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EOSDIS Core System Project

Flight Operations Segment (FOS) Acceptance Test Report for Release B Version 2.01.00: Earth Observing System (EOS) Operations Center (EOC) for the ECS Project

January 1998

Raytheon Systems Company
Upper Marlboro, Maryland

Flight Operations Segment (FOS) Acceptance Test Report for Release B: Version 2.01.00, Earth Observing System (EOS) Operations Center (EOC) for the ECS Project

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Preface

The content of this document defines the acceptance test report for the Flight Operations Segment (FOS). It addresses results from the FOS Release B Version 2.01.00 Formal Acceptance Test which took place from December 5 to December 17, 1997 at the Goddard Space Flight Center (GSFC) EOS Operations Center (EOC) - Building 32.

Included are detailed results for the entire suite of FOS tests conducted during the FOS Formal Acceptance Test Phase, including functional tests, end-to-end-tests, and regression tests. It defines test results and identifies deviations to procedures, problems encountered and Non-conformance Report (NCR) status. Thus, this document addresses the data item descriptions for CDRL 056 324/DV3 and 071 - 412/VE2.

This document is a contract deliverable with an approval code 2. As such, it does not require formal Government approval, however, the Government reserves the right to request changes within 45 days of the initial submittal. Once approved, contractor changes to this document are handled in accordance with Class I and Class II change control requirements described in the EOS Configuration Management Plan, and changes to this document shall be made by document change notice (DCN) or by complete revision.

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Abstract

This document describes the FOS Release B Version 2.01.00 Formal Acceptance Test status. It focuses on providing test results from various perspectives: FOS subsystem, level 4 requirements, Requirements by Release (RBR), and Interface Requirements Document (IRD) requirements.

Included are detailed results for the entire suite of FOS tests conducted during the FOS Formal Acceptance Test Phase, including functional tests, end-to-end-tests, and confidence tests. It defines test results and identifies deviations to procedures, problems encountered and NCR status.

Keywords: I&T, Results, Integration, NCR, FOS, Test, Requirements, RBR, Pass, Fail

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Appendix A. FOS RBR Test Status Matrix

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Abbreviations and Acronyms

1. Introduction

1.1 Identification

This document is the final version of the ECS System Acceptance Test Report for Release B Version 2.01.00, Earth Observing system (EOS) Operations Center (EOC), which are items 056 and 071 on the Contract Data Requirements List (CDRL) and defined by Data Item Description (DID) 324/DV3 and 412/VE2 under contract NAS5-60000.

1.2 Scope

This document summarizes the FOS acceptance test results for the Release B Version 2.01.00 Formal Test period.

In particular, the ECS System Acceptance Test Report for Release B Version 2.01.00, Earth Observing System (EOS) Operations Center (EOC) details the FOS system, as well as reporting on compliance with the Release B requirements as specified in the Functional and Performance Requirements Specification (#423-41-02), non mission-specific level 4 requirements as specified in the FOS Requirements Specification for the ECS Project, Volume 1 (#304-CD-001-003) and mission-specific Level 4 requirements as specified in the FOS Requirements Specification for the ECS Project, Volume 2 (#304-CD-004-003).

This document is under the ECS Configuration Control Board (CCB) and is the final Release B submittal. Changes to these volumes must be approved by this ECS CCB prior to inclusion in the document.

This document reflects the February 7, 1996 Technical Baseline maintained by the contractor configuration control board in accordance with ECS Technical Direction No. 11, dated December 6, 1994.

1.3 Purpose

This document describes the FOS Release B Version 2.01.00 Formal Acceptance Test status. It focuses on providing test results from various perspectives: FOS subsystem, level 4 requirements, Requirements by Release (RBR), and Interface Requirements Document (IRD) requirements.

1.4 Status and Schedule

The submittal of DIDs 324/DV3 and 412/VE2 meet the milestone specified in the CDRL of the National Aeronautics and Space Administration (NASA) contract NAS5-60000.

1.5 Document Organization

Section 1 provides the scope and document organization.

Section 2 provides a list of related documents, which were used directly or indirectly in the preparation of this document.

Section 3 defines the FOS Release B Version 2.01.00 Formal Acceptance Test results. It includes a brief description of the status of each FOS subsystem, description of test status for each test pass, test case pass/fail status information, and NCR status.

Appendix A contains the FOS RBR Test Status Matrix.

Appendix B contains FOS Level 4 Requirement Test Status Matrix.

The section Abbreviations and Acronyms contains an alphabetized list of definitions for abbreviations and acronyms used in this volume.

2. Related Documentation

2.1 Parent Documents

The parent documents are the documents from which this FOS Acceptance Test Report for Release B Version 2.01.00 scope and content are derived.

304-CD-001-003	Flight Operations Segment (FOS) Requirements Specification for the ECS Project, Volume 1: General Requirements
304-CD-004-003	Flight Operations Segment (FOS) Requirements Specification for the ECS Project, Volume 2: AM-1 Mission Specific
322-CD-100-001/ 411-CD-100-001	Flight Operations Segment (FOS) Release B: Version 2.01.00 Integration and Acceptance Test Procedures for the ECS Project
412-CD-003-002	ECS System Acceptance Test Report for Release A, Volume 3: Earth Observing System (EOS) Operations Center (EOC) for the ECS Project
423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS)
423-41-03	Goddard Space Flight Center, EOSDIS Core System (ECS) Contract Data Requirements Document

2.2 Applicable Documents

The following document is referenced within this document, or is directly applicable, or contains policies or other directive matters that are binding upon the content of this volume.

307-CD-001-003/ 329-CD-001-003	Flight Operations Segment (FOS) Release Plan and Development Plan for the ECS Project

2.3 Information Documents

2.3.1 Information Documents Referenced

The following documents are referenced herein and amplify or clarify the information presented in this document. These documents are not binding on the content of this FOS Acceptance Test Report for Release B Version 2.01.00: Earth Observing System Operations Center for the ECS Project.

194-201-SE1-001	Systems Engineering Plan for the ECS Project

194-202-SE1-001	Standards and Procedures for the ECS Project
193-208-SE1-001	Methodology for Definition of External Interfaces for the ECS Project
308-CD-001-006	Software Development Plan for the ECS Project
194-401-VE1-002	Verification Plan for the ECS Project
194-415-VE1-002	Acceptance Testing Management Plan for the ECS Project
501-CD-001-004	Performance Assurance Implementation Plan for the ECS Project
194-502-PA1-001	Contractor's Practices and Procedures Referenced in the PAIP for the ECS Project
604-CD-001-004	Operations Concept for the ECS Project, Part 1--ECS Overview
604-CD-002-003	Operations Concept for the ECS Project, Part 2B--Release B
604-CD-003-002	Operations Concept for the ECS Project, Part 2A--Release A

2.3.2 Information Documents Not Referenced

The following documents, although not referenced herein and/or not directly applicable, do amplify or clarify the information presented in this document. These documents are not binding on the content of the FOS Acceptance Test Report for Release B Version 2.01.00: Earth Observing System Operations Center for the ECS Project.

104-CD-001-003	Data Management Plan for the ECS Project
193-105-MG3-001	Data Management Procedures for the ECS Project

3. FOS Release B Version 2.01.00 Formal Test Results

This section contains detailed results for the FOS Release B Version 2.01.00 Formal Test Period, held from December 5, 1997 to December 17, 1997 at the ECS facility at the Goddard Space Flight Center (GSFC), Greenbelt, Maryland.

3.1 FOS Test Program Context

FOS software is installed at the EOS Operations Center (EOC) facility at GSFC and made available for formal acceptance testing. Formal acceptance testing includes the execution of functional tests designed to verify requirements (FOS level 4, IRD and RBR requirements) and end-to-end tests designed to ensure concurrent operational functionality. Formal testing also includes the execution and reporting of all regression tests executed following patch deliveries. All tests conducted during this period, including functional, end-to-end, and regression tests are currently defined in the FOS Release 2.01.00 Integration & Test Procedures document (322-CD-100-001/411-CD-100-001). Results reported in this document are a direct result of test procedure conduct using the test suite as shown in the test case list provided in Table 3.1-1.

In addition to Table 3.1.1, several Configuration Change Requests (CCRs) and software enhancements were tested with Version 2.01.00. The CCRs include:

- CCR 505-01-41-159, Absolute Time Command (ATC) Buffer Load and Command Telemetry Interface Unit/Flight Software Modifications (ESD 37)
- CCR 505-01-41-164, Spacecraft Command Issuance (ESD 40) part I
- FOT-9602, Support for Derived Parameter Infix Notation. Several performance improvements were also verified during the test phase. The performance improvements were specifically in User Station an Server Startup Time; Telemetry Decommutation; Real-time Commanding; and Display Initialization.

Table 3.1-1. FOS Release 2.01.00 Test Suite (1 of 2)

Test Title	Test Name	Associated Test Group
ANA-2010B	Standing Order Manager	Analysis
ANA-2020B	Spacecraft Clock Correlation Based on RDD Method	Analysis
ANA-2030B	Spacecraft Clock Correlation Based on USCCS Method	Analysis
ANA-2040B	Special Processing Algorithms	Analysis
ANA-2060B	Time Order Downlink Report	Analysis
ANA-2070B	Parameters Out of Limits Report	Analysis
ANA-2100B	System Generated Statistics	Analysis
ANA-2120B	Analysis Request Manager	Analysis

Table 3.1-1. FOS Release 2.01.00 Test Suite (2 of 2)

Test Title	Test Name	Associated Test Group
DBS-3100FPB	Database Mgmt via Web Pages	Database
CONT-2030B	SSR Monitoring	End-to End
EDOS-2001B	Ground TLM Analysis	Analysis
EDOS-2002B	Test Command Echo Exchange	External Interface
EDOS-2010B	SCS Summary Report Processing	External Interface
FDF-3100FPB	Disk Cleaner	Database
FUI-3000FPB	Roles Usability	System
IST-2000B	IST Pool Management	End-to-End
NCC-2040B	Ground Telemetry Replay	External Interface
TLM-2020B	Decom- Context Dependent Telemetry	Telemetry
TLM-2060B	Derived Parameter Processing	Telemetry
TLM-2100B	Info Window	Telemetry
REG-3000FPB	EOC Regression Test	Regression
SYS-3050FPB	Generic String Management	System
SYS-3060FPB	Tivoli	System

Note: Release B test cases are indicated by test case names ending with “B”. FOS Post Release B test cases are indicated by test case names ending with “FPB”.

3.2 FOS Testing During the Formal Test Phase

The FOS Release B Version 2.01.00 Formal Acceptance Test Suite was conducted between December 5, 1997 and December 17, 1997 at the EOC at GSFC, Greenbelt, Maryland. The test suite was conducted by the joint effort of the FOS Test and System Management Office (SMO) Acceptance Test (ATO) organizations.

For each test conducted, a test log was completed, detailing the successes/failures of each test, deviations made to procedures, NCRs written or verified as fixed, and a complete description of the as-run tests. Following the conduct of each test, the FOS Test Team determined the status of assigned requirements (i.e. verified passed, verified partial pass, verified failed, or not tested) and indicated status for each associated Level 4, RBR and IRD requirement. This was performed for all tests in the FOS test suite. The following sections provide the general and detailed results of this formal test period.

3.3 FOS Release B Version 2.01.00 Formal Test Results

During the FOS Release B Version 2.01.00 formal test timeframe, sixteen test cases were executed. Test Status was assigned for all test cases as Pass, Partial/Pass or Fail. Pass test status is assigned to a test when the test fully meets the success criteria stated in the test procedures. Partial/Pass test status is assigned when the test partially meets the success criteria stated in the test procedures. Failed test status occurs when most of the functionality of the test performed was

not met. Six tests fully passed as success criteria identified was fully met; ten tests were partially met with minor flaws in associated functionality. Seven tests were not executed (see Table 3.3-1).

Table 3.3-1. FOS Formal Test - Release 2.01.00

Test Title	Test Name	Test Status
ANA-2010B	Standing Order Manager	not executed
ANA-2020B	Spacecraft Clock Correlation Based on RDD Method	partial/pass
ANA-2030B	Spacecraft Clock Correlation Based on USCCS Method	not executed
ANA-2040B	Special Processing Algorithms	partial/pass
ANA-2060B	Time Order Downlink Report	partial/pass
ANA-2070B	Parameters Out of Limits Report	not executed
ANA-2100B	System Generated Statistics	not executed
ANA-2120B	Analysis Request Manager	partial/pass
CONT-2030B	SSR Monitoring	pass
DBS-3100FPB	Database Mgmt via Web Pages	pass
EDOS-2001B	Ground TLM Analysis	not executed
EDOS-2002B	Test Command Echo Exchange	pass
EDOS-2010B	SCS Summary Report Processing	partial/pass
FDF-3100FPB	Disk Cleaner	pass
FUI-3000FPB	Roles Usability	partial/pass
IST-2000B	IST Pool Management	partial/pass
NCC-2040B	Ground Telemetry Replay	not executed
TLM-2020B	Decom- Context Dependent Telemetry	pass
TLM-2060B	Derived Parameter Processing	pass
TLM-2100B	Info Window	not executed
REG-3000FPB	EOC Regression Test	partial/pass
SYS-3050FPB	Generic String Management	partial/pass
SYS-3060FPB	Tivoli	partial/pass

Note: Release B test cases are indicated by test case names ending with “B”. FOS Post Release B test cases are indicated by test case names ending with “FPB”.

3.3.1 FOS Subsystem - General Results

This section defines general FOS capabilities verified by the FOS and ATO organizations for each of the FOS subsystems via the execution of the FOS Release B Version 2.01.00 Test Suite during the formal test phase (detailed information on requirement status for each test is available in Appendix).

Table 3.3.1-1. General FOS Capabilities (1 of 6)

Subsystem	Func/Tool	Capability
PAS	Activity Definer	Insert commands, activities, PROCS w/out
		arguments, default scheduling info
		Define parameter values
		Save, delete, & modify
	BAP Definer Tool	Insert activities, scheduling info
		Modify parameter values
		Save, delete, & modify
	General Scheduler	Sched activities, PROCs, command, & BAP
		Retrieve activity & default sched info
		Un-schedule activity
	EOC Timeline -	Open (Master/What-ifs) & save plans
	Display/Mania	Edit functions
		Save/load configuration files
		Manipulations
		Permissions
	EOC Timeline -Mgmt	Manage multiple plans concurrently
	Contact Scheduler	Single/batch scheduling
		Algorithm processing
	Activity Constraint Definer	Define activity constraints
		Filtering
	Receive & Schedule	ATC/DAS load generation
		Late changes
	Sched Load Up-link	Schedule load uplinks
	What-If Planning	Create what-if plans on timeline
		View, save, and delete options
	DAS Generation	Create activities to build ATC load, validate cmd
		constraints, & populate a DAS period
		Notification of constraint violations
		Hard constraints prohibit DAS generation
Command Mgmt	Memory Dump Image	Dump & store S/C memory
		Verify dump compare (load.img to load.img, dump
		file to dump file, dump file to load.img)
		Enable user to overwrite ground reference image
	Table Load Valid & Gen	User generation of table load file
		Pre-defined templates used to define tables per DB
		Store uplink load data, image, report, & catalog entry

Table 3.3.1-1. General FOS Capabilities (2 of 6)

Subsystem	Func/Tool	Capability
	Micropro & FSW Load Gen	Generate instrument loads from microprocessor
		Update load catalog w/ an entry for the uplink load
	ATC Load Gen & Validation	Generate ATC load from DAS
		Generate ground script
		Manage erroneous DAS input
	ATC Load Mgt	Create partitioned ATC load
		Manipulate the ATC buffer display
	Validate & Gen	Generate RTS load, image load file, & load report
	RTS Loads	Check for hard and soft constraints
	RTS Load Mgt	Modeling of RTS buffer for the 128 ground locations
		View all available RTS loads
		Store RTS loads in the load catalog
	Table Load Mgt	Modeling of table loads
		View all available table loads
		Store table loads in the load catalog
Command	Cmd Authorize	Support user request for command authority
		Deny command privilege to unauthorized users
	Cmd Generation	Encase packets in CLTU
		Monitor S/C CLCWs for command receipt verification
		Generate FARM control commands
		Apply pertinent gap between CLTUs
	Ground Script Control	Ground script control characteristics
		Display status of executing ground script
	Ground Script Cmd	Process critical cmds, cmds w/ submnem, &
		prerequisite state check
		Manage override of crit. cmds & prereq state failures
	Manual Cmd	Process manually entered commands
		Validate submnem, hazardous, critical, & prereq
		state check commands
	Uplink Loads	Uplink RTS, table, instrument, & FSW loads
	Cmd Modes, Transmission	Select command rates
		Select active CTIU
		Transmit commands to S/C
		Enable retransmissions
	Tlm Verify & Cmd	Verify command receipt

Table 3.3.1-1. General FOS Capabilities (3 of 6)

Subsystem	Func/Tool	Capability
	Uplink Verify	Provide status of each uplinked command
		Provide telemetry verification status
Telemetry	Decom - H & S, Standby	Decommutate and display H & S and Standby tlm
	Decom - H/K Tlm	Decommutate and display housekeeping telemetry
	EU Conversion	Conversion of raw telemetry to engineering units
	User Adjust of EU Conv	User modification of polynomial coefficients,
		selection of specific EU equation for limit check
	Multi-Byte Param Proc	Processing telemetry parameters that are non-
		contiguous in a packet
	Data Quality Determination	Determination of packet data quality
	Red/Yellow Limits	Deter if tlm valuesare w/in red/yellow limit range
		Check of multiple limit sets
		Display of limit set status
	Real-Time Data Dropout	Detection of telemetry data dropout
	Real-Time Tlm Archive	Archive R/T tlm for housekeeping, H & S, &
		standby on both I and Q channels
	Multiple Source	Concurrent flow of telemetry from both
	Tlm Receipt	I & Q channels
	Tlm Replay Proc & Display	Dedicated replay of archive telemetry for house- keeping, H & S, and standby telemetry
	Context Dependent Parameters	Computed mnemonic values based on context key mnemonic
	Derived Parameter Processing	Process housekeeping, health and safety, and standby telemetry with predefined algorithms
Database	Dataset Generation	Generate datasets based on archived telemetry
		Display & print datasets
		Generate carryout files
	Database Mgmt via Web Pages	Edit FOS PDB - modify , add, delete a command, telemetry, event definition
	FDF Purge	Deletes files after moving to long-term storage Changes file status upon moving to long term storage
Analysis	Anal Products	Generate dataset products based on tlm archive
	DB Crossover	data that covers the times of different DBs
	User Specified Statistics	Generate stats report based on user time/tlm parameters (manually selected mnemonics)

Table 3.3.1-1. General FOS Capabilities (4 of 6)

Subsystem	Func/Tool	Capability
	Spacecraft Clock Correlation	S/C clock error based on RDD method Report genrated
	Analysis Request Manager	Process 14 simultaneous requests on 4 machines Filter capability by spacecraft id, subsystem, instrument, ground system ASCII report generated
	Special Processing Algorithms	User defined algorithm implemented Analysis request built
	Time Order Downlink Report	Report generated with selected options: request name, start/stop time interval, EU conversion value, raw value Graphs displayed
External	ASTER Sched &	Perform ASTER scheduling
	IST Access	Receipt, constraint check ASTER STS, ODS
		Integration of ASTER data into Master Plan
	FDF Interface	Ingest FDF products, validate, & populate into DB
		Process FDF products incl. table load, orb event gen
	NCC GCMR Processing	Send GCMRs to NCC
		Process GCM status & GCM disposition messages
	UPD Receipt & Archive	Send User Performance Data messages to NCC
		Receive, archive & display UPD status from NCC
	Test Command/Test Echo Exchange	Transmitted command test block CTB Receive command echo block CEB
	SCS Summary Report	Receive SCS report Process SCS data Generate report
Operations	Hardware	Hardware components incl. servers &
		workstations, file servers, & peripherals
	Functional Report Analysis	Requirements that are operational or
		verified via design analysis
End-to-End	Decision Support	Monitor tlm quality via CODA, UPD, & housekeep tlm
		Detect & recognize ACE/SAD misconfig while in
		safe-hold and cmd decoder anomalies
	ECT-2 Scenario	Schedule activities
		Build table, RTS, & ATC loads
		Uplink loads & procs, S/C dumps & compares
	S/C Activity Log	Receipt of S/C activity log entries in housekeep tlm
		Dump of S/C activity log table & log into archive
		History report of S/C activity data

Table 3.3.1-1. General FOS Capabilities (5 of 6)

Subsystem	Func/Tool	Capability
	S/C State Check	Create command list for expected values of
		commands executed in back-orbit
		Compare & report actual S/C state check tlm
	SSR Monitoring	Monitor SSR buffers in realtime- NCC UPD Report buffer status Recommend recovery procedures for RF failure
	IST Pool Mgmt	Maintain log of IST/EOC status Start up and shutdown IST connections allocation Dedicated and non-dedicated allocation based on IST type and location
System	IST Functionality	Planning & Scheduling
		Load Management
		Real-time monitoring of telemetry and command
		Event reporting
		User interface tools
	Concurrent/Ops	Concurrent ops - sched, R/T, & off-line activities
		Computer performance analysis for all nodes,
		real-time telemetry and command rates
		Real-time telemetry & command monitoring
	Year 2000 Time Test	Ensure all FOS functionality handles year 2000 trans
	FOS Startup/Shutdown	Startup, shutdown procedures for FOS servers
		& workstations
	Logical String Config	Establish logical strings for ops, test, & train modes
		Create & disable mirrored and tailored logical strings
	Failure Recover & Monitor	Automated failover of logical strings for R/T server
		Ensure ground script operation is maintained during
		failover recovery
		Status monitoring of system resources
	Tivoli	System Monitoring System level parameters

Table 3.3.1-1. General FOS Capabilities (6 of 6)

Subsystem	Func/Tool	Capability
	User Roles	Limit system access based on log on Change user roles during session Access to five tools based on roles (cmd request, command control window, room builder, RTS load builder, Binary load builder) Eight roles - command activity controller, database administrator, generic user, instrument controller, operations controller, read-only, PAS scheduler, PAS definer

3.3.2 FOS Individual Test Results

This section defines the individual test status results for each test executed in the FOS Release B Version 2.01.00 test suite. This includes functional and regression tests.

3.3.3 Spacecraft Clock Correlation Based on RDD Method

Test Case #/Title: ANA-2020B Clock Correlation - Return Data Delay (RDD)

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to calculate the spacecraft (s/c) clock error by use of the RDD algorithm. This value is given by the difference between the s/c time stamp and a Universal Time Code estimate of s/c time which is based on the ground receipt time. The input comes from simulated housekeeping telemetry, Return Channel Time Delay (RCTD) measurements, and Flight Dynamics Facility (FDF) predicts of the range stored in a file. The FDF range driver is run on the day of the test. Two cases are considered. The first case is for clock errors of 0 and 100 milliseconds with the telemetry data runs at 1 kb per second and the second case is with 16 kb per second.

Pass/Fail Assessment: Partial/Pass

Date of Test: 16 December 1997 at 1:00pm; EOC - Building 32, GSFC.

Test Conduct Summary: This test successfully verifies that the s/c clock error is calculated by use of the RDD algorithm. The predicted

s/c ranging data and RCTD measurements are used as inputs to the RDD algorithm. The predicted s/c ranging data is calculated by interpolating or extrapolating to the nearest millisecond. A report is generated for each real-time pass during which clock correlation is performed and it contains: the s/c id, the type of calculation used (RDD), results from the clock correlation calculation, and the s/c time associated with the results. The test is capable of generating a clock correlation bias of 0 millisecond and 100 milliseconds.

The following lists the description of requirements that failed:

The FOS does not provide notification once per minute indicating the average clock delta value for the RDD method.

The FOS does not provide the capability to control RDD clock correlation operations.

The EOC does not provide the following header information in the clock correlation report:

a. The start and stop times of the pass during which the correlation was performed.

The following lists the description of problems reported on NCRs:

Report Browser does not bring up Netscape.

Predicted ranging data file does not comply FDD ICD format.

Control window hung with the CLOCK END ECL directive.

Misleading event message.

CC messages displayed as SYS.

STRING DISCONNECT causes syntax error.

FoIpPtToPortal - Send Failed: Socket Error.

The start and stop times are missing in the report.

Inappropriate report name.

Q channel RCTD should not be written in the report.

Core dumped with ClockFileDriver.

RDD clock error calculation event message is not displayed every minute.

NaN milliseconds is displayed on event window.

NCRs: ECSed09843 ECSed09880 ECSed10171 ECSed10352 ECSed10460 ECSed10541 ECSed10551 ECSed10569 ECSed10574 ECSed10575 ECSed10648 ECSed10649 ECSed10651 ECSed10003 ECSed09918 ECSed10172

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
ANA-2020B	F-ANA-07110	The FOS shall provide the capability to calculate the spacecraft clock error by use of the RDD algorithm.	VP	
ANA-2020B	F-ANA-07120	The FOS shall use predicated spacecraft data as input to the RDD algorithm.	VP	
ANA-2020B	F-ANA-07130	The FOS shall interpolate or extrapolate to the nearest millisecond the predicted spacecraft range data.	VP	
ANA-2020B	F-ANA-07145	The FOS shall use an user-defined return channel time delay measurement as input to the RDD algorithm.	VP	
ANA-2020B	F-ANA-07160	The FOS shall provide notification once per minute indicating the average clock delta value for the RDD method.	F	10649
ANA-2020B	F-ANA-07180	The FOS shall provide the capability control RDD clock correlation operations.	F	10171
ANA-2020B	F-ANA-07300	The EOC shall provide the capability to generate a clock correlation report for each real-time pass during which clock correlation is performed.	VP	
ANA-2020B	F-ANA-07310	The EOC shall provide the following header information in the clock correlation report: a. The start and stop times of the pass during which the correlation was performed. b. The Spacecraft ID. c. The type of calculation used. (USCCS or RDD)	F	10569

Test Case	L4	Text	REQ Status	NCRs
ANA-2020B	F-ANA-07320	The EOC shall include in the clock correlation report the results from the clock correlation calculation, and the spacecraft time associated with the results.	VP	

Test Procedure Deviations: Added step 97 - CC START STRING = 100.

Test Procedure Work Arounds: Step 64 - Core dumped with ClockFileDriver. The ClockOdf file was generated with 0 bytes. Ftped the file to be used as input as workaround.

Steps 87, 102 - The CLOCK END ECL directive was not working. Used workaround.

Steps 91, 92, 93, 95, 107, 108, 109, 111 - Report Browser was not working. Used workaround.

3.3.4 Special Processing Algorithms

Test Case #/Title: ANA-2040B Special Processing Algorithms

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify the ability to take user supplied algorithms and system algorithms (curve fit, Fast Fourier Transform, smooth fit and compute the root mean square). The user supplied algorithms are written in C or C++ code. The algorithm will be registered with 20 inputs and 20 outputs defined and assigned to telemetry mnemonics. An analysis request will be built with the same 20 input parameters selected. The analysis request will be submitted, the algorithm will be executed and a dataset will be generated. The results of the dataset are displayed in a Time Order Downlink Report. System algorithms are performed on the resulting dataset.

Pass/Fail Assessment: Partial/Pass

Date of Test: 17 December 1997 at 4:00pm; Building 32 - GSFC.

Test Conduct Summary: Algorithms were executed using times and parameters as triggers. Using a dataset as input was unsuccessful due to error messages OnFailure called - no args and FaDrDatasetReader Error. User Algorithm PIDs are starting at 7000. These PIDs are currently assigned to spacecraft and ground telemetry. User Algorithm PIDs

need to start with a higher number. Curve fitting cause a core dump to occur. Fast Fourier Transform and smooth fitting contain erroneous data values in their calculations. There is no capability to compute rms.

NCRs

ECSed10723 ECSed10711 ECSed08768 ECSed08187
ECSed07521 ECSed07976 ECSed10088 ECSed06592
ECSed06709 ECSed07628 ECSed07627 ECSed07602
ECSed10290 ECSed08461 ECSed08463 ECSed08462
ECSed10381 ECSed10382 ECSed11113 ECSed09899

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
ANA-2040B	F-ANA-04050	The FOS shall provide the capability to generate a dataset from the results of a user supplied algorithm.	VP	
ANA-2040B	F-ANA-06020	The FOS shall provide the capability to curve-fit a parameter to a polynomial of user specified order, up to order 9.	F	ECSed08463
ANA-2040B	F-ANA-06021	The FOS shall provide the capability to apply a Fast Fourier Transform (FFT) to a parameter.	F	ECSed08461
ANA-2040B	F-ANA-06022	The FOS shall provide the capability to smooth a parameter by a user specified factor. Smoothing means that every N data points, where N is the user specified factor, are averaged to yield a single data point.	F	ECSed08462
ANA-2040B	F-ANA-06023	The FOS shall provide the capability to compute the Root Mean Square (RMS) of a parameter.	F	ECSed10711 ECSed11113
ANA-2040B	F-ANA-06040	The FOS shall provide the capability to apply a user supplied algorithm to data maintained in the telemetry archive.	VP	
ANA-2040B	F-ANA-06045	The FOS shall provide the capability of allowing up to 20 input parameters and 20 output parameters for a user supplied algorithm.	VP	
ANA-2040B	F-ANA-06050	The FOS shall provide the capability to utilize data contained within a dataset as input into a user supplied algorithm.	F	ECSed10381 & ECSed10382
ANA-2040B	F-FUI-09112	The FOS shall provide the capability to specify a parameter for input to an algorithm when building an analysis request for historical data analysis. Algorithms can be one of the following: a. user-defined b. system supplied	VP	

Test Case	L4	Text	REQ Status	NCRs
ANA-2040B	F-FUI-09500	The FOS shall provide the capability to register an algorithm that contains the following: a. algorithm name b. algorithm object file name c. output parameter name d. input parameters	VP	
ANA-2040B	F-FUI-09510	The FOS shall provide the capability to select a registered algorithm per selected parameters when building an analysis request.	VP	
ANA-2040B	F-FUI-09515	The FOS shall provide the capability to select valid discrete and analog values to be used per algorithm.	VP	

Test Procedure Deviations: Mnemonic selection modified by tester. $BIN-DIR was used to execute FuAnBuild due to bad environment variable.

Test Procedure Work Arounds: Mnemonic selection have been modified to reflect testers choice. Steps 14-21 Time Order Downlink Report was generated using the FaDrReaderDriver.

3.3.5 Time Order Downlink Report

Test Case #/Title: ANA-2060B Time Order Downlink Report

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify the ability to a generate and print a Time Order Downlink Report based on information selected from a combination of user interface and analysis tool options from a previously defined dataset. The test begins with the initialization of the EOC to support off-line analysis processing. A previously created Analysis Request is retrieved to verify that request processing has been completed. A Time Order Downlink Report is generated from the previously created analysis request, with selected options including request name and start/stop time interval and desired parameters (parameter selection will include at least one EU conversion value and one raw value) . The Time Order Downlink Report is saved and submitted. The next portion of the test reflects the ability to create a Custom Report. A custom report is created using ASCII files,

off-line products, screen snaps and other products in to a report. Margins and fonts will be changed and existing templates used. The last portion of the test will reflect the ability to display the results of analysis requests in the form of graphs and tables.

Pass/Fail Assessment: Partial/Pass

Date of Test: 14 December 1997 at 17:40pm; Building 32 - GSFC.

Test Conduct Summary: A Time Order Downlink Report was created by using the FaDrDreaderDriver. The report was limited to the complete dataset, due to lack of FUI interface there was no select a specific time span or mnemonics. There are currently no custom report functions available. There is minimal graph functionality. No off line table functionality available at this time.

NCRs

ECSed10613 ECSed10614 ECSed10615 ECSed10616
ECSed11070 ECSed08777 ECSed10427 ECSed10411
ECSed08500 ECSed10397 ECSed10396 ECSed10431
ECSed10430 ECSed10429 ECSed10428 ECSed10426
ECSed10425 ECSed10423 ECSed10422 ECSed10421
ECSed10420 ECSed10417 ECSed10416 ECSed10414
ECSed10413 ECSed10412 ECSed10410 ECSed08650
ECSed08316 ECSed06356 ECSed08648 ECSed10418
ECSed10579 ECSed10578 ECSed08649 ECSed10499
ECSed06316 ECSed09841 ECSed09842 ECSed09843

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
ANA-2060B	F-ANA-04350	The FOS shall provide the capability to generate a Time Ordered Downlink Report for a user specified mission.	F	ECSed08648
ANA-2060B	F-ANA-04360	The FOS shall produce a Time Ordered Downlink Report for the time interval requested by the user.	F	ECSed10578
ANA-2060B	F-ANA-04370	The time interval of a Time Ordered Downlink Report shall be greater than or equal to 1 second.	F	ECSed10579
ANA-2060B	F-ANA-04375	Each Time Ordered Downlink Report shall contain the following header information: a. The date and time of the report b. The starting spacecraft time of the data c. The ending spacecraft time of the data	VP	

Test Case	L4	Text	REQ Status	NCRs
ANA-2060B	F-ANA-04380	The FOS shall provide all data base defined telemetry mnemonics and their respective values for the time interval requested in the Time Ordered Downlink Report. If a telemetry mnemonic has a data base defined EU conversion, the EU value will be supplied,	VP	
ANA-2060B	F-ANA-04390	The FOS shall provide the spacecraft time for each telemetry mnemonic listed in the Time Ordered Downlink Report.	VP	
ANA-2060B	F-ANA-04400	The FOS shall order the telemetry parameters in a Time Ordered Downlink Report according to a unique spacecraft time tag associated with each parameter.	VP	
ANA-2060B	F-FUI-02920	The FOS shall provide the capability to create a custom report template composed of the following information: a. ASCII files b. off-line analysis products c. screen snaps d. blocks of descriptive text e. other routine reports	F	ECSed10616
ANA-2060B	F-FUI-02950	The FOS shall provide the capability to save a report template.	F	ECSed10616
ANA-2060B	F-FUI-02955	The FOS shall provide the capability to modify an existing report template.	F	ECSed10616
ANA-2060B	F-FUI-02960	The FOS shall provide the capability to delete a report template.	F	ECSed10616
ANA-2060B	F-FUI-02961	The FOS shall provide the capability to specify the report margins.	F	ECSed10616
ANA-2060B	F-FUI-02962	The FOS shall provide the capability to specify the report fonts.	F	ECSed10616
ANA-2060B	F-FUI-02963	The FOS shall provide the capability to specify the report title.	F	ECSed10616
ANA-2060B	F-FUI-02964	The FOS shall provide the capability to specify a default destination for the completed report (file, printer, browser/editor).	F	ECSed10616
ANA-2060B	F-FUI-02965	The FOS shall provide the capability to specify report author name.	F	ECSed10616
ANA-2060B	F-FUI-02967	The FOS shall provide the capability to create a report from a custom or routine report template.	F	ECSed10616
ANA-2060B	F-FUI-02970	The FOS shall provide the capability to accept report generation requests.	F	ECSed10616
ANA-2060B	F-FUI-02975	The FOS shall provide the capability to insert a specified file into a report.	F	ECSed10616

Test Case	L4	Text	REQ Status	NCRs
ANA-2060B	F-FUI-02980	The FOS shall provide the capability to insert a specified off-line analysis product into a report.	F	ECSed10616
ANA-2060B	F-FUI-02985	The FOS shall provide the capability to insert a specified screen snap into a report.	F	ECSed10616
ANA-2060B	F-FUI-02990	The FOS shall provide the capability to insert predefined blocks of text into a report.	F	ECSed10616
ANA-2060B	F-FUI-02991	The FOS shall provide the capability to insert routine reports into a report.	F	ECSed10616
ANA-2060B	F-FUI-02995	The FOS shall provide the capability to save a completed report.	F	ECSed10616
ANA-2060B	F-FUI-03000	The FOS shall provide the capability to initiate the printing of a completed report.	F	ECSed10616
ANA-2060B	F-FUI-03005	The FOS shall provide the capability to initiate the report browser/editor with a completed report.	F	ECSed10616
ANA-2060B	F-FUI-03010	The FOS shall provide the capability to cancel the processing of a report generation request.	F	ECSed10616
ANA-2060B	F-FUI-03025	The FOS shall provide the capability to display a list of existing report templates.	F	ECSed10616
ANA-2060B	F-FUI-03030	The FOS shall provide the capability to display a list of existing reports.	F	ECSed10616
ANA-2060B	F-FUI-03035	The FOS shall provide the capability to initiate the report template builder with a template selected from the template list.	F	ECSed10616
ANA-2060B	F-FUI-03040	The FOS shall provide the capability to initiate the report generator with a template selected from the template list.	F	ECSed10616
ANA-2060B	F-FUI-03045	The FOS shall provide the capability to select a report from the report list for browsing or editing.	F	ECSed10616
ANA-2060B	F-FUI-03050	The FOS shall provide the capability to display an existing report.	F	ECSed10616
ANA-2060B	F-FUI-03055	The FOS shall provide the capability to print an existing report.	F	ECSed10616
ANA-2060B	F-FUI-03060	The FOS shall provide the capability to edit an existing report.	F	ECSed10616
ANA-2060B	F-FUI-03061	The FOS shall provide the capability to save an existing report.	F	ECSed10616

Test Case	L4	Text	REQ Status	NCRs
ANA-2060B	F-FUI-07300	The FOS shall provide graphs that are capable of displaying the following: a. up to six telemetry values vs. time, or b. up to six telemetry values vs. a telemetry value c. the high and low, red and yellow limits of the telemetry parameters as lines(do	VPT	ECSed08316 ECSed10396 (b) ECSed10397 (c) ECSed10410 (e)
ANA-2060B	F-FUI-07305	The FOS shall allow the user to select up to six telemetry parameters to graph.	F	ECSed10613
ANA-2060B	F-FUI-07310	The FOS shall allow the user to plot data from different times and/or different data sources on a two dimensional graph.	F	ECSed10414
ANA-2060B	F-FUI-07315	The FOS shall display the minimum, current and maximum values of a selected telemetry parameter within the current visible area of the graph.	F	ECSed10416
ANA-2060B	F-FUI-07320	The FOS shall allow the user to select a telemetry parameter from the graph utilizing a pointing device.	VP	
ANA-2060B	F-FUI-07325	The FOS shall allow the user to select a range of times or X values, from the total range of time or X values available, in which to view the data.	F	ECSed10417
ANA-2060B	F-FUI-07335	The FOS shall allow the user to zoom in on the graph.	F	ECSed10418
ANA-2060B	F-FUI-07340	The FOS shall allow the user to zoom out from the graph.	F	ECSed10418
ANA-2060B	F-FUI-07345	The FOS shall allow the user to select a line style with which a telemetry parameter is displayed.	VP	
ANA-2060B	F-FUI-07350	The FOS shall allow the user to select a symbol with which a telemetry parameter is displayed.	VP	
ANA-2060B	F-FUI-07355	The FOS shall allow the user to specify whether the graph shall display a grid.	F	ECSed10420
ANA-2060B	F-FUI-07360	The FOS shall allow the user to specify the grid line style (dotted, dashed or solid).	F	ECSed10421
ANA-2060B	F-FUI-07365	The FOS shall allow the user to specify the grid granularity.	F	ECSed10422
ANA-2060B	F-FUI-07375	The FOS shall allow the user to specify limit line style (dotted, dashed, or solid).	F	ECSed10423
ANA-2060B	F-FUI-07380	The FOS shall allow the user to select the axis granularity.	F	ECSed10425
ANA-2060B	F-FUI-07385	The FOS shall allow the user to select the axis scale labels.	F	ECSed10426

Test Case	L4	Text	REQ Status	NCRs
ANA-2060B	F-FUI-07388	The FOS shall allow the user to specify the axis labels.	VP	
ANA-2060B	F-FUI-07390	The FOS shall allow the user to specify the graph title.	VP	
ANA-2060B	F-FUI-07391	The FOS shall allow the user to insert a graph legend.	VP	
ANA-2060B	F-FUI-07392	The FOS shall allow the user to save a graph.	VP	
ANA-2060B	F-FUI-07394	The FOS shall print graphs in either landscape or portrait orientation.	VPT	ECSed10428
ANA-2060B	F-FUI-07396	The FOS shall allow the user to print up to 4 graphs per page.	F	ECSed10429
ANA-2060B	F-FUI-07398	The FOS shall provide the visual indication that a telemetry value does not exist within the requested time span.	F	ECSed11070
ANA-2060B	F-FUI-07400	The FOS shall provide tables that are capable of displaying the following: a. up to 50 discrete and analog real-time telemetry values over a specified time interval b. the associated time at each interval c. the descriptor or mnemonic of each telemetry	F	ECSed10431
ANA-2060B	F-FUI-07415	The FOS shall provide the user with the capability to specify whether the telemetry value is represented by its mnemonic or descriptor.	F	ECSed10431
ANA-2060B	F-FUI-09200	The FOS shall provide the capability to display off-line analysis results in the following output views: a. graph b. table c. analysis report	VPT	ECSed10431 (b)

Test Procedure Deviations: Step 17 went to the datasets directory for the complete file name. After step 19 quit the FaDrReaderDriver. Modified step 234 to reflect the way to print.

Test Procedure Work Arounds: The FaDrReaderDriver was used to create and generate a Time Order Downlink Report.

3.3.6 Analysis Request Manager

Test Case #/Title: ANA-2120B Analysis Request Manager

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary:	This test is designed to verify the ability to manage all requests for data analysis. This includes simultaneous processing of multiple requests as well as a queue of requests waiting to be processed. This test will also verify selection filter capabilities and user-specified statistics report content. The test begins with the initialization of the EOC. The Analysis Request Builder tool is invoked and a historical request is generated, with selected options including request name, start/stop time interval, parameter names, and sampling rates. During the mnemonic selection portion of the request, all selection filter capabilities are verified. Previously built analysis requests are submitted for generation in order to fill the queue. The queue is checked to ensure the accuracy of the status of each request submitted. Various options will be tested on the queue (change a priority of a request, delete a request select products). At least one of the requests will be a user-specified statistics request. After the request has completed, an ASCII report is generated and checked. This report will be checked for correct header information as well as data accuracy. Another request will be built and submitted using a dataset from a previously completed request as input. Following completion of this request, an ASCII report is generated and checked.
Pass/Fail Assessment:	Partial/Pass
Date of Test:	14 December 1997 at 14:50pm; Building 32 - GSFC.
Test Conduct Summary:	Four analysis requests were submitted on three machines. Farming was successful on a limited basis. The number of machines used was reduced from eight to three and the number of requested submitted was reduced from 20 to four. Using a dataset as input to an analysis request was unsuccessful. Received error messages OnFailure called - no args and FaDrDatasetReader Error. The User Statistics Report does not indicate the interval type on the report. Unable to view the queue to verify it holds up to 10 analysis request, the queue will allow a request to be deleted, and a percentage complete to be displayed. The status of a request will display submitted, not waiting, currently processing, and complete. The user is allowed to filter by only one spacecraft ID, instruments, ground systems, and subsystems.

NCRs Written: ECSed10612 ECSed08771 ECSed08617 ECSed10381
ECSed10382 ECSed10438 ECSed10437 ECSed10436
ECSed10435 ECSed08615 ECSed04451 ECSed09910
ECSed10499 ECSed09888 ECSed10440 ECSed04751
ECSed10089 ECSed08516 ECSed09848 ECSed09913

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
ANA-2120B	F-ANA-01030	The FOS shall allow the user to access a previously saved dataset for analysis.	F	ECSed10381 & ECSed10382
ANA-2120B	F-ANA-04040	The FOS shall provide the capability to generate datasets from data base defined derived parameters.	VP	
ANA-2120B	F-ANA-04315	The FOS shall provide the capability to build ASCII reports from the user specified telemetry MMM statistics data.	VP	
ANA-2120B	F-ANA-04320	Each statistics report shall contain the following header information: a. The date and time of the report b. The starting spacecraft time of the data c. The ending spacecraft time of the data d. The interval type of the MMM statistics (if applicable)	VPT	ECSed08615
ANA-2120B	F-ANA-04330	The FOS shall provide the mnemonic name for each telemetry item specified in a statistics report.	VP	
ANA-2120B	F-ANA-04340	The FOS shall provide the capability to include the following information for each telemetry item specified as part of the telemetry statistics report: a. Minimum value within each time interval b. Spacecraft time for each minimum value reported c. Max	VPT	ECSed08615
ANA-2120B	F-ANA-08010	The FOS shall provide the capability to process up to 20 simultaneous requests for data analysis	VPT	ECSed09888
ANA-2120B	F-ANA-08020	The FOS shall provide the capability to maintain a queue of up to 10 requests for data analysis.	F	ECSed10436
ANA-2120B	F-ANA-08030	The FOS shall provide the capability to delete a request from the queue.	F	ECSed10437
ANA-2120B	F-ANA-08040	The FOS shall provide the capability to estimate the percentage complete of a data analysis request.	F	ECSed10438

Test Case	L4	Text	REQ Status	NCRs
ANA-2120B	F-ANA-08050	The FOS shall provide the capability to report the status of a data analysis request. The status can be one of the following: a. Request submitted b. Request waiting in queue c. Request currently being processed d. Request complete	VPT	ECSed10440 (b-d)
ANA-2120B	F-ANA-08060	The FOS shall provide the capability to selectively decommutate only those parameters which are required to fulfill the analysis request.	VP	
ANA-2120B	F-FUI-03200	The FOS shall provide a utility that allows a user to filter items according to any of the following: a. spacecraft b. spacecraft subsystem c. instrument d. ground system	VP	
ANA-2120B	F-FUI-03205	The FOS shall allow the user to specify one or more spacecraft Ids as a filter criteria.	F	ECSed04751
ANA-2120B	F-FUI-03215	The FOS shall allow the user to specify one or more instruments as a filter criteria.	F	ECSed04751
ANA-2120B	F-FUI-03220	The FOS shall allow the user to specify one or more ground systems as a filter criteria.	F	ECSed04751
ANA-2120B	F-FUI-03225	The FOS shall allow the user to specify one or more subsystems associated with a spacecraft Id as a filter criteria.	F	ECSed04751
ANA-2120B	F-FUI-03230	The FOS shall allow the user to specify one or more instruments associated with a spacecraft Id as a filter criteria.	F	ECSed04751
ANA-2120B	F-FUI-09140	The FOS shall provide the capability to display a request queue of up to 10 submitted analysis requests.	F	ECSed09910
ANA-2120B	F-FUI-09145	The FOS shall provide the capability to assign priority to a pending request in the request queue.	F	ECSed09910
ANA-2120B	F-FUI-09150	The FOS shall provide the capability to delete a request from the request queue display.	F	ECSed09910
ANA-2120B	F-FUI-09160	The FOS shall provide the capability to select output products for a completed analysis request.	F	ECSed10499
ANA-2120B	F-FUI-09225	The FOS shall provide the capability to use existing data sets as input for analysis requests.	VP	

Test Procedure Deviations: Steps 10 - 14 were skipped - only three user stations and four requests were used. Steps 44, 50 and 57 were skipped and revisited after the analysis requests completed. Steps 64 - 159 were skipped - only three user stations and four requests were used. Step 201 was modified to reflect the whole path name. Step 218 deviation due to J200 error message - no "save as" performed. Step 274 needed to provide full file name in the FaDrReaderDriver. Step 304 last three items were removed, not part of the test.

Test Procedure Work Arounds: Steps 235 - 242 are workarounds for Time Order Downlink Report using the FaDrReaderDriver. Steps 271 - 277 are workarounds for User Statistics report using the FaDrReaderDriver.

3.3.7 SSR Monitoring

Test Case #/Title: CONT-2030B - SSR Monitoring

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to show that the AM-1 Solid State Recorder buffers can be monitored in real-time by the SSR manager. It is designed to show that the SSR manager can detect and handle RF failures, via UPD messages that the status of the buffers can be reported at the end of a contact. That notification will be provided when a user attempts to schedule science data collection activities that cause overflow of any of the SSR buffers. S/C data volume will be modeled by the planning and scheduling software along with predictions of the SSR buffer status based on science collection activities. It is designed to show that the capability exists to change the buffer playback order of the instrument science data for the SSR and that the SSR manager shall provide an analysis window that contains buffer pointers, buffer status, playback state and RF failures

Following sign-on, The system will be brought up. The AM-1 Telemetry, the UPD data will be started to run on the system. As the different segments of the data pass through the system, requirements will be verified by the displays and expected behavior of the system. The system will then be brought down.

Pass/Fail Assessment: Pass

Date of Test: 16 December 1997 at 3:45pm; EOC, Building 32 - GSFC.

Test Conduct Summary: A Mater Plan was opened and activities were defined which will cause a buffer overflow. The activities were scheduled and the timeline turned colors to indicate a buffer overload. The resource model recalculated the predicted buffer volumes when new activities were scheduled. These predicted buffer volumes were displayed reflecting SSR Buffer Playback activities on the timeline. PAS sent buffer predicts to the SSR manager via Rtworks as seen on the SSR Manager's display (displays buffer pointers, buffer status, playback state, RF failure information). The SSR Dump command was not automatically entered into the command request window. Sent UPD data indicating RF link broke. The SSR Monitpr indicates the RF link failure and provides a recovery plan (contact NCC).

CODA data is still being defined so data drop out and data loss capabilities were not verified. The software functionality to change SSR buffer data volume limits is not available so no testing was done to verify changing SSR buffer data volume limits.

NCRs Written: ECSed10658 ECSed10659 ECSed10660 ECSed06360 ECSed08568 ECSed08767

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
CONT∞ 2030B	F-ANA-01060	The FOS shall be able to access EDOS Customer Operations and Data Accounting (CODA) messages for analysis.	UNV	ECSed10659
CONT∞ 2030B	F-ANA-06030	The FOS shall provide the capability for monitoring and evaluating spacecraft functions, resources, and performance including: a. stored command processing b. spacecraft recorders c. safe mode processes d. electrical power subsystem e. propel	VP	
CONT∞ 2030B	F-ANA-17010	The FOS shall provide the capability to monitor the AM-1 Solid State Recorder buffers in real-time.	VP	
CONT∞ 2030B	F-ANA-17020	The FOS shall provide the capability to detect RF failures which impact SSR playbacks.	VP	

Test Case	L4	Text	REQ Status	NCRs
CONT∞ 2030B	F-ANA-17030	The FOS shall provide the capability to report the state of the SSR playback at the time of an RF failure.	VP	
CONT∞ 2030B	F-ANA-17040	The FOS shall provide the capability to report the status of the SSR buffers at the end of a contact.	VP	
CONT∞ 2030B	F-ANA-17050	The FOS shall provide the capability to recommend recovery procedures to correct for playback data loss.	UNV	ECSed10659
CONT∞ 2030B	F-ANA-17060	The FOS shall provide the capability to recommend recovery procedures to correct RF link faults.	VP	
CONT∞ 2030B	F-FUI-14005	The FOS shall provide notification when a user attempts to schedule science data collection activities that cause overflow of any of the SSR buffers.	VP	
CONT∞ 2030B	F-FUI-14010	The FOS shall provide the capability to display updated SSR buffer status after each unrecoverable data dropout or premature loss of contact.	UNV	ECSed10659
CONT∞ 2030B	F-FUI-17800	The FOS shall provide a SSR analysis window that contains: a. buffer pointers b. buffer status c. playback state d. RF failures	VP	
CONT∞ 2030B	F-FUI-17810	The FOS shall display recommended playback data loss recovery procedures.	UNV	ECSed10659
CONT∞ 2030B	F-FUI-17820	The FOS shall display recommended RF fault link correction procedures.	VP	
CONT∞ 2030B	F-PAS-00600	The FOS shall provide the capability for an authorized user to allocate the amount of the solid state recorder buffer available to specific users.	UNV	ECSed10660
CONT∞ 2030B	F-PAS-00920	The FOS shall model spacecraft data volume.	VP	
CONT∞ 2030B	F-PAS-10310	The FOS shall provide the capability to change the AM-1 Solid State Recorder (SSR) buffer data volume limits.	UNV	ECSed10660
CONT∞ 2030B	F-PAS-10446	The FOS shall provide the capability to predict the on-board SSR buffer status based on the science data collection activities scheduled by the users and the contact schedule to be negotiated with the NCC.	VP	

Test Case	L4	Text	REQ Status	NCRs
CONT∞ 2030B	F-PAS-10530	The FOS shall provide the capability to change the buffer playback order of instrument science data for the Solid State Recorder (SSR).	VPT	ECSed10658

Test Procedure Deviations: None.

Test Procedure Work Arounds: None.

3.3.8 Database Management via Web Pages

Test Case #/Title: DBS-3100FPB - Database Management via Web Pages

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify DMS provides the user with the capability to modify, add, or delete a command, telemetry, or event Project Database (PDB) definitions that reside in the FOS database.

Pass/Fail Assessment: Pass

Date of Test: 17 December 1997 at 3:00 pm; Landover Hughes Building Mini-EOC.

Test Conduct Summary: Edited FOS PDB definition files. By using the FOS Database Utility Web pages, the user was able to modify, add, and delete command and telemetry definitions.

NCRs Written: ECSed11073 ECSed11074 ECSed11072

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
DBS∞ 3100FPB	None	None	N/A	N/A

Test Procedure Deviations: Steps 3 and 4 were not performed.

Test Procedure Work Arounds: Steps 2 and 3 were not performed. Had to use a developer's view in order to gain access to the database pages.

3.3.9 Test Command Echo Exchange

Test Case #/Title: EDOS-2002B - Test Command Echo Exchange

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify that the EOC can transmit Command Test Blocks (CTBs) to EDOS, receive corresponding Command Echo Blocks (CEBs) from EDOS, allow the user to specify the timeout value for receipt of CEBs, and generate event messages upon occurrence of a timeout and receipt of CEBs. Following initialization of FOS servers and EOC user station, the user invokes the Event Display and connects to String 100. The user attempts to send, via ECL directive, several CTBs with invalid timeout values, which result in syntax errors. A valid CTB is sent, which results in an event message indicating a CEB has not been received within the timeout limit. The user remotely logs in to the Real-Time Server and invokes the CEB driver, which emulates EDOS. When the CEB driver is running, a CEB is sent to the EOC for each CTB received by the driver. The tcpdump tool is utilized to monitor CTB and CEB message traffic. CEBs are sent within the timeout limit, and event messages indicate receipt of CEBs. Finally the CEB driver is terminated, CTBs with valid timeout values are sent, and an event message indicates a CEB has not been received within the timeout limit.

Pass/Fail Assessment: Pass

Date of Test: 13 December 1997 at 3:10pm; EOC, Building 32 - GSFC.

Test Conduct Summary: The EOC sent CTBs; received CEBs; allowed the user to specify the timeout value for receipt of CEBs; and generated appropriate event messages when timeouts occurred and when CEBs were received.

NCRs Written: None.

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
EDOS∞ 2002B	F-CMD-01185	The FOS shall have the capability to send Command Test Blocks to EDOS.	VP	
EDOS∞ 2002B	F-CMD-06100	The FOS shall have the capability to receive a Command Echo Block from EDOS.	VP	

Test Case	L4	Text	REQ Status	NCRs
EDOS∞ 2002B	F-CMD-06110	The FOS shall alert the operator if a Command Echo Block is not received from EDOS within a pre-defined time interval after transmission of a Command Test Block to EDOS.	VP	
EDOS∞ 2002B	F-CMD-06120	The FOS shall allow the operator to reconfigure the timeout value for receipt of Command Echo Blocks from EDOS.	VP	

Test Procedure Deviations: None.

Test Procedure Work Arounds: None.

3.3.10 SCS Summary Report Processing

Test Case #/Title: EDOS-2010B - SCS Summary Report Processing

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify that the EOC can receive SCS Summary Report binary data, archive these data, convert them to ASCII format, and generate a formatted report. Following initialization of the FOS Data Server and EOC user station, the user brings up the Event Display. The user logs in to an emulated EDOS host at the EOC (or telnets to an external host) containing valid and invalid SCS Summary Report binary data files. These files and their associated signal file are sent from the external host to the EOC via FTP. Event messages appear on the EOC user station indicating receipt of these data. A comparison is made among the SCS Summary Report binary data sent from the external host and archived by the EOC. The valid data are converted to ASCII report format. Event messages indicating processing status are generated, and the resulting ASCII report is stored.

The user then invokes the Report Generator tool to display the ASCII report. This tool is also used to convert archived binary data to ASCII report format.

Pass/Fail Assessment: Partial/Pass

Date of Test: 13 December 1997 at 1:30 PM and 14 December 1997 at 3:50 PM (retest); EOC, Building 32 - GSFC.

Test Conduct Summary: Two SCS Summary Reports (valid and invalid binary data) were sent, via FTP, to the EOC. No event messages were generated during the next File Watcher cycle, and the SCS Summary Report process was not started automatically. The binary data remained in the SCS Summary Report ingest directory (/fosb/test/am1/external/edos/summary) but were not stored in the applicable FOS archive directory (/fosb/test/am1/reports). The SCS Summary Report process, which was started via the Report Generator tool (On-Demand option), handled the valid data as invalid due to invalid data being stored as a result of incorrect data storage associated with the FTP. The Periodic option of the Report Generator tool did not function properly.

During the retest, valid and invalid binary data were copied manually into the SCS Summary Report ingest directory. The Report Generator tool (On-Demand option) was invoked to start the SCS Summary Report process. Both valid and invalid data were handled correctly, and a formatted ASCII report was generated for the valid data. Several event messages indicated errors in storing files.

NCRs Written: ECSed08393 ECSed10133 ECSed10336

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
EDOS∞ 2010B	F-ANA-04510	The FOS shall provide the capability to generate a spacecraft contact session summary report based on data received from EDOS.	VP	
EDOS∞ 2010B	F-ANA-04520	The FOS shall generate a spacecraft contact session summary report automatically whenever a Spacecraft Contact Session (SCS) Summary Report is received.	F	ECSed08393
EDOS∞ 2010B	F-ANA-04530	The FOS shall provide the capability to generate a Spacecraft Contact Session (SCS) Summary Report upon user request.	VP	
EDOS∞ 2010B	F-DMS-01021	The EOC shall be capable of retrieving the following data files from the FOS archive. a. View period information for backup Ground Stations. b. (deleted) c. Spacecraft Contact Session (SCS) Summary Report.	VP	

Test Case	L4	Text	REQ Status	NCRs
EDOS∞ 2010B	F-DMS-01420	The EOC shall provide the capability to receive a Spacecraft Contact Session (SCS) Summary Report from EDOS.	VP	
EDOS∞ 2010B	F-TLM-02210	The EOC shall be capable of receiving and processing EDOS Spacecraft Contact Session (SCS) summary reports following the completion of the spacecraft contact session.	VP	

Test Procedure Deviations: Steps 20, 35-37: Since SCS Summary Report binary data was not stored in the applicable FOS archive directory (/fosb/test/am1/reports), ingest directory (/fosb/test/am1/external/edos/summary) was used to access the binary data.

Test Procedure Work Arounds: Stopped the test at Step 25 due to incorrect data being stored as a result of FTP. Resumed the test on the next day by copying the binary data into the EOC ingest directory where the FTP would have stored the binary data.

Steps 38-40: Since routing the formatted ASCII report to the printer via the Report Generator tool was not functioning, the ASCII report was printed using 'snapframe'.

3.3.11 Disk Cleaner

Test Case #/Title: FDF3100FPB - Disk Cleaner

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify the ability delete files and/or change their status in the database tables which have been moved to long-term storage.

Following sign-on, files are entered into the directories and tables to be cleaned. Disk cleaner is then initiated. It is then verified that all directories have been cleaned out and database tables have been updated to reflect the status of the files in the script.

Pass/Fail Assessment: Pass

Date of Test: 17 December 1997 at 4:00 pm; Landover Hughes Building Mini-EOC.

Test Conduct Summary: Entered data files to be cleaned into directories and database tables. Initiated the disk cleaner and files were cleaned from the directories and all database tables were updated.

NCRs Written: ECSed11075

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
FDF∞ 3100FPB	F-DMS-01465	The EOC shall provide the capability for the EOC operator to configure a process to periodically purge FDF data from the local EOC database.	VP	

Test Procedure Deviations: Steps 1 and 2 not performed, as Data Server and Real Time Server were already up and running.

Test Procedure Work Arounds: Steps 3 and 4 are work arounds, as disk cleaner will actually run every 24 hours on its own.

3.3.12 Roles Usability

Test Case #/Title: FUI-3000FPB - Roles Usability

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify that user roles are enforced for five FOS tools, i.e., Command Control Window, Command Request, RTS Load Builder, Binary Load Builder, and Room Builder. The 'user_roles' database table is edited, as necessary, to restrict an IST user to 'Read-Only' privileges and to provide an EOC user the privileges associated with various user roles. The user specifies the 'Read-Only' role as part of the FOS login process, brings up the IST and EOC user station, and then attempts to use 12 FOS (including 7 Planning & Scheduling) tools for which user roles enforcement is intended. The privileges for each user role are pre-defined in the '/fosb/test/am1/config/RoleTask' file, which is the basis for determining the ability/inability to create, generate, save, or schedule using these tools. The user selects the 'Roles' button from the Control Window and selects a different role, then attempts to use the FOS tools as before. This process is repeated for each user role.

Note: Since Planning & Scheduling tool privileges are limited to PAS Scheduler and PAS Definer roles, these tools are exercised for the Read-Only, PAS Scheduler, and PAS Definer roles. Also, since the Read-Only role has the most limited privileges, it is selected prior to most other user roles to ensure that privileges are correctly enforced upon each role change (and *not* carried over from the previous role selection).

Pass/Fail Assessment: Partial/Pass

Date of Test: 16 December 1997 at 1:50 PM at mini-EOC, EDF - Upper Marlboro (Part 1); 17 December 1997 at 9:20 AM at EOC, Building 32 - GSFC (Part 2).

Test Conduct Summary: The 'user_roles' database table was modified to restrict an IST site to 'Read-Only' privileges. However, the IST at the mini-EOC was not configured properly when the test was first conducted (Part 1). Nevertheless, the Planning and Scheduling tools (Activity Definer, BAP Definer, Activity Recycler, Constraint Definer, General Scheduler, Contact Scheduler, and Load Generator) were not enforced for the read-only user role when tested at the EOC (Part 2). Additionally, the Activity Definer and Constraint Definer tools were not enforced for the Scheduler user role.

The Room Builder unexpectedly began shutting down the EOC user station for several, though not all, user roles. Additionally, 'Can't Create Roles Box' Error Dialog came up on several occasions, preventing a change in user role.

NCRs Written: ECSed10707 ECSed10708 ECSed10638 ECSed10464 ECSed10329

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
FUI∞ 3000FPB	F-FOS-10270	The FOS shall provide the capability to restrict an IST site to "read-only" privileges.	VP	

Test Procedure Deviations: Steps 2, 11, 12 (IST only) and 32: These steps could not be executed during testing at the mini-EOC, since the IST was not configured properly. These steps were executed when the test resumed at the EOC.

Step 43: Not executed, since Event Display already closed.

After Step 46: Had to connect to String 100, since user station unexpectedly went down.

Test Procedure Work Arounds: Restarted Pool Manager (FoPlRequest Receiver) process on Data Server several times, due to errors occasionally encountered when restarting the EOC User Station and IST.

3.3.13 IST Pool Management

Test Case #/Title: IST-2000B - IST Pool Management

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify that the EOC can administer the allocation of IST connections, including additional IST connections; monitor IST startup and shutdown; support dedicated, and a pool of non-dedicated, IST connections based on IST type and location; and support simultaneous IST connections. The user configures the database table containing IST pool management information ('ist_counter') to an initial state. Several iterations of logging into/logging out of ISTs and reconfiguring the 'ist_counter' database table are performed. IST logins are allowed in some instances, and denied in other cases, depending on the configuration of the 'ist_counter' database table. EOC User Station login and shutdown, as it pertains to overall FOS pool management, is included for completeness.

Pass/Fail Assessment: Partial/Pass

Date of Test: 17 December 1997 at 3:20 PM; EOC, Building 32 - GSFC.

Test Conduct Summary: The EOC administered the allocation of most, but not all, IST connections and has the capability for additional IST connections. Support to dedicated, and a pool of non-dedicated, IST connections based on IST type and location was provided. Monitoring IST-to-EOC logical connections was not always successful, since the 'ist_counter' database table did not always update correctly.

NCRs Written: ECSed09868 ECSed10477 ECSed10478 ECSed08766

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
IST-2000B	F-FOS-00175	The EOC shall administer the allocation of IST connections to the EOC.	VP	
IST-2000B	F-FOS-00180	The EOC shall monitor IST connections for changes in status.	VPT	ECSed10477
IST-2000B	F-FOS-00605	The FOS shall enable the existence of additional ISTs if required by the PI/TL to accommodate instrument team members, who may be at geographically separate locations.	VP	
IST-2000B	F-FOS-10210	The FOS shall support up to 15 operational ISTs for the AM-1 mission that are connected to the EOC at any one time.	VP	
IST-2000B	F-FOS-10215	The FOS shall provide ten dedicated, simultaneous IST connections at the following locations: a. CERES: 2 in building 1250, LaRC, 2 in building TBD b. MODIS: 2 at GSFC c. MOPITT: 1 at University of Toronto; 1 at NCAR in Boulder d. MISR: 2 at J	VPT	ECSed10478
IST-2000B	F-FOS-10220	The FOS shall provide six (6) additional, non-dedicated IST connections at the following locations: a. CERES: 4 [1 at SAIC, 1 at building 1300, LaRC; 1 each at 2 other buildings TBD, LaRC b. MODIS: 1 at GSFC c. MISR: 1 at JPL	VPT	ECSed10478
IST-2000B	F-FOS-10225	The FOS shall provide an IST software tool kit to the AM-1 spacecraft integration and test facility.	VP	
IST-2000B	F-FOS-10230	The FOS shall provide a single IST connection to the AM-1 spacecraft integration and test facility.	VP	

Test Procedure Deviations:

Step 13: Reset ‘ist_counter’ database table to account for other EOC users on the system.

Steps 17-21, 26-29, 35-37, 44, 46, 49: Since there was only one IST available (configured as CERES), the IST was brought down so that the IST could be brought up again.

Expected Results for 'ist_counter' database table were often different than expected since only one IST (CERES) was available and other EOC users were on the system.

Test Procedure Work Arounds: Restarted Pool Manager (FoPlRequest Receiver) process on Data Server several times, due to errors occasionally encountered when restarting the IST.

3.3.14 Decom- Context Dependent Telemetry

Test Case #/Title: TLM-2000B Context Dependent Parameter Processing

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify the ability of the FOS to automatically compute values of specified mnemonics based on context key mnemonics, whether the key be a discrete mnemonic key or derived parameter mnemonic.

Following sign-on, an alphanumeric telemetry page which includes EU conversion values for mnemonics and their context keys (both discrete and derived parameter keys) is invoked at the user station. The telemetry data driver is initiated, broadcasting housekeeping telemetry onto the FOS LAN in the form of EDUs. As telemetry packets are received and the telemetry information decommutated, telemetry displays are viewed and snapped at specified times. These specified times coincide with EU changes initiated by the telemetry packet generator for specified mnemonic keys. Steps are then provided to ensure that when context keys are static or marked with bad quality, the output value of associated mnemonics are also marked as static.

This test is considered successful when all EU converted values as shown on the display page match EU values from specified EU algorithm information when the context key value is applied, for both discrete parameters and derived parameter input. All context-associated mnemonics providing input to EU specifications, when marked as bad quality or static, result in static condition for the output mnemonics.

Pass/Fail Assessment: **Pass**

Date of Test: 16 December 1997 at 9:35 pm; Building 32 - GSFC.

Test Conduct Summary: Broadcasted telemetry packets onto the FOS LAN in the form of EDUs which included EU conversion values for mnemonics and their context keys (both discrete and derived parameter keys) at the user station. As telemetry packets were received and the telemetry information decommutated, telemetry displays were viewed and snapped at specified times. These specified times coincided with EU changes initiated by the telemetry packet generator for specified mnemonic keys. Steps were then provided to ensure that when context keys are static or marked with bad quality, the output value of associated mnemonics are also marked as static. All context-associated mnemonics providing input to EU specifications, when marked as bad quality or static, result in static condition for the output

NCRs Written: ECSed10687 ECSed08783 ECSed08304

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
TLM-2020B	F-DMS-10110	The FOS shall provide the capability to exclude processing of duplicate CERES data.	VP	
TLM-2020B	F-FUI-09410	The FOS shall provide the following output views for real-time analysis requests: a. alphanumeric telemetry b. real-time graph c. real-time table d. info window	VP (a)	
TLM-2020B	F-RMS-00070	The EOC shall provide an EOC operator access to real-time data.	VP	
TLM-2020B	F-TLM-00610	The FOS shall initially mark all defined telemetry parameters as being static and as having no data available.	VP	
TLM-2020B	F-TLM-00635	The FOS shall mark a parameter as being active when it has been successfully decommutated.	VP	
TLM-2020B	F-TLM-00810	The FOS shall provide decommutation of a given location of a given packet to be associated with any one of various parameter mnemonics, depending on the value of a discrete telemetry context switch parameter.	VP	
TLM-2020B	F-TLM-00815	The FOS shall support up to sixteen (16) distinct, predefined ranges for each context switch parameter.	VP	

Test Case	L4	Text	REQ Status	NCRs
TLM-2020B	F-TLM-00820	The FOS shall only decommutate a context-dependent parameter when the context switch is of good quality and has been marked active.	VP	
TLM-2020B	F-TLM-00920	The FOS shall provide the capability to select an EU conversion algorithm based upon the value of an associated predefined discrete telemetry point.	VP	
TLM-2020B	F-TLM-01410	The FOS shall make available the values for every predefined telemetry parameter.	VP	
TLM-2020B	F-TLM-10810	FOS shall provide decommutation of a given location of a given major cycle to be associated with any one of various parameter mnemonics, depending on the value of a discrete telemetry context switch parameter.	VP	

Test Procedure Deviations: Steps 1 and 2 not performed, as Data Server and Real Time Server were already up and running.

Edited procedure TLM2020EU to take Limits Off directive out. (not processing properly).

Test Procedure Work Arounds: Edited procedure TLM2020EU to take Limits Off directive out. (not processing properly).

3.3.15 Derived Parameter Processing

Test Case #/Title: TLM-2060B Derived Parameter Processing

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify the FOS's capability of processing spacecraft/instrument Housekeeping data via special computations using predefined algorithms. These simple calculations will be done via derived parameters. Derived parameters are built by combining existing parameters via arithmetic or logical functions. It will be possible to use predefined analog, discrete, constant, or other derived values as a source to build a new derived parameter.

Following sign-on, alphanumeric telemetry pages which include parameter and associated parameter Decom value displays are invoked at the user station. The telemetry

data driver is initiated, broadcasting Housekeeping telemetry onto the FOS LAN in the form of EDU's. As telemetry packets are received and the telemetry information decommutated, telemetry displays are viewed and snapped at specified times. Parameter values residing on alphanumeric displays are analyzed post-test to ensure derived parameter values match scripted values for specific mnemonics..

Pass/Fail Assessment: Pass

Date of Test: 17 December 1997 at 10:30 pm; Building 32 - GSFC.

Test Conduct Summary: Broadcasted telemetry packets onto the FOS LAN in the form of EDUs which included EU conversion values for mnemonics and their derivatives (both discrete and derived parameters) at the user station. As telemetry packets were received and the telemetry information decommutated, telemetry displays were viewed and snapped at specified times. These specified times coincided with changes initiated by the telemetry packet generator for specified mnemonics. Steps were then provided to ensure that when the derivatives are static or marked with bad quality, the output value of associated mnemonics are also marked as static or bad quality.

NCRs Written: ECSed10662 ECSed10663 ECSed10664 ECSed10668 ECSed10665 ECSed08772

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
TLM-2060B	F-TLM-00315	The FOS shall mark all parameters decommutated from a packet containing an error as having questionable quality.	VP	
TLM-2060B	F-TLM-01035	The FOS shall use high and low limit values in raw or EU counts as specified for decommutated and derived parameters when limits have been defined.	VP	
TLM-2060B	F-TLM-01050	The FOS shall perform limit checking only on good quality data.	VP	
TLM-2060B	F-TLM-01235	The FOS shall allow for adjusting the limit values of any boundary limit group for parameters having multiple boundary limit groups defined.	VP	
TLM-2060B	F-TLM-01310	The FOS shall evaluate derived parameters based on specified, predefined equations.	VP	

Test Case	L4	Text	REQ Status	NCRs
TLM-2060B	F-TLM-01315	The FOS shall use analog telemetry values, discrete telemetry values, constants, or other derived parameters to build new derived parameters.	VP	
TLM-2060B	F-TLM-01320	The FOS shall be capable of using either decoded or converted values when evaluating derived telemetry parameters.	VP	
TLM-2060B	F-TLM-01325	The FOS shall support the use of basic arithmetic operators when building the derived parameters. The allowable arithmetic operators shall include: + Addition - Subtraction - Negation * Multiplication / Division SIN Sine ASIN Arcsine COS Cosine	VP	
TLM-2060B	F-TLM-01330	The FOS shall support the use of basic logical operators when building the derived parameters. The allowable logical operators shall include: = Equal to != Not equal to < Less than <= Less than or equal to > Greater than >= Greater than or equal to	VPT	10664
TLM-2060B	F-TLM-01335	The FOS shall mark a derived parameter as having questionable quality whenever any of the input parameters are marked as questionable.	VP	
TLM-2060B	F-TLM-01345	The FOS shall flag the derived parameter as static if any of the input parameters are static.	VP	
TLM-2060B	F-TLM-01350	The FOS shall evaluate derived parameters in the specified order.	VP	
TLM-2060B	F-TLM-01355	The FOS shall allow individual derived parameter evaluations to be enabled or disabled.	F	10662
TLM-2060B	F-TLM-01360	The FOS shall provide the capability to adjust individual derived parameter re-evaluation rates based on a user specified interval.	F	10663
TLM-2060B	F-TLM-01365	The FOS shall support a derived parameter evaluation interval of no less than one (1) spacecraft clock second.	F	10665
TLM-2060B	F-TLM-01415	The FOS shall make available the status for every predefined telemetry parameter.	VP	

Test Case	L4	Text	REQ Status	NCRs
TLM-2060B	F-TLM-01425	The FOS shall make available, on a per-parameter basis, the following: a. last decommutated raw value b. associated converted value (if applicable) c. limit range values (if applicable) d. limit sense interval e. no data available indicator f. stati	Moved to TLM 2100B	
TLM-2060B	F-TLM-11320	The FOS shall provide the capability to process a maximum of fifty (50) AM-1 derived parameters at a given time.	F	10668

Test Procedure Deviations: Steps 1 and 2 not performed, as Data Server and Real Time Server were already up and running.

Step 18 modified to send infinite number of packets.

Step 27 ECL directive failed.

Step 52 changed snap to occur at packet 7.

Step 53 changed snap to occur at packet 15.

Step 54 changed snap to occur at packet 22.

Step 55 changed snap to occur at packet 30.

Step 66 changed snap to occur at packet 7.

Step 67 changed snap to occur at packet 15.

Step 68 changed snap to occur at packet 22.

Step 69 changed snap to occur at packet 30.

Step 72 deleted.

Test Procedure Work Arounds: Edited procedure TLM2020EU to take Limits Off directive out. (not processing properly).

3.3.16 EOC Regression Test

Test Case #/Title: REG-3000FPB - EOC Regression Test

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify critical FOS functionality after a Post-Release B delivery or patch has been installed at the mini-EOC (Releases 2.0.x) or EOC (Releases 2.0.1

and 2.01.00). The test provides a reasonable level of confidence that the delivery or patch has not adversely impacted FOS functionality. Fundamental planning and scheduling, command, telemetry, and analysis capabilities are confirmed prior to executing the FOS test procedures that are specifically affected by the delivery or patch.

Note: This test procedure is tailored to a DEC Data Server and Real-Time Server and SUN User Stations. Other configurations will have slightly different entry fields for some steps.

Pass/Fail Assessment: Partial/Pass

Date of Test: 12 December 1997 at 9:00 AM and 14 December 1997 at 8:30 AM (1st run (on DEC servers)) and 18 December 1997 at 9:30 AM (2d run (on SUN servers)); EOC, Building 32 - GSFC.

Test Conduct Summary: This regression was run twice: the 1st run followed the initial installation of R 2.01.00 at the EOC and was accomplished on DEC servers; the 2d run followed the final installation and was accomplished on SUN servers.

Fundamental planning and scheduling, command management, and telemetry capabilities were verified to the extent that the associated functionality is included in this regression test. Several analysis discrepancies noted in the 1st run were resolved prior to the 2d run. There were still some outstanding discrepancies associated with the Command Control window and Ground Script.

During the 12 December test conduct, telemetry parameters for building an Analysis Request could not be selected. Additionally, RTS, Binary, and Table Load Builder tools did not come up when requested. Both these problems, as well as RTS load generation, were resolved and did not occur during subsequent runs of this test procedure.

During the 14 December run, a core dump resulted when trying to process an Analysis Request. This problem did not occur during the 18 December run.

Part of the regression test was not run due to problems associated with a rash of FOP-related event messages (which might have been caused by EDOS sending

spurious CLCWs, based on post-test discussions). Nevertheless, the following command-related discrepancies persist or could not be verified during the regression test. When a load containing a DAS was entered in the Command Control Window (CCW), the associated commands were neither executed nor displayed in the CCW, and all directives previously displayed in the CCW disappeared, but then were displayed upon closing, then reopening, the CCW. When the CCW is reopened, the next command queued for execution could not be sent unless a dummy (e.g., No Operation) directive is inserted before the command. A load with an expired time window would not execute, and a table load results in failure of the Command Format process and String 100. The CCW hung, or would not execute the next directive, when there was certain sequencing of directives queued up in the Ground Script, including consecutive critical commands. A command or proc request could not be submitted using the command request window.

Neither simulation/training, simulation/test, nor real-time/test logical strings could be created. An error dialog indicating invalid J2000 value appeared when selecting a time range in the Selected Pair Times window for an analysis request. Display Builder graphs and tables don't update.

A large input value results in the failure of the Decom process when performing an exponential conversion on a DEC. Also, three analysis requests cannot be processed concurrently.

NCRs Written:

ECSed10584 ECSed10588 ECSed10602 ECSed11078
ECSed01108 ECSed09832 ECSed09575 ECSed10017
ECSed10602 ECSed09451 ECSed10307 ECSed09579
ECSed10609 ECSed10316 ECSed09524 ECSed09577
ECSed09873 ECSed09708 ECSed10010 ECSed08934
ECSed10144 ECSed10316 ECSed09579 ECSed09873
ECSed09524 ECSed09575 ECSed09823 ECSed09708

Requirement Verification Status:

There are no requirements linked to this test case.

Test Procedure Deviations:

2d Run: FOS Server and User Station Startup Section: Since SUN servers were used, many steps utilized the UNIX commands for SUN hosts (including direct login

capability) rather than DEC hosts (which require remote login capability).

1st Run: RTS Load definition, Validation, and Generation Section, Steps 4-14: These steps could not be executed, since the RTS Load Builder tool did not come up.

2d Run: Ground Script & Manual Commanding: Steps 12-13: These steps could not be executed, since the flood of extraneous FOP-related event messages and Ground Script problems prevented commanding.

1st Run: PROC Execution, Load Uplinking, Dumps, and Image Compare Section, Step 3, 13, 14, 15: These steps could not be executed, since there were no RTS, Table, Microprocessor, or Flight Software loads, respectively, to uplink.

2d Run: PROC Execution, Load Uplinking, Dumps, and Image Compare Section, Step 3, 13, 14, 15: These steps could not be executed, since the flood of extraneous FOP-related event messages and Ground Script problems prevented commanding.

1st and 2d Runs: PROC Execution, Load Uplinking, Dumps, and Image Compare Section, Steps 4-12: These steps could not be executed, since no valid source of dump data was available (e.g., ETS/MPS).

1st and 2d Runs: Logical String Manipulation, Steps 3-17, 19-21, and 23-27: These steps could not be executed, since no Simulation/Training, Simulation/Test, and Real-Time/Test strings, respectively, could be created.

1st and 2d Runs: FOS Server and User Station Shutdown Section, Step 3: This step could not be executed, since String 101 was not created.

2d Run: FOS Server and User Station Shutdown Section: Since SUN servers were used, many steps utilized the UNIX commands for SUN hosts rather than DEC hosts.

Test Procedure Work Arounds:

1st and 2d Runs: Restarted Pool Manager (FoPlRequest Receiver) process on Data Server several times, due to errors occasionally encountered when restarting the EOC User Station.

1st Run: Ground Script & Manual Commanding Section, Step 13: Clicked on 'Suspend' button to resume execution of Ground Script for critical commands.

3.3.17 Generic String Management

Test Case #/Title:	SYS-3050FPB - Generic String Management
Reference to Test Documentation:	322-CD-100-001/411-CD-100-001
Test Summary:	This test is designed to verify that string-related FOS functions conform to the new Generic String Manager. The test also confirms that the 'user_roles' database table is utilized for ground control and command authorization. Fundamental conformance to the new Generic String Manager is demonstrated for string-related processes of telemetry and telemetry archiving, spacecraft activity log monitoring, ground control and command authorization, NCC reconfiguration, commanding and ground script control, logical string manipulation, and backup string creation.
Pass/Fail Assessment:	Partial/Pass
Date of Test:	18 December 1997 at 1:00 PM; EOC, Building 32 - GSFC.
Test Conduct Summary:	String-related processes of telemetry and archiving, spacecraft activity log monitoring, ground control and command authorization, NCC reconfiguration, commanding, ground script control conformed to the new Generic String Manager. The 'user_roles' database table was utilized for ground control and command authorization. Simulation/training and simulation/test logical strings could not be created due to ECL parser-related problems. A real-time/test logical string could not be created due to Activity Log Monitor-related problems. A backup real-time server was not created since no backup real-time server was available.
NCRs Written:	ECSed09917 ECSed10144 ECSed10316 ECSed09708 ECSed10142
Requirement Verification Status:	There are no requirements linked to this test case.
Test Procedure Deviations:	Steps 15-18: Not executed, since other users were testing on the system.

Steps 59-68: Not executed, since no backup real-time server was available.

Test Procedure Work Arounds: None.

3.3.18 Tivoli

Test Case #/Title: SYS-3060FPB - Tivoli

Reference to Test Documentation: 322-CD-100-001/411-CD-100-001

Test Summary: This test is designed to verify that the EOC monitors periodically monitors system resource levels and provides user notification, via Tivoli event messages, when there is a change in status of certain system components and when pre-defined system resources exceed or are less than configurable thresholds. Thresholds and associated monitoring frequency of certain system resource parameters are re-configured in Tivoli, which generates system monitoring event messages. A printer, user station, and the Data Server are unplugged, brought down, re-plugged, and re-initialized to trigger applicable event messages.

Note: The Tivoli event messages reflect the predefined parameter settings, although the event messages are triggered based on the current settings, which are established during this test.

Pass/Fail Assessment: Partial/Pass

Date of Test: 17 December 1997 at 6:30 PM; EOC, Building 32 - GSFC.

Test Conduct Summary: The monitoring thresholds and associated frequencies of EOC system resource parameters that Tivoli monitors were reconfigured during the test as much as possible. Normally, Tivoli would compare the reconfigured thresholds with current values for these parameters and generate event messages if the criteria were met. However, no Tivoli event messages were generated, since Tivoli had not been completely installed or initialized at the EOC prior to the test.

Additionally, the user station profiles were not installed and the Print Queue status parameter was not included in the FOS Server Profile. Attempted to distribute changes to monitoring thresholds and frequencies to all

subscribers, but distribution to the FOS servers ("pumas, beetles, and flys") resulted in an error message.

NCRs Written: ECSed10712 ECSed10713 ECSed10715 ECSed10725

Requirement Verification Status:

Test Case	L4	Text	REQ Status	NCRs
SYS-3060FPB	F-FOS-00700	The FOS shall report if CPU utilization is in excess of a configurable threshold at the occurrence of a configurable polling interval.	F	ECSed10712
SYS-3060FPB	F-FOS-00705	The FOS shall provide the capability to report if file system resources usage including: a. Local disk partition inode availability, b. Local disk partition space availability, c. Number of bad NFS calls, exceeds configurable thresholds at the occurrence of a configurable polling interval.	F	ECSed10712
SYS-3060FPB	F-FOS-00715	The FOS shall provide the capacity to report if System resource usage, including: a. Swap Space Availability, b. The number of Pageouts, c. The number of Zombie processes on the host, exceeds configurable thresholds at the occurrence of a configurable polling interval.	F	ECSed10712
SYS-3060FPB	F-FOS-00720	The FOS shall provide the capacity to report if specifiable daemons go down and come up.	F	ECSed10712
SYS-3060FPB	F-FOS-00725	The FOS shall report when a printer queue becomes unavailable and when it again becomes available.	F	ECSed10712
SYS-3060FPB	F-FOS-00730	The FOS shall report when host machines go down and come up.	F	ECSed10712
SYS-3060FPB	F-FOS-00735	The FOS shall report if the space available for the Tivoli (COTS) database is less than a configurable value.	F	ECSed10712

Test Procedure Deviations:

Step 10: Used "FOSGeneralProfileMgrtest", since the profile for the user station was not initialized.

Steps 18, 20, 22, 24, 26, 28, 30, 32, 37, 39: Since there was no user station profile, attempted to distribute changes to monitoring thresholds and frequencies to all subscribers. When this failed for the FOS servers, distributed changes to the next level of subscribers only.

Step 42: Not executed, since there were no Tivoli event messages to print.

Steps 44-45: Not executed, since there was insufficient information to monitor these parameters.

Steps 48-53: Not executed, since it was apparent that Tivoli was not completely installed or initialized prior to the test.

Test Procedure Work Arounds: None.

3.4 FOS Requirements Status

The FOS Test Program focused on the verification of FOS RBR requirements as specified in the Functional and Performance Requirements Specification (#423-41-02), non mission-specific level 4 requirements as specified in the FOS Requirements Specification for the ECS Project, Volume 1 (#304-CD-001-003) and mission-specific Level 4 requirements as specified in the FOS Requirements Specification for the ECS Project, Volume 2 (#304-CD-004-003). The following tables represent the verification status of these requirements resulting from the execution of test procedures during the formal FOS Release B Acceptance Test Phase.

Table 3.4-1. FOS Level 4 Requirements Status

Subsystem	Pass	Partial	Fail	Unverified	Totals
ANA	60	10	35	69	174
CMD	71	7	5	11	94
CMS	90	25	11	19	145
DMS	49	23	8	28	108
FOS	52	10	7	23	92
FUI	194	92	74	48	408
HRD	71	4	0	0	75
PAS	60	33	11	25	129
RMS	25	4	4	15	48
TLM	100	22	14	21	157
Totals	772	230	169	259	1430
%	54	16	12	18	

Table 3.4-2. FOS RBR Requirements Status

Req't Type	Pass	Partial	Fail	Unverified	Totals
AM1	15	15	0	3	33
ASTER	8	12	1	5	26
EOC	27	135	5	6	173
EOSD	33	23	0	5	61
EDOS	8	8	1	8	25
ESN	0	0	0	1	1
FOS	3	9	0	3	15
ICC	29	116	4	21	170
NI	10	8	3	2	23
Totals	132	327	14	54	527
	25	62	3	10	

3.5 FOS NCR Status

Non-conformance reports (NCRs) are generated during the dry-run and formal test period by cognizant test engineers, Quality Assurance, NASA witnesses and programmers during the dry-run and formal test periods. In general terms, NCRs are generated for any of the following general circumstances: 1) Any requirement which is not provided by the FOS software as a whole or only partially provided; 2) Any provided functional software/hardware "piece" where that "piece" is not fully functional 3) usability of the tested function does not meet operational standards.

NCRs are broken down into 3 priority categories. Level 1, 2, 3, and 4. Level 1 NCRs are those which inhibit operational functionality, thus rendering any further testing as futile (i.e. show-stoppers). Level 2 NCRs are those which inhibit a specific function from working nominally, but a workaround is available. Level 3 NCRs are those which affect "look and feel" of specific functions but do not hamper associated functionality.

The following tables represent the FOS NCR status resulting from the execution of test procedures at the initial formal test timeframe (December 5, 1997) and at the completion of formal test timeframe (December 17, 1997) for Release B Version 2.01.00.

Table 3.5-1. Initial Formal Test Phase FOS NCRs

Severity	Open	Fixed	Pending Verif	Closed Verif	Totals
Level 1	9	0	0	146	155
Level 2	270	21	58	580	929
Level 3	322	29	37	449	837
Level 4	0	1	1	1	3
Totals	601	51	96	1176	1924

Table 3.5-2. Completed Formal Test Phase FOS NCRs

Severity	Open	Fixed	Pending Verif	Closed Verif	Totals
Level 1	11	0	0	157	168
Level 2	338	29	59	590	1016
Level 3	347	38	39	454	878
Level 4	0	1	1	1	3
Totals	696	68	99	1202	2065

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Appendix A. FOS RBR Test Status Matrix

The following matrix delineates each applicable FOS Release B RBR and IRD requirement and associated verification status. Verification status information provided reflects FOS Formal Acceptance Test execution results as reported at the completion of formal testing of Release 2.01.00.

RBR ID	Verification Method
AM1-0020#B	passed
AM1-0030#B	passed
AM1-0050#B	passed
AM1-0070#B	partially passed
AM1-0090#B	partially passed
AM1-0120#B	passed
AM1-0125#B	passed
AM1-0130#B	partially passed
AM1-0135#B	partially passed
AM1-0140#B	partially passed
AM1-0150#B	passed
AM1-0160#B	passed
AM1-0200#B	partially passed
AM1-0215#B	passed
AM1-0220#B	unverified
AM1-0225#B	partially passed
AM1-0230#B	passed
AM1-0240#B	partially passed
AM1-0270#B	partially passed
AM1-0280#B	unverified
AM1-0340#B	passed
AM1-1000#B	passed
AM1-1010#B	passed
AM1-1020#B	passed
AM1-1050#B	passed
AM1-1060#B	partially passed
AM1-1070#B	partially passed
AM1-1080#B	unverified
AM1-1090#B	passed
AM1-1100#B	partially passed
AM1-1110#B	partially passed

RBR ID	Verification Method
AM1-1120#B	partially passed
AM1-1150#B	partially passed
ASTER-0050#B	partially passed
ASTER-0060#B	passed
ASTER-0200#B	failed
ASTER-0210#B	passed
ASTER-0220#B	partially passed
ASTER-0230#B	passed
ASTER-0240#B	passed
ASTER-0250#B	partially passed
ASTER-0260#B	partially passed
ASTER-0300#B	partially passed
ASTER-0310#B	partially passed
ASTER-0340#B	partially passed
ASTER-0350#B	partially passed
ASTER-0410#B	unverified
ASTER-0520#B	unverified
ASTER-0530#B	unverified
ASTER-0540#B	unverified
ASTER-0550#B	unverified
ASTER-0570#B	partially passed
ASTER-0580#B	partially passed
ASTER-0590#B	partially passed
ASTER-1060#B	passed
ASTER-1080#B	partially passed
ASTER-2000#B	passed
ASTER-2030#B	passed
ASTER-2040#B	passed
EDOS-4.1.1.1#B	partially passed
EDOS-4.1.1.15#B	unverified
EDOS-4.1.1.16#B	unverified
EDOS-4.1.1.17#B	partially passed
EDOS-4.1.1.18#B	partially passed
EDOS-4.1.1.2#B	partially passed
EDOS-4.1.1.3#B	passed
EDOS-4.1.1.4#B	passed
EDOS-4.1.1.6#B	partially passed
EDOS-4.1.1.7#B	unverified
EDOS-4.1.1.8#B	passed
EDOS-4.2.1.3#B	unverified

RBR ID	Verification Method
EDOS-4.2.1.4#B	passed
EDOS-4.2.1.5#B	passed
EDOS-4.2.1.6#B	unverified
EDOS-4.2.1.7#B	partially passed
EDOS-4.3.1.4#B	unverified
EDOS-4.6.1.1#B	partially passed
EDOS-4.6.1.2#B	passed
EDOS-4.6.1.3#B	passed
EDOS-4.6.1.4#B	failed
EDOS-4.6.1.5#B	passed
EDOS-4.6.1.6#B	passed
EDOS-4.6.1.7#B	unverified
EDOS-4.6.1.8#B	unverified
EOC-0030#B	passed
EOC-0040#B	partially passed
EOC-1005#B	failed
EOC-2010#B	partially passed
EOC-2020#B	partially passed
EOC-2030#B	partially passed
EOC-2040#B	partially passed
EOC-2045#B	partially passed
EOC-2070#B	partially passed
EOC-2160#B	partially passed
EOC-2170#B	partially passed
EOC-2180#B	partially passed
EOC-2190#B	partially passed
EOC-2200#B	partially passed
EOC-2210#B	partially passed
EOC-2220#B	partially passed
EOC-2230#B	partially passed
EOC-2240#B	partially passed
EOC-2250#B	partially passed
EOC-2260#B	partially passed
EOC-2270#B	partially passed
EOC-2272#B	partially passed
EOC-2280#B	partially passed
EOC-2290#B	partially passed
EOC-2300#B	partially passed
EOC-2310#B	partially passed
EOC-2320#B	partially passed

RBR ID	Verification Method
EOC-2350#B	partially passed
EOC-2370#B	partially passed
EOC-2400#B	partially passed
EOC-2405#B	partially passed
EOC-2410#B	partially passed
EOC-2420#B	partially passed
EOC-2430#B	passed
EOC-2460#B	partially passed
EOC-2480#B	partially passed
EOC-2482#B	partially passed
EOC-2490#B	partially passed
EOC-2510#B	partially passed
EOC-2520#B	partially passed
EOC-2530#B	partially passed
EOC-2535#B	partially passed
EOC-2540#B	partially passed
EOC-2550#B	partially passed
EOC-2555#B	partially passed
EOC-2570#B	partially passed
EOC-2590#B	partially passed
EOC-2620#B	partially passed
EOC-2630#B	passed
EOC-3015#B	partially passed
EOC-3017#B	partially passed
EOC-3020#B	partially passed
EOC-3024#B	partially passed
EOC-3030#B	partially passed
EOC-3050#B	partially passed
EOC-3070#B	failed
EOC-3080#B	partially passed
EOC-3086#B	partially passed
EOC-3090#B	partially passed
EOC-3160#B	partially passed
EOC-3200#B	partially passed
EOC-3210#B	partially passed
EOC-3225#B	partially passed
EOC-3226#B	partially passed
EOC-3238#B	passed
EOC-3240#B	failed
EOC-4005#B	passed

RBR ID	Verification Method
EOC-4008#B	passed
EOC-4010#B	passed
EOC-4015#B	partially passed
EOC-4018#B	partially passed
EOC-4020#B	partially passed
EOC-4060#B	partially passed
EOC-4100#B	partially passed
EOC-4120#B	partially passed
EOC-4125#B	partially passed
EOC-4130#B	passed
EOC-4140#B	partially passed
EOC-4160#B	partially passed
EOC-4166#B	partially passed
EOC-4168#B	unverified
EOC-4200#B	passed
EOC-4210#B	partially passed
EOC-5010#B	partially passed
EOC-5012#B	partially passed
EOC-5015#B	partially passed
EOC-5020#B	partially passed
EOC-5030#B	partially passed
EOC-5045#B	partially passed
EOC-5050#B	partially passed
EOC-5070#B	partially passed
EOC-5080#B	partially passed
EOC-5090#B	partially passed
EOC-5100#B	partially passed
EOC-5105#B	failed
EOC-5110#B	partially passed
EOC-5120#B	partially passed
EOC-5130#B	passed
EOC-5180#B	partially passed
EOC-5185#B	passed
EOC-5187#B	partially passed
EOC-5190#B	passed
EOC-5200#B	partially passed
EOC-5220#B	partially passed
EOC-5230#B	partially passed
EOC-5240#B	partially passed
EOC-6010#B	partially passed

RBR ID	Verification Method
EOC-6020#B	passed
EOC-6050#B	partially passed
EOC-6060#B	partially passed
EOC-6070#B	partially passed
EOC-6080#B	partially passed
EOC-6100#B	partially passed
EOC-6110#B	partially passed
EOC-6130#B	passed
EOC-6135#B	partially passed
EOC-6140#B	passed
EOC-6150#B	partially passed
EOC-6160#B	partially passed
EOC-6195#B	partially passed
EOC-6200#B	partially passed
EOC-6210#B	partially passed
EOC-7010#B	partially passed
EOC-7015#B	passed
EOC-7020#B	partially passed
EOC-7025#B	partially passed
EOC-7030#B	partially passed
EOC-7040#B	unverified
EOC-7045#B	partially passed
EOC-7060#B	partially passed
EOC-7110#B	failed
EOC-7115#B	unverified
EOC-7116#B	unverified
EOC-7120#B	partially passed
EOC-7130#B	partially passed
EOC-7140#B	partially passed
EOC-7150#B	passed
EOC-7160#B	passed
EOC-8010#B	partially passed
EOC-8020#B	passed
EOC-8090#B	partially passed
EOC-8100#B	passed
EOC-8110#B	partially passed
EOC-8130#B	partially passed
EOC-8140#B	passed
EOC-8150#B	partially passed
EOC-8160#B	partially passed

RBR ID	Verification Method
EOC-8220#B	partially passed
EOC-8230#B	partially passed
EOC-8240#B	partially passed
EOC-8250#B	partially passed
EOC-8260#B	passed
EOC-8270#B	passed
EOC-8285#B	partially passed
EOC-8290#B	partially passed
EOC-8320#B	unverified
EOC-8330#B	passed
EOC-8370#B	partially passed
EOC-8372#B	unverified
EOC-8375#B	partially passed
EOC-8380#B	partially passed
EOC-9010#B	partially passed
EOC-9020#B	partially passed
EOC-9025#B	partially passed
EOC-9040#B	partially passed
EOC-9080#B	partially passed
EOC-9090#B	partially passed
EOC-9110#B	passed
EOC-9130#B	partially passed
EOC-9510#B	passed
EOC-9520#B	passed
EOC-9570#B	partially passed
EOC-9580#B	partially passed
EOSD0010#B	partially passed
EOSD0015#B	partially passed
EOSD0020#B	passed
EOSD0025#B	partially passed
EOSD0500#B	partially passed
EOSD0502#B	unverified
EOSD0510#B	partially passed
EOSD0545#B	partially passed
EOSD0560#B	passed
EOSD0630#B	partially passed
EOSD0700#B	passed
EOSD0710#B	passed
EOSD0720#B	passed
EOSD0730#B	passed

RBR ID	Verification Method
EOSD0740#B	passed
EOSD0750#B	passed
EOSD0760#B	passed
EOSD0780#B	passed
EOSD0800#B	passed
EOSD1000#B	partially passed
EOSD1010#B	partially passed
EOSD1480#B	passed
EOSD1490#B	unverified
EOSD1500#B	unverified
EOSD1502#B	partially passed
EOSD1505#B	partially passed
EOSD1510#B	passed
EOSD1520#B	partially passed
EOSD1530#B	partially passed
EOSD1600#B	partially passed
EOSD1605#B	passed
EOSD1680#B	partially passed
EOSD1690#B	passed
EOSD1770#B	partially passed
EOSD1990#B	partially passed
EOSD2100#B	partially passed
EOSD2200#B	passed
EOSD2400#B	partially passed
EOSD2430#B	partially passed
EOSD2440#B	passed
EOSD2480#B	passed
EOSD2550#B	unverified
EOSD2990#B	passed
EOSD3000#B	passed
EOSD3200#B	passed
EOSD3220#B	passed
EOSD3490#B	partially passed
EOSD3500#B	passed
EOSD3510#B	passed
EOSD3600#B	passed
EOSD3610#B	passed
EOSD3615#B	passed
EOSD3625#B	passed
EOSD3630#B	partially passed

RBR ID	Verification Method
EOSD3700#B	passed
EOSD3710#B	partially passed
EOSD3800#B	passed
EOSD3810#B	passed
EOSD3820#B	passed
EOSD4100#B	passed
EOSD5410#B	unverified
ESN-1367#B	unverified
FOS-0020#B	passed
FOS-0025#B	passed
FOS-0030#B	partially passed
FOS-0040#B	partially passed
FOS-1010#B	partially passed
FOS-1020#B	passed
FOS-1030#B	unverified
FOS-1040#B	partially passed
FOS-1050#B	unverified
FOS-1060#B	unverified
FOS-1080#B	partially passed
FOS-1090#B	partially passed
FOS-1130#B	partially passed
FOS-1140#B	partially passed
ICC-0010#B	partially passed
ICC-0020#B	partially passed
ICC-0030#B	partially passed
ICC-0040#B	passed
ICC-0050#B	partially passed
ICC-0055#B	partially passed
ICC-0070#B	partially passed
ICC-1130#B	passed
ICC-2010#B	partially passed
ICC-2015#B	partially passed
ICC-2020#B	partially passed
ICC-2050#B	partially passed
ICC-2052#B	partially passed
ICC-2060#B	partially passed
ICC-2110#B	passed
ICC-2115#B	partially passed
ICC-2120#B	partially passed
ICC-2140#B	partially passed

RBR ID	Verification Method
ICC-2150#B	partially passed
ICC-2170#B	partially passed
ICC-2180#B	partially passed
ICC-2190#B	partially passed
ICC-2210#B	partially passed
ICC-2220#B	partially passed
ICC-2230#B	partially passed
ICC-2250#B	partially passed
ICC-2270#B	partially passed
ICC-2280#B	partially passed
ICC-2290#B	partially passed
ICC-2300#B	partially passed
ICC-2350#B	partially passed
ICC-2370#B	partially passed
ICC-2380#B	partially passed
ICC-2390#B	passed
ICC-2400#B	partially passed
ICC-2420#B	partially passed
ICC-2430#B	partially passed
ICC-2450#B	partially passed
ICC-3010#B	partially passed
ICC-3020#B	partially passed
ICC-3040#B	partially passed
ICC-3050#B	partially passed
ICC-3060#B	failed
ICC-3070#B	partially passed
ICC-3071#B	failed
ICC-3085#B	failed
ICC-3090#B	partially passed
ICC-3100#B	partially passed
ICC-3110#B	partially passed
ICC-3150#B	unverified
ICC-3160#B	partially passed
ICC-3210#B	partially passed
ICC-3220#B	unverified
ICC-3230#B	unverified
ICC-3240#B	partially passed
ICC-3270#B	partially passed
ICC-3370#B	partially passed
ICC-3380#B	partially passed

RBR ID	Verification Method
ICC-3400#B	partially passed
ICC-3420#B	unverified
ICC-4010#B	partially passed
ICC-4020#B	passed
ICC-4040#B	partially passed
ICC-4045#B	passed
ICC-4070#B	partially passed
ICC-4090#B	partially passed
ICC-4095#B	partially passed
ICC-4100#B	partially passed
ICC-4110#B	failed
ICC-4120#B	partially passed
ICC-4130#B	passed
ICC-4150#B	partially passed
ICC-4170#B	passed
ICC-4180#B	passed
ICC-4190#B	unverified
ICC-4200#B	partially passed
ICC-4220#B	partially passed
ICC-4230#B	unverified
ICC-4410#B	partially passed
ICC-4420#B	partially passed
ICC-4440#B	unverified
ICC-4450#B	partially passed
ICC-4460#B	partially passed
ICC-4470#B	partially passed
ICC-4480#B	partially passed
ICC-4490#B	unverified
ICC-4500#B	partially passed
ICC-4510#B	partially passed
ICC-4540#B	passed
ICC-4545#B	partially passed
ICC-4550#B	partially passed
ICC-4560#B	passed
ICC-4580#B	passed
ICC-4590#B	unverified
ICC-4600#B	partially passed
ICC-4610#B	partially passed
ICC-4710#B	partially passed
ICC-4720#B	unverified

RBR ID	Verification Method
ICC-4730#B	partially passed
ICC-4740#B	partially passed
ICC-4750#B	unverified
ICC-4760#B	passed
ICC-4765#B	partially passed
ICC-4770#B	passed
ICC-4775#B	passed
ICC-4780#B	partially passed
ICC-4790#B	partially passed
ICC-4800#B	unverified
ICC-4810#B	unverified
ICC-4820#B	unverified
ICC-4830#B	passed
ICC-6005#B	partially passed
ICC-6010#B	passed
ICC-6020#B	partially passed
ICC-6030#B	passed
ICC-6040#B	partially passed
ICC-6060#B	partially passed
ICC-6070#B	passed
ICC-6080#B	partially passed
ICC-6090#B	partially passed
ICC-6110#B	partially passed
ICC-6120#B	partially passed
ICC-6130#B	partially passed
ICC-6135#B	partially passed
ICC-6140#B	passed
ICC-6145#B	passed
ICC-6150#B	passed
ICC-6195#B	passed
ICC-6200#B	partially passed
ICC-6205#B	unverified
ICC-6210#B	unverified
ICC-6510#B	partially passed
ICC-6520#B	partially passed
ICC-6525#B	partially passed
ICC-6540#B	partially passed
ICC-6580#B	partially passed
ICC-6590#B	partially passed
ICC-6600#B	passed

RBR ID	Verification Method
ICC-6620#B	partially passed
ICC-7005#B	partially passed
ICC-7010#B	partially passed
ICC-7030#B	partially passed
ICC-7050#B	passed
ICC-7060#B	partially passed
ICC-7065#B	partially passed
ICC-7070#B	partially passed
ICC-7075#B	partially passed
ICC-7210#B	passed
ICC-7214#B	passed
ICC-7220#B	partially passed
ICC-7230#B	partially passed
ICC-7240#B	partially passed
ICC-7250#B	partially passed
ICC-7270#B	partially passed
ICC-7290#B	partially passed
ICC-7330#B	partially passed
ICC-7350#B	unverified
ICC-7360#B	unverified
ICC-7370#B	partially passed
ICC-7390#B	partially passed
ICC-7400#B	unverified
ICC-7430#B	partially passed
ICC-7460#B	partially passed
ICC-7500#B	partially passed
ICC-7510#B	partially passed
ICC-7550#B	partially passed
ICC-8010#B	passed
ICC-8020#B	passed
ICC-8040#B	unverified
ICC-8050#B	unverified
NI-0010#B	partially passed
NI-0020#B	passed
NI-0030#B	passed
NI-0110#B	partially passed
NI-0120#B	failed
NI-0130#B	failed
NI-0140#B	failed
NI-0150#B	passed

RBR ID	Verification Method
NI-0160#B	partially passed
NI-0170#B	unverified
NI-0210#B	passed
NI-0220#B	passed
NI-0230#B	passed
NI-0240#B	passed
NI-0250#B	unverified
NI-0310#B	partially passed
NI-0330#B	partially passed
NI-0340#B	partially passed
NI-0350#B	partially passed
NI-1000#B	passed
NI-1010#B	passed
NI-1030#B	passed
NI-1060#B	partially passed

Appendix B. FOS Level 4 Requirement Test Status Matrix

The following matrix delineates each applicable Release B FOS Level 4 requirement, including mission and non-mission specific requirements, and associated verification information. Verification status information provided reflects FOS Formal Acceptance Test execution results as reported at the completion of formal testing of Release B Version 2.01.00.

Level 4 ID	Ver_Status
F-ANA-01010	failed
F-ANA-01015	unverified
F-ANA-01020	passed
F-ANA-01025	unverified
F-ANA-01030	failed
F-ANA-01040	partially passed
F-ANA-01050	unverified
F-ANA-01060	unverified
F-ANA-01070	unverified
F-ANA-01080	unverified
F-ANA-02010	passed
F-ANA-02030	partially passed
F-ANA-02040	passed
F-ANA-02050	failed
F-ANA-03010	passed
F-ANA-03012	unverified
F-ANA-03015	passed
F-ANA-03020	passed
F-ANA-03030	failed
F-ANA-03040	failed
F-ANA-03050	passed
F-ANA-03060	failed
F-ANA-03070	passed
F-ANA-03080	passed
F-ANA-03100	unverified
F-ANA-03110	unverified
F-ANA-03120	unverified
F-ANA-03125	unverified
F-ANA-03130	unverified

Level 4 ID	Ver_Status
F-ANA-03135	passed
F-ANA-03140	passed
F-ANA-03150	failed
F-ANA-03160	passed
F-ANA-03170	failed
F-ANA-03180	unverified
F-ANA-03190	unverified
F-ANA-03200	passed
F-ANA-03210	unverified
F-ANA-04010	passed
F-ANA-04020	partially passed
F-ANA-04025	unverified
F-ANA-04030	failed
F-ANA-04035	unverified
F-ANA-04040	passed
F-ANA-04050	passed
F-ANA-04060	passed
F-ANA-04070	passed
F-ANA-04080	passed
F-ANA-04090	passed
F-ANA-04100	passed
F-ANA-04110	passed
F-ANA-04120	partially passed
F-ANA-04130	partially passed
F-ANA-04140	unverified
F-ANA-04150	unverified
F-ANA-04200	passed
F-ANA-04210	passed
F-ANA-04220	passed
F-ANA-04310	unverified
F-ANA-04315	passed
F-ANA-04320	partially passed
F-ANA-04330	passed
F-ANA-04340	partially passed
F-ANA-04350	failed
F-ANA-04360	failed
F-ANA-04370	failed
F-ANA-04375	passed
F-ANA-04380	passed
F-ANA-04390	passed

Level 4 ID	Ver_Status
F-ANA-04400	passed
F-ANA-04410	unverified
F-ANA-04415	unverified
F-ANA-04420	unverified
F-ANA-04430	unverified
F-ANA-04510	passed
F-ANA-04520	failed
F-ANA-04530	passed
F-ANA-05010	unverified
F-ANA-05020	unverified
F-ANA-05030	unverified
F-ANA-05031	unverified
F-ANA-05032	unverified
F-ANA-05033	unverified
F-ANA-05034	unverified
F-ANA-05040	unverified
F-ANA-05050	unverified
F-ANA-05060	unverified
F-ANA-05070	unverified
F-ANA-05080	unverified
F-ANA-05090	unverified
F-ANA-05100	unverified
F-ANA-05110	unverified
F-ANA-05120	unverified
F-ANA-05130	unverified
F-ANA-05140	unverified
F-ANA-05150	unverified
F-ANA-05160	failed
F-ANA-05170	unverified
F-ANA-05180	passed
F-ANA-05190	unverified
F-ANA-05210	unverified
F-ANA-05220	partially passed
F-ANA-05250	unverified
F-ANA-06020	failed
F-ANA-06021	failed
F-ANA-06022	failed
F-ANA-06023	failed
F-ANA-06030	passed
F-ANA-06040	passed

Level 4 ID	Ver_Status
F-ANA-06045	passed
F-ANA-06050	failed
F-ANA-07010	passed
F-ANA-07020	unverified
F-ANA-07030	unverified
F-ANA-07110	passed
F-ANA-07120	passed
F-ANA-07130	passed
F-ANA-07145	passed
F-ANA-07160	failed
F-ANA-07180	failed
F-ANA-07210	failed
F-ANA-07215	failed
F-ANA-07220	failed
F-ANA-07230	failed
F-ANA-07240	failed
F-ANA-07245	failed
F-ANA-07250	failed
F-ANA-07260	failed
F-ANA-07280	passed
F-ANA-07300	passed
F-ANA-07310	failed
F-ANA-07320	passed
F-ANA-07330	failed
F-ANA-07400	passed
F-ANA-07420	passed
F-ANA-07430	passed
F-ANA-07440	passed
F-ANA-07500	unverified
F-ANA-07510	unverified
F-ANA-07520	unverified
F-ANA-07530	unverified
F-ANA-07540	unverified
F-ANA-07550	unverified
F-ANA-08010	partially passed
F-ANA-08020	failed
F-ANA-08030	failed
F-ANA-08040	failed
F-ANA-08050	partially passed
F-ANA-08060	passed

Level 4 ID	Ver_Status
F-ANA-08070	failed
F-ANA-09010	unverified
F-ANA-09020	unverified
F-ANA-09030	unverified
F-ANA-09040	unverified
F-ANA-09050	unverified
F-ANA-09060	unverified
F-ANA-09070	passed
F-ANA-09080	passed
F-ANA-09090	passed
F-ANA-09100	unverified
F-ANA-09110	unverified
F-ANA-09120	unverified
F-ANA-09130	unverified
F-ANA-09140	unverified
F-ANA-09150	passed
F-ANA-09160	unverified
F-ANA-09300	passed
F-ANA-09305	unverified
F-ANA-09310	passed
F-ANA-09315	passed
F-ANA-17010	passed
F-ANA-17020	passed
F-ANA-17030	passed
F-ANA-17040	passed
F-ANA-17050	unverified
F-ANA-17060	passed
F-CMD-01120	passed
F-CMD-01125	passed
F-CMD-01140	unverified
F-CMD-01150	passed
F-CMD-01160	passed
F-CMD-01165	passed
F-CMD-01180	unverified
F-CMD-01185	passed
F-CMD-01230	passed
F-CMD-01250	passed
F-CMD-01310	passed
F-CMD-01315	failed
F-CMD-01317	passed

Level 4 ID	Ver_Status
F-CMD-01320	passed
F-CMD-01325	passed
F-CMD-01330	passed
F-CMD-01335	passed
F-CMD-01340	passed
F-CMD-01345	passed
F-CMD-02110	passed
F-CMD-02120	passed
F-CMD-02125	passed
F-CMD-02130	passed
F-CMD-02135	passed
F-CMD-02140	passed
F-CMD-02210	passed
F-CMD-02215	partially passed
F-CMD-02220	passed
F-CMD-02225	passed
F-CMD-02230	passed
F-CMD-02235	passed
F-CMD-02240	passed
F-CMD-02245	passed
F-CMD-02250	partially passed
F-CMD-02255	unverified
F-CMD-02260	passed
F-CMD-02265	failed
F-CMD-03110	unverified
F-CMD-03115	passed
F-CMD-03125	passed
F-CMD-03127	passed
F-CMD-03130	passed
F-CMD-03133	passed
F-CMD-03135	partially passed
F-CMD-03210	passed
F-CMD-03215	partially passed
F-CMD-03220	passed
F-CMD-03225	passed
F-CMD-03230	failed
F-CMD-03310	passed
F-CMD-03315	passed
F-CMD-03320	passed
F-CMD-03410	passed

Level 4 ID	Ver_Status
F-CMD-04110	partially passed
F-CMD-04115	passed
F-CMD-04120	passed
F-CMD-04130	partially passed
F-CMD-04210	passed
F-CMD-04215	passed
F-CMD-04220	passed
F-CMD-04225	passed
F-CMD-04230	passed
F-CMD-05110	partially passed
F-CMD-05115	passed
F-CMD-05120	passed
F-CMD-05220	passed
F-CMD-05225	passed
F-CMD-05230	passed
F-CMD-05235	passed
F-CMD-05245	passed
F-CMD-05247	passed
F-CMD-05250	unverified
F-CMD-05255	unverified
F-CMD-05310	unverified
F-CMD-05410	unverified
F-CMD-05510	unverified
F-CMD-06100	passed
F-CMD-06110	passed
F-CMD-06120	passed
F-CMD-11210	passed
F-CMD-11211	passed
F-CMD-11212	passed
F-CMD-11215	passed
F-CMD-11226	passed
F-CMD-12130	passed
F-CMD-12240	passed
F-CMD-12245	passed
F-CMD-13230	passed
F-CMD-14310	failed
F-CMD-14313	passed
F-CMD-14315	failed
F-CMD-15245	passed
F-CMD-15515	unverified

Level 4 ID	Ver_Status
F-CMD-15520	unverified
F-CMS-00105	passed
F-CMS-00110	passed
F-CMS-00115	partially passed
F-CMS-00118	unverified
F-CMS-00120	passed
F-CMS-00125	passed
F-CMS-00130	passed
F-CMS-00140	unverified
F-CMS-00205	passed
F-CMS-00210	passed
F-CMS-00215	passed
F-CMS-00220	passed
F-CMS-00230	passed
F-CMS-00235	unverified
F-CMS-00240	passed
F-CMS-00243	failed
F-CMS-00245	passed
F-CMS-00250	partially passed
F-CMS-00305	partially passed
F-CMS-00405	unverified
F-CMS-00425	passed
F-CMS-00510	passed
F-CMS-00530	passed
F-CMS-00550	passed
F-CMS-00610	passed
F-CMS-00615	passed
F-CMS-00620	passed
F-CMS-00625	passed
F-CMS-00630	passed
F-CMS-00635	passed
F-CMS-00640	passed
F-CMS-00660	passed
F-CMS-00670	passed
F-CMS-00675	passed
F-CMS-00710	passed
F-CMS-00720	partially passed
F-CMS-00725	unverified
F-CMS-00728	unverified
F-CMS-00729	unverified

Level 4 ID	Ver_Status
F-CMS-00730	partially passed
F-CMS-00735	passed
F-CMS-00740	passed
F-CMS-00745	passed
F-CMS-00750	unverified
F-CMS-00755	unverified
F-CMS-00810	passed
F-CMS-00820	passed
F-CMS-00830	passed
F-CMS-00840	passed
F-CMS-00850	partially passed
F-CMS-00860	passed
F-CMS-00910	passed
F-CMS-00915	partially passed
F-CMS-00920	passed
F-CMS-00925	partially passed
F-CMS-00930	partially passed
F-CMS-00935	passed
F-CMS-00940	passed
F-CMS-00950	partially passed
F-CMS-01010	passed
F-CMS-01020	passed
F-CMS-01025	unverified
F-CMS-01028	passed
F-CMS-01029	passed
F-CMS-01030	passed
F-CMS-01110	passed
F-CMS-01120	passed
F-CMS-01130	passed
F-CMS-01140	passed
F-CMS-01150	partially passed
F-CMS-01160	passed
F-CMS-01210	passed
F-CMS-01215	partially passed
F-CMS-01220	passed
F-CMS-01225	partially passed
F-CMS-01305	unverified
F-CMS-01310	passed
F-CMS-01320	passed
F-CMS-01325	passed

Level 4 ID	Ver_Status
F-CMS-01330	partially passed
F-CMS-01340	passed
F-CMS-01350	passed
F-CMS-01360	partially passed
F-CMS-01405	unverified
F-CMS-01410	unverified
F-CMS-01420	passed
F-CMS-01425	passed
F-CMS-01430	partially passed
F-CMS-01440	passed
F-CMS-01450	passed
F-CMS-01460	partially passed
F-CMS-01505	partially passed
F-CMS-01512	passed
F-CMS-01610	failed
F-CMS-01630	failed
F-CMS-01710	partially passed
F-CMS-01715	partially passed
F-CMS-01720	passed
F-CMS-01725	unverified
F-CMS-01730	unverified
F-CMS-01735	partially passed
F-CMS-01740	partially passed
F-CMS-01743	failed
F-CMS-01745	passed
F-CMS-01750	passed
F-CMS-01760	partially passed
F-CMS-01765	failed
F-CMS-01770	failed
F-CMS-01775	failed
F-CMS-01820	failed
F-CMS-01825	failed
F-CMS-01830	failed
F-CMS-01835	unverified
F-CMS-01840	failed
F-CMS-10110	passed
F-CMS-10120	passed
F-CMS-10125	passed
F-CMS-10130	passed
F-CMS-10210	passed

Level 4 ID	Ver_Status
F-CMS-10220	partially passed
F-CMS-10240	passed
F-CMS-10250	passed
F-CMS-10255	passed
F-CMS-10410	passed
F-CMS-10420	passed
F-CMS-10510	unverified
F-CMS-10600	passed
F-CMS-10710	passed
F-CMS-10720	passed
F-CMS-10725	passed
F-CMS-10730	passed
F-CMS-10740	passed
F-CMS-10750	unverified
F-CMS-11170	passed
F-CMS-11180	passed
F-CMS-11185	passed
F-CMS-11190	passed
F-CMS-11310	passed
F-CMS-11320	passed
F-CMS-11330	passed
F-CMS-11340	partially passed
F-CMS-11410	passed
F-CMS-11420	passed
F-CMS-11510	unverified
F-CMS-11720	passed
F-DMS-00110	passed
F-DMS-00120	passed
F-DMS-00130	passed
F-DMS-00140	passed
F-DMS-00150	passed
F-DMS-00160	passed
F-DMS-00170	passed
F-DMS-00180	passed
F-DMS-00205	partially passed
F-DMS-00210	partially passed
F-DMS-00215	partially passed
F-DMS-00220	partially passed
F-DMS-00225	partially passed
F-DMS-00230	partially passed

Level 4 ID	Ver_Status
F-DMS-00231	passed
F-DMS-00232	failed
F-DMS-00233	passed
F-DMS-00235	partially passed
F-DMS-00240	partially passed
F-DMS-00245	partially passed
F-DMS-00250	partially passed
F-DMS-00255	partially passed
F-DMS-00260	partially passed
F-DMS-00265	failed
F-DMS-00270	unverified
F-DMS-00310	passed
F-DMS-00320	passed
F-DMS-00330	unverified
F-DMS-00340	passed
F-DMS-00350	passed
F-DMS-00360	partially passed
F-DMS-00370	passed
F-DMS-00375	passed
F-DMS-00410	passed
F-DMS-00420	partially passed
F-DMS-00510	unverified
F-DMS-00520	unverified
F-DMS-00530	unverified
F-DMS-00540	unverified
F-DMS-00550	unverified
F-DMS-00610	passed
F-DMS-00620	passed
F-DMS-00630	passed
F-DMS-00640	passed
F-DMS-00650	passed
F-DMS-00710	passed
F-DMS-00720	passed
F-DMS-00730	passed
F-DMS-00740	unverified
F-DMS-00750	unverified
F-DMS-00760	unverified
F-DMS-00770	partially passed
F-DMS-00780	passed
F-DMS-00790	failed

Level 4 ID	Ver_Status
F-DMS-00810	passed
F-DMS-00820	passed
F-DMS-00830	passed
F-DMS-00840	unverified
F-DMS-00910	passed
F-DMS-00920	passed
F-DMS-00930	partially passed
F-DMS-00940	passed
F-DMS-00950	unverified
F-DMS-00960	unverified
F-DMS-01010	passed
F-DMS-01020	partially passed
F-DMS-01021	passed
F-DMS-01022	unverified
F-DMS-01110	unverified
F-DMS-01120	unverified
F-DMS-01130	unverified
F-DMS-01140	unverified
F-DMS-01150	passed
F-DMS-01210	passed
F-DMS-01220	passed
F-DMS-01230	partially passed
F-DMS-01240	unverified
F-DMS-01250	unverified
F-DMS-01260	unverified
F-DMS-01270	failed
F-DMS-01280	failed
F-DMS-01285	unverified
F-DMS-01290	partially passed
F-DMS-01295	unverified
F-DMS-01310	passed
F-DMS-01320	passed
F-DMS-01330	passed
F-DMS-01400	unverified
F-DMS-01405	passed
F-DMS-01410	unverified
F-DMS-01420	passed
F-DMS-01430	unverified
F-DMS-01435	unverified
F-DMS-01450	partially passed

Level 4 ID	Ver_Status
F-DMS-01451	partially passed
F-DMS-01452	partially passed
F-DMS-01455	partially passed
F-DMS-01460	unverified
F-DMS-01465	passed
F-DMS-01475	passed
F-DMS-01480	passed
F-DMS-01485	failed
F-DMS-01490	failed
F-DMS-10110	passed
F-DMS-10710	failed
F-DMS-10720	passed
F-DMS-11010	passed
F-DMS-11030	passed
F-FOS-00010	passed
F-FOS-00015	passed
F-FOS-00017	unverified
F-FOS-00020	passed
F-FOS-00025	passed
F-FOS-00035	passed
F-FOS-00040	passed
F-FOS-00045	passed
F-FOS-00070	passed
F-FOS-00075	passed
F-FOS-00080	passed
F-FOS-00085	passed
F-FOS-00090	unverified
F-FOS-00095	unverified
F-FOS-00098	passed
F-FOS-00110	unverified
F-FOS-00115	passed
F-FOS-00120	passed
F-FOS-00125	passed
F-FOS-00130	passed
F-FOS-00140	passed
F-FOS-00145	passed
F-FOS-00155	passed
F-FOS-00160	partially passed
F-FOS-00165	unverified
F-FOS-00175	passed

Level 4 ID	Ver_Status
F-FOS-00180	partially passed
F-FOS-00200	partially passed
F-FOS-00220	passed
F-FOS-00225	passed
F-FOS-00230	unverified
F-FOS-00240	passed
F-FOS-00245	passed
F-FOS-00250	passed
F-FOS-00255	passed
F-FOS-00260	partially passed
F-FOS-00300	unverified
F-FOS-00305	unverified
F-FOS-00308	passed
F-FOS-00310	passed
F-FOS-00315	passed
F-FOS-00317	unverified
F-FOS-00318	unverified
F-FOS-00320	partially passed
F-FOS-00321	unverified
F-FOS-00322	passed
F-FOS-00325	passed
F-FOS-00327	unverified
F-FOS-00330	passed
F-FOS-00335	passed
F-FOS-00340	partially passed
F-FOS-00345	unverified
F-FOS-00347	passed
F-FOS-00350	passed
F-FOS-00420	passed
F-FOS-00430	partially passed
F-FOS-00450	passed
F-FOS-00455	passed
F-FOS-00460	passed
F-FOS-00465	unverified
F-FOS-00470	unverified
F-FOS-00475	unverified
F-FOS-00480	unverified
F-FOS-00490	passed
F-FOS-00500	passed
F-FOS-00505	passed

Level 4 ID	Ver_Status
F-FOS-00510	partially passed
F-FOS-00515	passed
F-FOS-00520	passed
F-FOS-00550	unverified
F-FOS-00560	unverified
F-FOS-00570	passed
F-FOS-00605	passed
F-FOS-00700	failed
F-FOS-00705	failed
F-FOS-00715	failed
F-FOS-00720	failed
F-FOS-00725	failed
F-FOS-00730	failed
F-FOS-00735	failed
F-FOS-10150	passed
F-FOS-10200	unverified
F-FOS-10205	unverified
F-FOS-10210	passed
F-FOS-10215	partially passed
F-FOS-10220	partially passed
F-FOS-10225	passed
F-FOS-10230	passed
F-FOS-10240	unverified
F-FOS-10245	unverified
F-FOS-10270	passed
F-FOS-10305	passed
F-FUI-01100	passed
F-FUI-01105	passed
F-FUI-01110	passed
F-FUI-01115	failed
F-FUI-01120	unverified
F-FUI-01125	partially passed
F-FUI-01130	passed
F-FUI-01135	passed
F-FUI-01140	passed
F-FUI-01145	passed
F-FUI-01150	partially passed
F-FUI-01155	passed
F-FUI-01160	passed
F-FUI-01165	passed

Level 4 ID	Ver_Status
F-FUI-01170	partially passed
F-FUI-01175	partially passed
F-FUI-01180	partially passed
F-FUI-01185	passed
F-FUI-01200	failed
F-FUI-01205	failed
F-FUI-01215	failed
F-FUI-01220	partially passed
F-FUI-01225	partially passed
F-FUI-01230	failed
F-FUI-01235	passed
F-FUI-01305	passed
F-FUI-01310	failed
F-FUI-01315	passed
F-FUI-01320	passed
F-FUI-01325	passed
F-FUI-01330	passed
F-FUI-01335	passed
F-FUI-01340	failed
F-FUI-01400	partially passed
F-FUI-01405	partially passed
F-FUI-01410	passed
F-FUI-01415	partially passed
F-FUI-01420	unverified
F-FUI-01425	passed
F-FUI-01430	unverified
F-FUI-01435	passed
F-FUI-01440	unverified
F-FUI-01445	passed
F-FUI-01500	partially passed
F-FUI-01505	partially passed
F-FUI-01510	partially passed
F-FUI-01515	passed
F-FUI-01520	passed
F-FUI-01525	passed
F-FUI-01530	passed
F-FUI-01535	passed
F-FUI-01540	passed
F-FUI-01545	failed
F-FUI-01550	passed

Level 4 ID	Ver_Status
F-FUI-01555	passed
F-FUI-01560	passed
F-FUI-01565	partially passed
F-FUI-01570	passed
F-FUI-01580	partially passed
F-FUI-01585	partially passed
F-FUI-01590	passed
F-FUI-01591	passed
F-FUI-01595	passed
F-FUI-01600	partially passed
F-FUI-01605	partially passed
F-FUI-01610	partially passed
F-FUI-01615	partially passed
F-FUI-01620	partially passed
F-FUI-02100	partially passed
F-FUI-02110	passed
F-FUI-02115	passed
F-FUI-02200	passed
F-FUI-02202	partially passed
F-FUI-02205	unverified
F-FUI-02210	partially passed
F-FUI-02215	partially passed
F-FUI-02220	unverified
F-FUI-02225	passed
F-FUI-02230	unverified
F-FUI-02235	partially passed
F-FUI-02240	partially passed
F-FUI-02300	partially passed
F-FUI-02305	partially passed
F-FUI-02310	partially passed
F-FUI-02315	partially passed
F-FUI-02320	partially passed
F-FUI-02325	partially passed
F-FUI-02330	partially passed
F-FUI-02335	partially passed
F-FUI-02400	passed
F-FUI-02410	passed
F-FUI-02415	passed
F-FUI-02420	passed
F-FUI-02425	passed

Level 4 ID	Ver_Status
F-FUI-02430	passed
F-FUI-02435	passed
F-FUI-02440	passed
F-FUI-02445	passed
F-FUI-02450	passed
F-FUI-02500	passed
F-FUI-02505	passed
F-FUI-02510	passed
F-FUI-02515	passed
F-FUI-02520	passed
F-FUI-02525	partially passed
F-FUI-02530	passed
F-FUI-02535	passed
F-FUI-02540	passed
F-FUI-02545	passed
F-FUI-02550	partially passed
F-FUI-02600	partially passed
F-FUI-02605	passed
F-FUI-02610	passed
F-FUI-02625	passed
F-FUI-02630	passed
F-FUI-02635	passed
F-FUI-02640	passed
F-FUI-02700	passed
F-FUI-02705	passed
F-FUI-02710	passed
F-FUI-02715	partially passed
F-FUI-02720	passed
F-FUI-02725	passed
F-FUI-02800	partially passed
F-FUI-02805	passed
F-FUI-02810	passed
F-FUI-02815	passed
F-FUI-02825	passed
F-FUI-02830	passed
F-FUI-02835	passed
F-FUI-02840	failed
F-FUI-02845	passed
F-FUI-02850	partially passed
F-FUI-02855	passed

Level 4 ID	Ver_Status
F-FUI-02860	partially passed
F-FUI-02865	passed
F-FUI-02870	passed
F-FUI-02875	passed
F-FUI-02880	passed
F-FUI-02885	passed
F-FUI-02890	passed
F-FUI-02895	passed
F-FUI-02920	failed
F-FUI-02926	unverified
F-FUI-02950	failed
F-FUI-02955	failed
F-FUI-02960	failed
F-FUI-02961	failed
F-FUI-02962	failed
F-FUI-02963	failed
F-FUI-02964	failed
F-FUI-02965	failed
F-FUI-02967	failed
F-FUI-02970	failed
F-FUI-02975	failed
F-FUI-02980	failed
F-FUI-02985	failed
F-FUI-02990	failed
F-FUI-02991	failed
F-FUI-02995	failed
F-FUI-03000	failed
F-FUI-03005	failed
F-FUI-03010	failed
F-FUI-03025	failed
F-FUI-03030	failed
F-FUI-03035	failed
F-FUI-03040	failed
F-FUI-03045	failed
F-FUI-03050	failed
F-FUI-03055	failed
F-FUI-03060	failed
F-FUI-03061	failed
F-FUI-03100	partially passed
F-FUI-03105	unverified

Level 4 ID	Ver_Status
F-FUI-03110	unverified
F-FUI-03200	partially passed
F-FUI-03205	failed
F-FUI-03210	passed
F-FUI-03215	failed
F-FUI-03220	failed
F-FUI-03225	failed
F-FUI-03230	failed
F-FUI-04000	passed
F-FUI-04010	passed
F-FUI-04020	passed
F-FUI-04030	passed
F-FUI-04040	passed
F-FUI-04050	partially passed
F-FUI-04060	passed
F-FUI-04070	passed
F-FUI-04080	passed
F-FUI-04090	partially passed
F-FUI-04100	partially passed
F-FUI-04110	passed
F-FUI-04120	passed
F-FUI-04130	partially passed
F-FUI-04140	partially passed
F-FUI-04280	partially passed
F-FUI-04290	passed
F-FUI-04300	passed
F-FUI-05100	passed
F-FUI-05105	partially passed
F-FUI-05110	passed
F-FUI-05115	passed
F-FUI-05120	passed
F-FUI-05125	passed
F-FUI-05130	passed
F-FUI-05200	unverified
F-FUI-05205	partially passed
F-FUI-05210	passed
F-FUI-05215	passed
F-FUI-05220	passed
F-FUI-05300	passed
F-FUI-05315	partially passed

Level 4 ID	Ver_Status
F-FUI-05335	passed
F-FUI-05340	partially passed
F-FUI-05400	partially passed
F-FUI-05405	passed
F-FUI-05500	partially passed
F-FUI-05505	partially passed
F-FUI-05510	passed
F-FUI-05515	passed
F-FUI-05600	passed
F-FUI-05605	partially passed
F-FUI-05700	failed
F-FUI-05705	partially passed
F-FUI-05710	unverified
F-FUI-05720	passed
F-FUI-05725	partially passed
F-FUI-05730	unverified
F-FUI-06100	partially passed
F-FUI-06105	passed
F-FUI-06110	passed
F-FUI-06115	partially passed
F-FUI-06120	partially passed
F-FUI-06125	failed
F-FUI-06130	partially passed
F-FUI-06135	partially passed
F-FUI-06200	unverified
F-FUI-06205	unverified
F-FUI-06210	unverified
F-FUI-06215	unverified
F-FUI-06220	unverified
F-FUI-06225	unverified
F-FUI-06230	unverified
F-FUI-06235	unverified
F-FUI-06300	passed
F-FUI-06305	passed
F-FUI-06310	unverified
F-FUI-06315	passed
F-FUI-06320	passed
F-FUI-06330	partially passed
F-FUI-06335	passed
F-FUI-06337	passed

Level 4 ID	Ver_Status
F-FUI-06340	passed
F-FUI-06345	passed
F-FUI-06350	passed
F-FUI-06355	passed
F-FUI-06360	passed
F-FUI-06365	passed
F-FUI-06370	passed
F-FUI-06375	passed
F-FUI-06380	unverified
F-FUI-06385	passed
F-FUI-06390	passed
F-FUI-06395	partially passed
F-FUI-06400	passed
F-FUI-06405	passed
F-FUI-06410	passed
F-FUI-06415	passed
F-FUI-06420	passed
F-FUI-06425	passed
F-FUI-06430	passed
F-FUI-06435	passed
F-FUI-06440	passed
F-FUI-06445	passed
F-FUI-06450	passed
F-FUI-06455	passed
F-FUI-06460	passed
F-FUI-06465	passed
F-FUI-06470	passed
F-FUI-07100	partially passed
F-FUI-07120	partially passed
F-FUI-07125	partially passed
F-FUI-07130	partially passed
F-FUI-07135	passed
F-FUI-07140	passed
F-FUI-07200	partially passed
F-FUI-07205	passed
F-FUI-07210	passed
F-FUI-07215	unverified
F-FUI-07220	unverified
F-FUI-07225	failed
F-FUI-07230	failed

Level 4 ID	Ver_Status
F-FUI-07235	passed
F-FUI-07240	passed
F-FUI-07245	failed
F-FUI-07250	failed
F-FUI-07255	failed
F-FUI-07300	partially passed
F-FUI-07305	failed
F-FUI-07310	failed
F-FUI-07311	unverified
F-FUI-07315	failed
F-FUI-07320	passed
F-FUI-07325	failed
F-FUI-07330	partially passed
F-FUI-07335	failed
F-FUI-07340	failed
F-FUI-07345	passed
F-FUI-07350	passed
F-FUI-07355	failed
F-FUI-07360	failed
F-FUI-07365	failed
F-FUI-07370	partially passed
F-FUI-07375	failed
F-FUI-07380	failed
F-FUI-07385	failed
F-FUI-07388	passed
F-FUI-07390	passed
F-FUI-07391	passed
F-FUI-07392	passed
F-FUI-07394	partially passed
F-FUI-07396	failed
F-FUI-07398	failed
F-FUI-07400	failed
F-FUI-07410	unverified
F-FUI-07415	failed
F-FUI-07425	partially passed
F-FUI-07500	passed
F-FUI-07505	passed
F-FUI-07510	passed
F-FUI-07515	passed
F-FUI-07520	passed

Level 4 ID	Ver_Status
F-FUI-07525	passed
F-FUI-07600	unverified
F-FUI-07605	unverified
F-FUI-07700	unverified
F-FUI-07710	unverified
F-FUI-07720	partially passed
F-FUI-08100	passed
F-FUI-08105	passed
F-FUI-08110	passed
F-FUI-08115	partially passed
F-FUI-09100	partially passed
F-FUI-09105	passed
F-FUI-09110	partially passed
F-FUI-09112	passed
F-FUI-09115	unverified
F-FUI-09120	passed
F-FUI-09125	passed
F-FUI-09130	passed
F-FUI-09140	failed
F-FUI-09145	failed
F-FUI-09150	failed
F-FUI-09160	failed
F-FUI-09170	passed
F-FUI-09200	partially passed
F-FUI-09205	passed
F-FUI-09210	partially passed
F-FUI-09215	failed
F-FUI-09220	failed
F-FUI-09225	passed
F-FUI-09300	unverified
F-FUI-09305	unverified
F-FUI-09310	unverified
F-FUI-09315	unverified
F-FUI-09350	unverified
F-FUI-09355	unverified
F-FUI-09360	unverified
F-FUI-09363	unverified
F-FUI-09365	unverified
F-FUI-09370	unverified
F-FUI-09375	unverified

Level 4 ID	Ver_Status
F-FUI-09410	passed
F-FUI-09415	unverified
F-FUI-09500	passed
F-FUI-09510	passed
F-FUI-09515	passed
F-FUI-09530	unverified
F-FUI-09600	unverified
F-FUI-09605	partially passed
F-FUI-09610	passed
F-FUI-09615	passed
F-FUI-09620	passed
F-FUI-09625	passed
F-FUI-09630	passed
F-FUI-09635	passed
F-FUI-09640	partially passed
F-FUI-09645	partially passed
F-FUI-09650	failed
F-FUI-09655	failed
F-FUI-09660	partially passed
F-FUI-09663	partially passed
F-FUI-09665	partially passed
F-FUI-09700	partially passed
F-FUI-09705	partially passed
F-FUI-09710	passed
F-FUI-11200	passed
F-FUI-12310	partially passed
F-FUI-12610	failed
F-FUI-12800	partially passed
F-FUI-14005	passed
F-FUI-14010	unverified
F-FUI-17200	partially passed
F-FUI-17265	partially passed
F-FUI-17270	passed
F-FUI-17600	unverified
F-FUI-17700	passed
F-FUI-17800	passed
F-FUI-17810	unverified
F-FUI-17820	passed
F-FUI-19550	passed
F-HRD-00005	passed

Level 4 ID	Ver_Status
F-HRD-00010	passed
F-HRD-00015	passed
F-HRD-00020	passed
F-HRD-00025	passed
F-HRD-00030	passed
F-HRD-00035	passed
F-HRD-00040	passed
F-HRD-00045	passed
F-HRD-00050	passed
F-HRD-00055	passed
F-HRD-00060	passed
F-HRD-00065	passed
F-HRD-00070	passed
F-HRD-00075	passed
F-HRD-00090	passed
F-HRD-00095	passed
F-HRD-00100	passed
F-HRD-01005	passed
F-HRD-01010	passed
F-HRD-01015	partially passed
F-HRD-01020	passed
F-HRD-01025	passed
F-HRD-01030	passed
F-HRD-01035	passed
F-HRD-01040	passed
F-HRD-01045	passed
F-HRD-02005	passed
F-HRD-02010	passed
F-HRD-02015	passed
F-HRD-02020	passed
F-HRD-02025	passed
F-HRD-02030	passed
F-HRD-02035	passed
F-HRD-02040	passed
F-HRD-02045	passed
F-HRD-02050	passed
F-HRD-02055	passed
F-HRD-02060	passed
F-HRD-02065	passed
F-HRD-02070	passed

Level 4 ID	Ver_Status
F-HRD-02075	passed
F-HRD-02080	passed
F-HRD-02095	passed
F-HRD-02100	passed
F-HRD-02105	passed
F-HRD-03005	passed
F-HRD-03010	passed
F-HRD-03015	passed
F-HRD-03020	passed
F-HRD-03025	passed
F-HRD-03030	passed
F-HRD-03035	passed
F-HRD-03040	partially passed
F-HRD-03045	passed
F-HRD-04005	passed
F-HRD-04010	passed
F-HRD-04015	passed
F-HRD-04020	passed
F-HRD-04025	passed
F-HRD-04030	passed
F-HRD-05005	passed
F-HRD-05010	passed
F-HRD-05015	passed
F-HRD-05020	passed
F-HRD-05025	partially passed
F-HRD-06005	passed
F-HRD-06010	passed
F-HRD-06015	passed
F-HRD-07005	passed
F-HRD-07010	partially passed
F-HRD-07015	passed
F-HRD-07017	passed
F-HRD-07020	passed
F-HRD-07025	passed
F-PAS-00020	passed
F-PAS-00025	passed
F-PAS-00030	passed
F-PAS-00035	passed
F-PAS-00100	partially passed
F-PAS-00103	failed

Level 4 ID	Ver_Status
F-PAS-00105	partially passed
F-PAS-00115	passed
F-PAS-00120	unverified
F-PAS-00135	passed
F-PAS-00137	passed
F-PAS-00138	partially passed
F-PAS-00140	partially passed
F-PAS-00145	passed
F-PAS-00150	passed
F-PAS-00153	unverified
F-PAS-00155	unverified
F-PAS-00160	partially passed
F-PAS-00165	partially passed
F-PAS-00170	partially passed
F-PAS-00175	partially passed
F-PAS-00180	partially passed
F-PAS-00185	partially passed
F-PAS-00195	partially passed
F-PAS-00200	passed
F-PAS-00205	passed
F-PAS-00210	passed
F-PAS-00215	passed
F-PAS-00220	passed
F-PAS-00300	passed
F-PAS-00310	passed
F-PAS-00315	passed
F-PAS-00330	passed
F-PAS-00335	partially passed
F-PAS-00340	failed
F-PAS-00350	passed
F-PAS-00355	partially passed
F-PAS-00360	passed
F-PAS-00365	partially passed
F-PAS-00400	partially passed
F-PAS-00405	passed
F-PAS-00410	passed
F-PAS-00415	passed
F-PAS-00420	partially passed
F-PAS-00425	partially passed
F-PAS-00500	passed

Level 4 ID	Ver_Status
F-PAS-00503	passed
F-PAS-00505	passed
F-PAS-00510	partially passed
F-PAS-00600	unverified
F-PAS-00605	passed
F-PAS-00610	passed
F-PAS-00700	passed
F-PAS-00705	passed
F-PAS-00800	passed
F-PAS-00805	passed
F-PAS-00810	passed
F-PAS-00815	failed
F-PAS-00820	passed
F-PAS-00835	passed
F-PAS-00840	passed
F-PAS-00860	unverified
F-PAS-00900	partially passed
F-PAS-00905	partially passed
F-PAS-00910	partially passed
F-PAS-00915	passed
F-PAS-00920	passed
F-PAS-00925	partially passed
F-PAS-00930	unverified
F-PAS-00935	unverified
F-PAS-00940	partially passed
F-PAS-00945	partially passed
F-PAS-00950	partially passed
F-PAS-01000	passed
F-PAS-01035	passed
F-PAS-01040	passed
F-PAS-01120	passed
F-PAS-01125	passed
F-PAS-01200	partially passed
F-PAS-01205	failed
F-PAS-01210	partially passed
F-PAS-01215	partially passed
F-PAS-01220	unverified
F-PAS-01300	partially passed
F-PAS-01305	failed
F-PAS-01310	partially passed

Level 4 ID	Ver_Status
F-PAS-10009	unverified
F-PAS-10010	passed
F-PAS-10100	passed
F-PAS-10105	passed
F-PAS-10110	passed
F-PAS-10300	passed
F-PAS-10305	failed
F-PAS-10310	unverified
F-PAS-10312	passed
F-PAS-10400	failed
F-PAS-10405	failed
F-PAS-10410	unverified
F-PAS-10415	unverified
F-PAS-10436	passed
F-PAS-10437	unverified
F-PAS-10440	unverified
F-PAS-10441	unverified
F-PAS-10442	unverified
F-PAS-10445	passed
F-PAS-10446	passed
F-PAS-10447	passed
F-PAS-10448	passed
F-PAS-10449	passed
F-PAS-10450	passed
F-PAS-10455	unverified
F-PAS-10500	failed
F-PAS-10505	failed
F-PAS-10510	partially passed
F-PAS-10515	passed
F-PAS-10530	partially passed
F-PAS-10535	passed
F-PAS-10560	unverified
F-PAS-10565	unverified
F-PAS-10570	passed
F-PAS-10575	passed
F-PAS-10605	unverified
F-PAS-10610	unverified
F-PAS-10620	unverified
F-PAS-10623	unverified
F-PAS-10625	unverified

Level 4 ID	Ver_Status
F-PAS-10630	unverified
F-PAS-10700	failed
F-PAS-10705	partially passed
F-RMS-00010	unverified
F-RMS-00020	passed
F-RMS-00030	passed
F-RMS-00035	failed
F-RMS-00040	passed
F-RMS-00050	passed
F-RMS-00060	passed
F-RMS-00070	passed
F-RMS-00080	passed
F-RMS-00090	passed
F-RMS-00100	passed
F-RMS-00110	passed
F-RMS-00130	unverified
F-RMS-00140	unverified
F-RMS-00150	unverified
F-RMS-00160	unverified
F-RMS-00170	unverified
F-RMS-01010	passed
F-RMS-01020	passed
F-RMS-01030	passed
F-RMS-01060	passed
F-RMS-01070	passed
F-RMS-02010	partially passed
F-RMS-02020	partially passed
F-RMS-03010	partially passed
F-RMS-03030	partially passed
F-RMS-03040	passed
F-RMS-03050	passed
F-RMS-03060	unverified
F-RMS-03070	passed
F-RMS-03080	passed
F-RMS-03090	failed
F-RMS-03240	failed
F-RMS-04010	passed
F-RMS-04020	passed
F-RMS-04085	failed
F-RMS-04090	passed

Level 4 ID	Ver_Status
F-RMS-04100	passed
F-RMS-04110	passed
F-RMS-04120	passed
F-RMS-05010	unverified
F-RMS-05020	unverified
F-RMS-05030	unverified
F-RMS-05040	unverified
F-RMS-05050	unverified
F-RMS-05060	unverified
F-RMS-05070	unverified
F-RMS-05080	unverified
F-TLM-00110	passed
F-TLM-00115	passed
F-TLM-00120	passed
F-TLM-00135	passed
F-TLM-00210	passed
F-TLM-00215	passed
F-TLM-00220	passed
F-TLM-00310	passed
F-TLM-00315	passed
F-TLM-00410	passed
F-TLM-00440	passed
F-TLM-00445	passed
F-TLM-00450	passed
F-TLM-00490	passed
F-TLM-00510	passed
F-TLM-00515	passed
F-TLM-00525	passed
F-TLM-00530	passed
F-TLM-00535	unverified
F-TLM-00540	failed
F-TLM-00610	passed
F-TLM-00620	passed
F-TLM-00625	passed
F-TLM-00635	passed
F-TLM-00710	passed
F-TLM-00715	passed
F-TLM-00720	passed
F-TLM-00725	passed
F-TLM-00730	passed

Level 4 ID	Ver_Status
F-TLM-00735	passed
F-TLM-00810	passed
F-TLM-00815	passed
F-TLM-00820	passed
F-TLM-00910	passed
F-TLM-00915	partially passed
F-TLM-00920	passed
F-TLM-00925	partially passed
F-TLM-00935	partially passed
F-TLM-00945	passed
F-TLM-00960	passed
F-TLM-00970	partially passed
F-TLM-00985	partially passed
F-TLM-00990	partially passed
F-TLM-01010	passed
F-TLM-01015	passed
F-TLM-01020	failed
F-TLM-01025	failed
F-TLM-01030	failed
F-TLM-01035	passed
F-TLM-01040	passed
F-TLM-01045	passed
F-TLM-01050	passed
F-TLM-01055	partially passed
F-TLM-01110	passed
F-TLM-01115	passed
F-TLM-01120	partially passed
F-TLM-01125	passed
F-TLM-01130	partially passed
F-TLM-01135	passed
F-TLM-01140	passed
F-TLM-01145	failed
F-TLM-01150	failed
F-TLM-01155	partially passed
F-TLM-01160	passed
F-TLM-01165	passed
F-TLM-01210	failed
F-TLM-01215	unverified
F-TLM-01220	partially passed
F-TLM-01225	failed

Level 4 ID	Ver_Status
F-TLM-01230	failed
F-TLM-01235	passed
F-TLM-01310	passed
F-TLM-01315	passed
F-TLM-01320	passed
F-TLM-01325	passed
F-TLM-01330	partially passed
F-TLM-01335	passed
F-TLM-01345	passed
F-TLM-01350	passed
F-TLM-01355	failed
F-TLM-01360	failed
F-TLM-01365	failed
F-TLM-01410	partially passed
F-TLM-01415	passed
F-TLM-01420	passed
F-TLM-01425	unverified
F-TLM-01430	passed
F-TLM-01510	passed
F-TLM-01515	failed
F-TLM-01520	unverified
F-TLM-01540	unverified
F-TLM-01545	passed
F-TLM-01610	passed
F-TLM-01625	passed
F-TLM-01630	passed
F-TLM-01635	partially passed
F-TLM-01640	partially passed
F-TLM-01710	passed
F-TLM-01715	passed
F-TLM-01720	passed
F-TLM-01725	passed
F-TLM-01730	passed
F-TLM-01825	passed
F-TLM-01830	passed
F-TLM-02110	passed
F-TLM-02115	passed
F-TLM-02120	passed
F-TLM-02125	passed
F-TLM-02130	passed

Level 4 ID	Ver_Status
F-TLM-02135	passed
F-TLM-02140	unverified
F-TLM-02210	passed
F-TLM-02215	partially passed
F-TLM-02217	unverified
F-TLM-02218	unverified
F-TLM-02250	passed
F-TLM-02280	unverified
F-TLM-02281	unverified
F-TLM-02285	unverified
F-TLM-02286	unverified
F-TLM-02290	unverified
F-TLM-02291	unverified
F-TLM-02295	unverified
F-TLM-02296	unverified
F-TLM-02298	unverified
F-TLM-02299	unverified
F-TLM-10125	partially passed
F-TLM-10130	passed
F-TLM-10410	passed
F-TLM-10415	passed
F-TLM-10420	passed
F-TLM-10425	passed
F-TLM-10430	passed
F-TLM-10435	passed
F-TLM-10440	passed
F-TLM-10445	passed
F-TLM-10455	passed
F-TLM-10460	passed
F-TLM-10465	passed
F-TLM-10470	passed
F-TLM-10475	passed
F-TLM-10490	passed
F-TLM-10525	passed
F-TLM-10535	partially passed
F-TLM-10540	partially passed
F-TLM-10550	unverified
F-TLM-10555	unverified
F-TLM-10560	partially passed
F-TLM-10570	partially passed

Level 4 ID	Ver_Status
F-TLM-10575	passed
F-TLM-10580	passed
F-TLM-10810	passed
F-TLM-10955	passed
F-TLM-11320	failed
F-TLM-11515	passed
F-TLM-11520	unverified
F-TLM-13000	partially passed

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Abbreviations and Acronyms

AGS	Aster Ground System
AM	Morning (ante meridiem) --see EOS AM
ANA	Analysis
AOS	Acquisition of Signal
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer (formerly ITIR)
ATC	Absolute Time Command
ATO	Acceptance Test Organization
BAP	Baseline Activity Profile
CAC	Command Activity Controller
CCB	Configuration Control Board
CCR	Configuration Change Request
CCSDS	Consultative Committee for Space Data Systems
CDRL	Contract Data Requirements List
CERES	Clouds and Earth's Radiant Energy System
CI	Configuration item
CLCW	Command Link Control Words
CM	Configuration Management
CMD	Command
CMS	Command Management System
COTS	Commercial Off-The-Shelf
CSCI	Computer software configuration item
CSMS	Communications and System Management Segment
CSR	Consent to Ship Review
CSS	Communications Subsystem (CSMS)
CTIU	Command and Telemetry Interface Unit

DAR	Data Acquisition Request
DAS	Detailed Activity Schedule
DB	Database
DBA	Database Administrator
DBMS	Database Management System
DCN	Document Change Notice
DDTS	Distributed Defect Tracking System
DFCD	Data Format Control Document
DID	Data item description; data ingest/distribution
DMS	Data Management Subsystem
DSN	Deep Space Network
DSS	Decision Support System
EASE	Expert Advisor State Equation
Ebnet	EOS Backbone Network
ECL	ECS Command Language
ECOM	EOS Communications
ECS	EOSDIS Core System
EDF	ECS Development Facility
EDOS	EOS Data and Operations System
EDU	EDOS Data Unit
EOC	EOS Operations Center
EOS	Earth Observing System
EOSDIS	EOS Data and Information System
ETS	EOSDIS Test System
EU	Engineering Unit
EVT	Event
FDF	Flight Dynamics Facility
FIFO	First In - First Out
FMG	File Management

FOS	Flight Operations Segment (ECS)
FOT	Flight Operations Team
FUI	FOS User Interface
GCMR	Ground Configuration Message Request
GSFC	Goddard Space Flight Center
HGA	High Gain Antenna
HRD	Hardware
I&T	Integration and Test
ICC	Instrument Control Center
IP	International Partners
IRD	Interface Requirements Document
IST	Instrument Support Toolkit
JPL	Jet Propulsion Laboratory
LAN	Local Area Network
LaRC	Langley Research Center
LMC	Lockheed Martin Corporation
LOS	Loss of Signal
LSM	Local System Manager
LTIP	Long Term Instrument Plan
LTSP	Long Term Science Plan
M&O	Maintenance and Operations
MISR	Multi-Angle Imaging SpectroRadiometer
MO&DSD	Mission Operations and Data System Directorate (GSFC Code 500)
MODIS	Moderate Resolution Imaging Spectrometer
MOPITT	Measurements of Pollution in the Troposphere
MSS	Management and Subsystem (part of CSMS)
MTPE	Mission to Planet Earth
Nascom	NASA Communications Network
NASDA	National Space Development Agency (Japan)

NCC	Network Control Center
NCR	Non-conformance Report
NOAA	National Oceanic and Atmospheric Administration
OASIS	Operations and Science Instrument Support
ODB	Operational Database
ODM	Operational Data Message
PAS	Planning and Scheduling
PDB	Project Data Base
PI	Principal Investigator
PI/TL	Principal Investigator/Team Leader
PROC	Procedure
QA	Quality Assurance
RBR	Requirements by Release
RCM	Real-Time Contact Management
RCTD	Return Channel Time Delay
RMA	Reliability, Maintainability, Availability
RRR	Release Readiness Review
RTCS	Relative Time Command Sequence
RTS	Relative Time Sequence
SCC	Spacecraft Controls Computer
SCF	Science Computing Facility
SCT	Spacecraft Time
SDVF	SMC Service Management Center
SDPS	Science Data Processing System
SN	Space Network
SSIM	Spacecraft Simulator
SSR	Solid State Recorder
TD	Target Day
TDRS	Tracking and Data Relay Satellite

TDRSS	Tracking and Data Relay Satellite System
TL	Team Leader
TLM	Telemetry
TOO	Target of Opportunity
TRR	Test Readiness Review
TTM	Time Transfer Message
TW	Target Week
USCCS	User Spacecraft Clock Calibration System
UPS	User Planning System
UTC	Universal Time Coordinated
UI	User Interface
WAN	Wide Area Network
WOTS	Wallops Orbital Tracking System

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