

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
<u>PAS-2190B</u>					
	F-FUI-04110	passed	The FOS shall provide the capability to display 'what-if' changes on the timeline display.		0
	F-PAS-00160	passed	The FOS shall provide the capability for an authorized user to make 'what-if' changes without affecting the mission schedule for a specific spacecraft.	'What-if' changes will allow planners to study alternate mission schedules in an off-line and non-interfering mode. Capabilities like constraint checking that are available for mission schedules will be available in the 'what-if' mode.	0
	F-PAS-00165	passed	The FOS shall provide the capability for an authorized user to discard 'what-if' changes without affecting the mission schedule for a specific spacecraft.		0

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F-PAS-00170		passed	The FOS shall provide the capability for an authorized user to save 'what-if' changes to the mission schedule without affecting the mission schedule for a specific spacecraft.	These changes would be set aside and would not be incorporated. This capability would allow a planner to save a set of changes he has not finished so that he could turn off his machine.	0
F-PAS-00175		passed	The FOS shall provide the capability for an authorized user to retrieve previously saved 'what-if' changes without affecting the mission schedule for a specific spacecraft.		0
F-PAS-00180		passed	The FOS shall provide the capability for an authorized user to delete previously saved 'what-if' changes without affecting the mission schedule for a specific spacecraft.		0

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F-PAS-00185		passed	The FOS shall provide the capability for an authorized user to incorporate 'what-if' changes to the mission schedule for a specific spacecraft.		0
F-PAS-00195		passed	The FOS shall prevent a user from inputting 'what-if' requests to any portion of a mission schedule that he does not have update access for.		0
<u>PAS-2200B</u>					
F-CMS-00105		passed	The EOC shall expand spacecraft and instrument activities in the DAS into lists of absolute time commands.	Activities will be expanded using expansion instructions defined in the PDB. For complex instruments, the activity expansion may be complex and involve many instrument and spacecraft commands.	0

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F-CMS-00610		passed	The EOC shall expand ground activities in the DAS into lists of time tagged ground directives.		0
F-CMS-00615		passed	The EOC shall provide the capability to modify the expansion of a ground activity into ground directives by applying parameter values supplied as part of an activity request.		0
F-CMS-00620		passed	The EOC shall provide the capability to check the ground directives in the ground script against ground schedule constraints.	Ground schedule constraints will be defined in the PDB.	0
F-CMS-00625		passed	The EOC shall provide notification of ground schedule constraint violations.		0

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F-CMS-00630		passed	The EOC shall provide the capability to allow "soft" ground constraint violations to remain in the ground	The PDB will specify "hard" constraints, which cannot be violated, and "soft" constraints, which can be allowed to remain in the ground script.	0
F-CMS-00635		passed	The EOC shall provide the capability to prohibit "hard" ground constraint violations remaining in the ground script.	The PDB will specify "hard" constraints, which cannot be violated, and "soft" constraints, which can be allowed to remain in the ground script.	0
F-CMS-00670		passed	The EOC shall provide the capability to generate a ground script from a list of ground directives that covers the same operational period as the DAS.		0
F-CMS-00675		passed	The EOC shall provide the capability to initiate generation of the ground script which corresponds to a DAS upon		0

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			request.		
F-CMS-01505		passed	<p>The EOC shall provide the capability to produce an integrated report which includes the following information in chronological order:</p> <ul style="list-style-type: none"> a. Absolute time commands to be executed b. Relative time commands to be executed c. Scheduled spacecraft contacts d. Real-time commands to be uplinked e. Loads to be uplinked f. Expected orbital events 	The Integrated Report will be made available to the IOT via the IST.	0
F-CMS-01610		failed	<p>The EOC shall process all loads associated with a DAS in less than 1 hour. The processing of loads</p> <p style="text-align: center;">C-497</p>		08739
					324-CD-005-001/ 412-CD-002-001

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			<p>associated with a DAS shall include:</p> <ul style="list-style-type: none">a. Generating an ATC load based on the expanded DAS activitiesb. Verifying the current contents of RTS buffers referenced by the ATC load.c. Generating a ground script based on the expanded DAS activitiesd. Verifying the existence in the EOC table load catalog of the table loads that have uplink references in the DASe. Verifying the existence in the EOC flight software load catalog of the flight software loads that have uplink references in the DASf. Verifying the existence in the EOC microprocessor load catalog of the		
			C-498		324-CD-005-001/ 412-CD-002-001

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			microprocessor loads that have uplink references in the DAS g. Verifying the existence in the EOC RTS load catalog of the RTS loads that have uplink references in the DAS		
F-FUI-04090		passed	The FOS shall provide the capability to display the start and end times of the Detailed Activity Schedule on the timeline display.		0
F-PAS-00800		passed	The FOS shall provide the capability for an authorized user to define the start and end times for the Detailed Activity Schedule.		0
F-PAS-00805		passed	The FOS shall identify all disallowed activities that are between the start and end times for the Detailed Activity	Disallowed activities include: _activities that are scheduled in windows; _resource reservation	0

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			Schedule.	request activities that are place holders for detailed activities; _and activities that cause constraint violations.	
F-PAS-00810		passed	The FOS shall provide the capability for an authorized user to remove disallowed activities from the Detailed Activity Schedule.	This is intended to give the FOT the ability to avoid mistakes with an automated check.	0
F-PAS-00815		failed	The FOS shall provide the capability for an authorized user to specify the users who can create a Detailed Activity Schedule.		08021,08022
F-PAS-00835		passed	The FOS shall ensure that activities in the Detailed Activity Schedule are within predefined resource limits .		0
F-PAS-00840		passed	The FOS shall ensure that no activities		0
			C-500		324-CD-005-001/ 412-CD-002-001

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			cause hard constraint violations in the Detailed Activity Schedule.		
F-PAS-01035		passed	<p>The FOS shall be able to release a Detailed Activity Schedule (DAS) containing 1000 activities in less than 10 minutes. The process of releasing a DAS includes:</p> <ul style="list-style-type: none">a. Generate a schedule boundary that defines the DASb. Identify activities in the DAS that violate hard and soft constraintsc. Change the protections on activities in the DAS to restrict schedule modifications to TOOs and Late Changes		0

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<u>POST-B</u>					
F-ANA-01070		unverified	The FOS shall be able to access EDOS Status Messages for analysis.	Functionality to be delivered post-Release B.	0
F-ANA-01080		unverified	The FOS shall be able to access EOSDIS Ground Station RF Terminal Status Messages for analysis.	Functionality to be delivered post-Release B	0
F-ANA-04140		unverified	The FOS shall provide the capability to generate datasets from EDOS Status Messages.	Functionality to be delivered post-Release B.	0
F-ANA-04150		unverified	The FOS shall provide the capability to generate datasets from EOSDIS Ground Station RF terminal Status Messages.	Functionality to be delivered post-Release B.	0

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F-ANA-07500		unverified	The FOS shall compute and store the UTC for each data outage which was a result of an EDOS failure.	The EDOS failure is determined by evaluating the contents of the EDOS Status Message which is received from EDOS approximately every 5 seconds. Functionality to be delivered post-Release B.	0
F-ANA-07510		unverified	The FOS shall provide compute and store the total elapsed time for each data outage which was a result of an EDOS failure.	Functionality to be delivered post-Release B.	0
F-ANA-07520		unverified	The FOS shall provide compute and store the total time for all data outages within each real time contact resulting from EDOS failures.	Functionality to be delivered post-Release B.	0
F-ANA-07530		unverified	The FOS shall compute and store the UTC for each data outage which was	The EOSDIS Ground Station RF Terminal failure is determined by	0

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			a result of an EOSDIS Ground Station RF Terminal failure.	evaluating the contents of the EOSDIS Ground Station RF Terminal Status Message which is received from the EOSDIS Ground Station Management Facility. During a spacecraft contact, only the data from the active ground station is evaluated. Functionality to be delivered post-Release B.	
F-ANA-07540		unverified	The FOS shall compute and store the elapsed time for each data outage which was a result of an EOSDIS Ground Station RF Terminal failure.	Functionality to be delivered post-Release B.	0
F-ANA-07550		unverified	The FOS shall compute and store the total time for all data outages within each real time contact resulting from EOSDIS Ground Station RF Terminal failures.	Functionality to be delivered post-Release B.	0
			C-504		324-CD-005-001/ 412-CD-002-001

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	F-ANA-09010	unverified	<p>The EOC shall define an EASE to contain up to 15 comparisons of the following type, all resulting in a value of TRUE or FALSE:</p> <p>a. Spacecraft or ground telemetry value (Greater Than, Less Than, Greater Than or Equal To, Less Than or Equal To, Equal To, Not Equal To) Constant. Example. BattVolt1 > 20.0</p> <p>b. Spacecraft or ground telemetry value (Greater Than, Less Than, Greater Than or Equal To, Less Than or Equal To, Equal To, Not Equal To) spacecraft or ground telemetry value. Example. BattVolt1 > BattVolt2</p> <p>c. The return value of a function taking a ground or spacecraft telemetry value as an argument (Greater Than,</p>		0

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			<p>Less Than, Equal Greater Than or Equal To, Less Than or Equal To, To, Not Equal To) Constant. Example. AverageDelta Value (BattVolt1) == 0.0</p> <p>d. The value of another EASE (Equal To) TRUE/FALSE. Example. BatteryEASE == TRUE</p>		
	F-ANA-09020	unverified	<p>The EOC shall compute the value of the EASE by operating on the TRUE/FALSE results of each comparison contained within the EASE, using AND or OR boolean operators.</p> <p>Examples: (Batt1Volts > 20.0) AND (Battery1EASE == FALSE)_(Batt1Volts>Batt2Volts) OR</p>		0
			C-506		324-CD-005-001/ 412-CD-002-001

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			(Batt2Volts>Batt3Volts)		
	F-ANA-09030	unverified	The EOC shall evaluate the boolean AND/OR operators in order, unless parentheses are included to indicate order of operation.		0
	F-ANA-09040	unverified	The EOC shall provide the capability to define an EASE.		0
	F-ANA-09050	unverified	The EOC shall provide the capability to delete an EASE.		0
	F-ANA-09060	unverified	The EOC shall provide the capability to edit an EASE.		0
			C-507		324-CD-005-001/ 412-CD-002-001

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F-CMD-01140		unverified	The EOC shall be capable of transmitting commands to the EOS spacecraft using the EOSDIS ground stations.	The EDOS forward link processor will reside at the EOSDIS ground station and therefore will require separate addressing from the EDOS facility at White Sands. Functionality to be delivered post-Release B.	0
F-DMS-00950		unverified	The EOC shall provide the capability to archive event messages received from EDOS.	Functionality to be delivered post-Release B.	0
F-DMS-00960		unverified	The EOC shall provide the capability to retrieve archived EDOS event messages.	Functionality to be delivered post-Release B.	0
F-DMS-01022		unverified	The EOC shall be capable of retrieving	This requirement will be implemented	0
			C-508		324-CD-005-001/ 412-CD-002-001

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			<p>the following data files from the FOS post-Release B. archive.</p> <p>a. View period information for EOSDIS Ground Stations.</p> <p>b. EOSDIS Ground Station Acquisition data. c. Spacecraft contact</p>		
	F-DMS-01110	unverified	The EOC shall provide the capability to send archived data to a designated SDPS.		0
	F-DMS-01120	unverified	The EOC shall accept storage status, indicating the success or failure of the storage of the archived data, from the SDPS.		0
	F-DMS-01130	unverified	The EOC shall maintain the archived data until the SDPS has notified the		0

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			EOC of successful storage.		
F-DMS-01140		unverified	The EOC shall provide the capability to retrieve FOS archive data from the SDPS.		0
F-DMS-01285		unverified	The FOS shall provide the capability to receive event messages from EDOS.	Functionality to be delivered post-Release B.	0
F-DMS-01295		unverified	The FOS shall provide the capability to designate a type of event message as an EDOS event message.	Functionality to be delivered post-Release B	0
F-DMS-01410		unverified	The EOC shall provide the capability to send spacecraft contact schedules to EDOS.		0
			C-510		324-CD-005-001/ 412-CD-002-001

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F-DMS-01430		unverified	The EOC shall provide the capability to append an EDOS header to files transmitted to EDOS.		0
F-DMS-01435		unverified	The FOS shall allow the operator to configure the EOC to set and unset the test flag in files sent to EDOS.		0
F-DMS-01460		unverified	The EOC shall provide the capability to send files to the EOSDIS Ground Stations.	The EOC will provide Spacecraft contact schedules and FDF-generated acquisition data to the EOSDIS Ground Stations. Functionality to be delivered post-Release B.	0
F-FOS-00017		unverified	The EOC shall use and support the EOSDIS Ground Stations, via the	Functionality to be delivered post-Release B	0

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			EDOS/Ebnet interface, to obtain routine forward link (S-band) and return link (S-band and X-band) support.		
F-FOS-00321		unverified	The EOC shall use EBnet for data communications with EOSDIS Ground Stations.	This requirement will be implemented in post-Release B.	0
F-FOS-00327		unverified	The EOC shall receive acquisition data from the FDF for EOSDIS Ground Stations.	This requirement will be implemented in post-Release B.	0
F-FOS-00345		unverified	The EOC shall receive status data from EDOS.	Reference the Interface Control Document between the EDOS and EGS Elements for specifics pertaining to this interface.	0

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F-FOS-00550		unverified	FOS critical real time processes shall be able to recover to normal operations within 1 minute of a Data Server failover.		0
F-FOS-00560		unverified	FOS off-line processes that reside on the Data Server shall checkpoint non-recoverable data to the RAID.		0
F-FOS-10240		unverified	The FOs shall provide an IST software toolkit to the U.S. JPL ASTER Science Team SCF.	This IST will have limited (read-only) capabilities.	0
F-FOS-10245		unverified	The FOS shall provide a single IST connection to the U.S. JPL ASTER Science Team SCF.	The U.S. ASTER Science Team SCF is designated as a "read only" site.	0

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F-FUI-02926		unverified	The FOS shall provide a routine report template for a data outage report.	This requirement will be implemented post-Release B. This is related to EOSDIS Ground Station and EDOS status messages.	0
F-FUI-07311		unverified	The FOS shall allow the user to plot data from different times and/or different data sources on a three dimensional graph.	This requirement will be implemented Post Release B.	0
F-PAS-00155		unverified	The FOS shall provide FDF orbit data to the ECS SDPS.	DMS has responsibility for this requirement.	0
F-PAS-00860		unverified	The EOC shall generate a Detailed Activity Schedule file for archival at the ECS SDPS.		0
F-PAS-00930		unverified	The FOS shall be able to model a C-514		0 324-CD-005-001/ 412-CD-002-001

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			nominal spacecraft attitude.		
F-PAS-00935		unverified	The FOS shall be able to model spacecraft attitude offsets.		0
F-PAS-10440		unverified	The EOC shall provide the capability to schedule EOSDIS Ground Stations communication for routine S-band and X-band contacts.	This requirement will be implemented post-Release B	0
F-PAS-10441		unverified	The EOC shall provide the capability to receive EOSDIS Ground Stations' view periods from the FDF.	This requirement will be implemented post-Release B. DMS has responsibility for this requirement.	0
F-PAS-10442		unverified	The EOC shall provide the capability to receive availability schedules from the	This requirement will be implemented post-Release B. DMS has	0

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			EOSDIS Ground Stations.	responsibility for this requirement.	
F-PAS-10610		unverified	The FOS shall define and display on the timeline an orbital event when the CERES Solar elevation angle value (provided by FDD) is -11 degrees. (This allows the instrument operations team to accurately schedule CERES solar calibrations.)		0
F-PAS-10620		unverified	The FOS shall define and display on the timeline orbital events when the CERES Solar elevation angle (provided by FDD) enters and exits a range of values defined by CERES,.		0
F-PAS-10630		unverified	The FOS shall define and display on the timeline orbital events when the		0

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			value (provided by FDD) dips below a value provided by CERES.		
F-RMS-00010		unverified	The EOC shall support concurrent real-time operations for up to seven (7) spacecraft and their instruments.		0
F-TLM-02217		unverified	The EOC shall be capable of receiving and processing EDOS Status messages.	High level status information will be provided by EDOS on a periodic basis, nominally every 5 seconds. This requirement will be implemented post-Release B.	0
F-TLM-02218		unverified	The EOC shall be capable of of receiving and processing EOSDIS Ground Station Status messages.	High level status information will be provided by EOSDIS Ground Stations on a periodic basis, nominally every 5 seconds. This requirement will be implemented post-Release B.	0

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F-TLM-02280		unverified	The FOS shall be capable of replaying stored EDOS Status messages based upon a user specified time period.	This requirement will be implemented post-Release B.	0
F-TLM-02281		unverified	The FOS shall be capable of replaying stored EOSDIS Ground Station Status messages based upon a user specified time period.	This requirement will be implemented post-Release B.	0
F-TLM-02285		unverified	The FOS shall process all stored EDOS Status messages for the requested period, during the replay operation.	This requirement will be implemented post-Release B.	0
F-TLM-02286		unverified	The FOS shall process all stored EOSDIS Ground Station Status messages for the requested period, during the replay operation.	This requirement will be implemented post-Release B.	0

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	F-TLM-02290	unverified	The FOS shall be capable of processing stored EDOS Status messages for analysis at twelve (12) times the real-time rate.	This requirement is derived from the fact that the FOS must be able to analyze twenty-four (24) hours of stored telemetry data within two (2) hours. This capability is used for off-line batch processing and when the immediate display of information is not necessary or desired (i.e. gathering statistics on a particular parameter over several weeks of stored telemetry data). This requirement will be implemented post-Release B.	0
	F-TLM-02291	unverified	The FOS shall be capable of processing EOSDIS Ground Station Status messages for analysis at twelve (12) times the real-time rate.	This requirement is derived from the fact that the FOS must be able to analyze twenty-four (24) hours of stored telemetry data within two (2)	0

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				hours. This capability is used for off-line batch processing and when the immediate display of information is not necessary or desired (i.e. gathering statistics on a particular parameter over several weeks of stored telemetry data). This requirement will be implemented post-Release B.	
F-TLM-02295		unverified	The FOS shall be capable of processing stored EDOS Status messages for display at rates up to three (3) times the real-time rate.	This requirement permits the rapid replay and display of stored data and may be useful during contact simulations. This requirement will be implemented post-Release B.	0
F-TLM-02296		unverified	The FOS shall be capable of processing stored EOSDIS Ground Station Status messages for display at	This requirement permits the rapid replay and display of stored data and may be useful during contact	0

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			rates up to three (3) times real-time rate.	simulations. This requirement will be implemented post-Release B	
F-TLM-02298		unverified	The FOS shall be able to replay and process the EDOS Status messages at the real-time or at a user-specified rate.	This requirement will be implemented post-Release B.	0
F-TLM-02299		unverified	The FOS shall be able to replay and process the EOSDIS Ground Station Status messages at the real-time or at a user specified rate.	This requirement will be implemented post-Release B. Refer to F-TLM-02296 for "user-specified rate". This requirement will be implemented post-Release B.	0
<u>SAS-2000B</u>					
F-FOS-00308		passed	The FOS shall provide the capability for an EOC operator to remotely login to the Spacecraft Simulator to access simulator displays.		0

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	F-FOS-00322	passed	The FOS shall provide the capability for an EOS operator to remotely login to an Flight Dynamics Division (FDD) workstation to access FDD real time attitude determination (RTAD) displays.		0
	F-FOS-10305	passed	The FOS shall provide the capability for an EOC operator to remotely login to the AM1 Spacecraft Analysis System (SAS) to access analysis displays.		0
<u>SYS-2000B</u>					
	F-FOS-00070	passed	The EOC shall manage initialization and shutdown of EOC functions.		0
	F-FOS-00490	passed	The EOC shall provide for security		0
			C-522		324-CD-005-001/ 412-CD-002-001

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			<p>safeguards to cover unscheduled system shutdown (aborts) and subsequent restarts, as well as for scheduled system shutdown and operational startup.</p>		
	F-FOS-00570	passed	<p>The FOS Data Server shall startup and initialize within 5 minutes.</p>		0
<u><i>SYS-2020B</i></u>					
	F-FOS-00035	passed	<p>The EOC shall provide a test mode of operation that does not interfere with ongoing operations, and which supports independent FOS and subsystem tests, end-to-end tests, and integration and verification activities occurring during at a minimum:</p> <p>a. Spacecraft and instrument</p>		0
			C-523		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			<p>integration and test</p> <p>b. Pre-launch</p> <p>c. Upgrades and enhancements</p>		
F-FUI-07720		partially passed	The FOS shall provide one status window for each logical string connection.		08509
F-FUI-08100		passed	The FOS shall provide a user the capability to submit a resource service request.	<p>A resource service request will contain the parameters needed by the Resource Management Subsystem to establish a logical string. These parameters include:</p> <p>_a. spacecraft Id</p> <p>_b. data base Id</p> <p>_c. service type (real-time, replay, simulation)</p>	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				_d. mode (operational, training, test)	
F-RMS-00020		passed	The EOC shall be capable of accepting default ground system information at system startup.	Default ground system information will include default logical strings to be created at system initialization time.	0
F-RMS-00030		passed	The EOC shall be capable of accepting EOC operator requests to configure the EOC.	Configure refers to the allocation of EOC hardware and software components for a specific use within a logical string.	0
F-RMS-00040		passed	The EOC shall allow EOC operators to identify EOC resources for operational mode.	Identifying a logical string for operation, test or training mode will not constrain the use of that logical string. This identification merely serves notice to all potential users of the intended use for a given string.	0
F-RMS-00050		passed	The EOC shall allow EOC operators to	Identifying a logical string for operation,	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			identify EOC resources for test mode.	test or training mode will not constrain the use of that logical string. This identification merely serves notice to all potential users of the intended use for a given string.	
F-RMS-00060		passed	The EOC shall allow EOC operators to identify EOC resources for training mode.	Identifying a logical string for operation, test or training mode will not constrain the use of that logical string. This identification merely serves notice to all potential users of the intended use for a given string.	0
F-RMS-01060		passed	The EOC shall provide the capability to authorize an EOC operator to modify the ground system configuration.		0
F-RMS-01070		passed	The EOC shall allow only one	Ground configuration authority is	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			authorized EOC operator, at any given time, the privilege to modify the ground system configuration.	granted on a per logical string basis.	
<u><i>SYS-2030B</i></u>					
	F-DMS-01270	failed	The FOS shall provide the capability to generate events upon receipt of hardware component status change information from the MSS.		07606
	F-DMS-01280	failed	The FOS shall provide the capability to generate events upon receipt of permanent and temporary software component status change information from the MSS.		07606
	F-FOS-00098	passed	The EOC shall provide the capabilities: a. To test both nominal operations and		0
			C-527		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			<p>failure paths</p> <p>b. To log test activities and test configuration</p> <p>c. To support analysis of test data and the generation of test results</p> <p>d. To maintain test procedures and test</p>		
	F-FOS-00490	passed	<p>The EOC shall provide for security safeguards to cover unscheduled system shutdown (aborts) and subsequent restarts, as well as for scheduled system shutdown and operational startup.</p>		0
	F-FOS-00510	partially passed	<p>The EOC shall have no single point of failure for functions associated with real-time operations of the spacecraft and instruments.</p>		08628

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-FUI-08105		passed	The FOS shall provide a user the capability to display ground system equipment status.		0
F-FUI-08110		passed	The FOS shall provide a user the capability to display ground system parameter values.		0
F-FUI-08115		partially passed	The FOS shall provide a user the capability to display user workstation configuration data.	The workstation configuration display will show the connections between each active workstation and the established ground system configurations.	08627
F-RMS-02010		partially passed	The EOC shall process an EOC operator request to initiate the transfer of spacecraft control from one set of hardware and software components		08628

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			to another in order to work around a fault or anomaly.		
F-RMS-02020		partially passed	The EOC shall correct a failure condition with a redundant component within one minute of operator request.	The RMS design goal is to restore normal operations within 30 seconds.	08628
F-RMS-03010		partially passed	The EOC shall monitor EOC hardware components for changes in status.	The status monitored tells the EOC that the component is active or inactive. The monitor function will be provided by MSS tools that will be employed by the FOS software. Statuses will be reported to the DMS subsystem in the form of management events.	08628
F-RMS-03030		partially passed	The EOC shall monitor software components for change in status.	The status of the software tasks monitored could be active, inactive, or	08628

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				<p>suspended. The monitor function will be provided by MSS tools that will be employed by the FOS software.</p> <p>Statuses will be reported to the DMS subsystem in the form of management events.</p>	
	F-RMS-03040	passed	The EOC shall maintain changes to the ground configuration and hardware and software component statuses.		0
	F-RMS-03050	passed	The EOC shall make ground configuration and component statuses available for display to the EOC operators.		0
	F-RMS-03070	passed	The EOC shall notify the operator of changes in the ground configuration		0
			C-531		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			and component statuses.		
	F-RMS-03080	passed	The EOC shall log changes in the ground configuration and component statuses.		0
	F-RMS-03090	failed	The EOC shall provide the MSS with changes in EOC component statuses.		08623
	F-RMS-03240	failed	The EOC shall make performance monitoring and fault management information obtained from the MSS available to the EOC operator.		07606
<u>TLM-2000B</u>	F-FOS-00020	passed	The EOC shall use and support the EDOS/EBnet interface to obtain the		0
			C-532		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			<p>data formatting services, data distribution services, and data quality and accounting services needed to achieve full FOS functionality.</p>		
F-FOS-00320		passed	<p>The EOC shall use Ebnet for data communications for the following types of data:</p> <ul style="list-style-type: none"> a. Real-time telemetry data, rate-buffered telemetry data b. Command data c. TDRSS schedule requests and TDRSS schedules d. Data exchange with the FDF, NCC and EDOS 	<p>Reference the Interface Control Document between the EOC and Ebnet for specifics pertaining to this interface.</p>	
F-FUI-07330		passed	<p>The FOS shall have the capability to capture all occurrences of a parameter between screen updates, and then</p> <p style="text-align: center;">C-533</p>		<p>0</p> <p>324-CD-005-001/ 412-CD-002-001</p>

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			display the captured data at the next update.		
F-FUI-07425		passed	The FOS shall provide the user with the capability to capture all occurrences of a telemetry value between screen updates, and then display the captured data at the next screen update.		0
F-FUI-17200		partially passed	The FOS shall be capable of displaying master/major cycle count.		04760
F-FUI-17700		passed	The FOS shall display current master/major cycle count.		0
F-RMS-00070		passed	The EOC shall provide an EOC operator		0
			C-534		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			access to real-time data.		
F-RMS-00090		passed	The EOC shall provide an EOC operator access to simulated data.		0
F-TLM-00115		passed	The EOC shall be capable of receiving EOS spacecraft simulator telemetry.	The spacecraft simulator data may originate at the spacecraft contractor facility, spacecraft software development facility, or EOC.	0
F-TLM-00135		passed	The EOC shall be capable of receiving telemetry in either EDU or CCSDS packet format.	The EOC is required to directly accept and process archived instrument engineering telemetry in CCSDS packet form. Spacecraft and instrument housekeeping telemetry CCSDS packets will be received encapsulated	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				within EDUs.	
	F-TLM-00210	passed	The EOC shall accept EDOS Data Units (EDUs) containing spacecraft and instrument telemetry data.		0
	F-TLM-00215	passed	The EOC shall extract the EDU Service Header (ESH) containing data quality, accounting, and EDOS ground receipt date and time information from the EDU.		0
	F-TLM-00220	passed	The EOC shall extract the Service Data Unit (SDU) containing a CCSDS Version-1 spacecraft or instrument telemetry packet from the EDU.		0
	F-TLM-00410	passed	The FOS shall accept a CCSDS Version-1 format telemetry packet of a	The packets to be processed are defined within the Project Data Base	0
			C-536		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			predefined type and length.	and are organized by APID.	
F-TLM-00440		passed	<p>The FOS shall extract from the telemetry packet primary header field the following:</p> <ul style="list-style-type: none"> a. The 11-bit packet APID. b. The 14-bit packet sequence count. c. The two (2) octet packet length count. 	<p>The FOS will examine the CCSDS packet sequence count located within the primary header to determine a proper packet sequence and to detect missing packets.</p>	0
F-TLM-00450		passed	<p>The FOS shall be capable of extracting from the telemetry packet application data field the following:</p> <ul style="list-style-type: none"> a. An optional CCSDS packet secondary header field b. The packet application process telemetry information. 	<p>CCSDS defines the packet secondary header as being an optional data field within each CCSDS packet. However, it is envisioned that this field will be used throughout the EOS missions and will contain an eight (8) octet packet time stamp. The application process telemetry information contains the</p>	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				telemetered spacecraft and instrument sample point values.	
F-TLM-00490		passed	The FOS shall provide the capability to convert the packet time stamp according to a specified spacecraft time code conversion algorithm.	Examples of time codes are CCSDS Unsegmented Time Code and CCSDS Day Segmented Time Code. AM-1 uses CCSDS Day Segmented Time Code and does not require spacecraft time fly wheeling. Spacecraft time flywheel is not required for AM-1, but may be necessary for future missions. (Reference "Time Code Formats", Blue Book, CCSDS 301.0-B-2.)	0
F-TLM-00610		passed	The FOS shall initially mark all defined telemetry parameters as being static and as having no data available.	A static indicator is associated with each parameter and is accessible for display or other processing.	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-00635		passed	The FOS shall mark a parameter as being active when it has been successfully decommutated.		0
F-TLM-01410		passed	The FOS shall make available the values for every predefined telemetry parameter.		0
F-TLM-01430		passed	The FOS shall initialize/baseline all decommutated and converted value areas when no telemetry data is available.	For example, this would occur during pre-contact system configuration when telemetry data is yet to be	0
F-TLM-10410		passed	The FOS shall accept AM-1 CCSDS format telemetry packets of a predefined type and length.	The FOS will support both pure CCSDS packet telemetry and Time Division Multiplexed (TDM) type telemetry transferred within the CCSDS packets,	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				such as that implemented for AM-1.	
F-TLM-10420		passed	The FOS shall accept AM-1 1664 octet diagnostic telemetry packets.		0
F-TLM-10425		passed	The FOS shall accept AM-1 208 octet health and safety telemetry packets.		0
F-TLM-10430		passed	The FOS shall accept AM-1 208 octet diagnostic telemetry packets.		0
F-TLM-10435		passed	The FOS shall accept AM-1 208 octet standby CTIU telemetry packets.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-10440		passed	<p>The FOS shall extract from the telemetry packet primary header field the following:</p> <ul style="list-style-type: none"> a. The 11-bit packet APID. b. The 14-bit packet sequence count. c. The two (2) octet packet length count. 	<p>The FOS will examine the AM-1 CCSDS packet sequence count located within the primary header to determine a proper major cycle sequence and to detect missing cycles.</p>	
F-TLM-10465		passed	<p>The FOS shall be capable of extracting the 193 octet telemetry information from the 1 Kbps AM-1 health and safety packet application data field.</p>		0
F-TLM-10470		passed	<p>The FOS shall be capable of extracting the 193 octet telemetry information from the 1 Kbps AM-1 diagnostic packet application data field.</p>		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-10475		passed	The FOS shall be capable of extracting the 193 octet telemetry information from the 1 Kbps AM-1 standby CTIU packet application data field.		0
F-TLM-10490		passed	The FOS shall provide the capability to convert the packet time stamp according to the CCSDS Day Segmented Time Code time conversion algorithm.		0
F-TLM-10525		passed	The FOS shall determine the decommutation algorithm for a telemetered AM-1 CCSDS packet based upon the packet application process identifier (APID) and packet sequence count fields.		0
F-TLM-10550		unverified	The FOS shall be capable of		08039
			C-542		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			decommutating real-time spacecraft diagnostic telemetry at a rate of 16 Kbps.		
F-TLM-10555		unverified	The FOS shall be capable of decommutating real-time instrument diagnostic telemetry at a rate of 16 Kbps.		08039
F-TLM-10560		passed	The FOS shall be capable of continuously decommutating real-time spacecraft health and safety telemetry at a rate of 1 Kbps.		0
F-TLM-10570		passed	The FOS shall be capable of decommutating real-time spacecraft diagnostic telemetry at a rate of 1 Kbps.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
	F-TLM-10575	passed	The FOS shall be capable of decommutating real-time instrument diagnostic telemetry at a rate of 1 Kbps.		0
	F-TLM-10580	passed	The FOS shall be capable of decommutating real-time spacecraft standby CTIU telemetry at a rate of 1 Kbps.		0
<u>TLM-2010B</u>					
	F-FOS-00020	passed	The EOC shall use and support the EDOS/EBnet interface to obtain the data formatting services, data distribution services, and data quality and accounting services needed to achieve full FOS functionality.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-FOS-00320		passed	<p>The EOC shall use Ebnet for data communications for the following types of data:</p> <ul style="list-style-type: none"> a. Real-time telemetry data, rate-buffered telemetry data b. Command data c. TDRSS schedule requests and TDRSS schedules d. Data exchange with the FDF, NCC and EDOS 	<p>Reference the Interface Control Document between the EOC and Ebnet for specifics pertaining to this interface.</p>	
F-FOS-00350		passed	<p>The EOC shall receive telemetry data from EDOS, including real-time and rate-buffered housekeeping and engineering data from EOS instruments and spacecraft.</p>	<p>Reference the Interface Control Document between the EOC and EDOS for specifics pertaining to this interface.</p>	0
F-FUI-07330		passed	<p>The FOS shall have the capability to capture all occurrences of a parameter</p>		0
			C-545		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			between screen updates, and then display the captured data at the next update.		
F-FUI-07425		passed	The FOS shall provide the user with the capability to capture all occurrences of a telemetry value between screen updates, and then display the captured data at the next screen update.		0
F-TLM-00110		passed	The EOC shall be capable of receiving EOS spacecraft and instrument telemetry.	The spacecraft data may originate at the spacecraft contractor facility, spacecraft launch facility, or EDOS.	0
F-TLM-00115		passed	The EOC shall be capable of receiving EOS spacecraft simulator telemetry.	The spacecraft simulator data may originate at the spacecraft contractor facility, spacecraft software	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				development facility, or EOC.	
F-TLM-00135		passed	The EOC shall be capable of receiving telemetry in either EDU or CCSDS packet format.	The EOC is required to directly accept and process archived instrument engineering telemetry in CCSDS packet form. Spacecraft and instrument housekeeping telemetry CCSDS packets will be received encapsulated within EDUs.	0
F-TLM-00210		passed	The EOC shall accept EDOS Data Units (EDUs) containing spacecraft and instrument telemetry data.		0
F-TLM-00215		passed	The EOC shall extract the EDU Service Header (ESH) containing data quality, accounting, and EDOS ground receipt date and time information from the EDU.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-00220		passed	The EOC shall extract the Service Data Unit (SDU) containing a CCSDS Version-1 spacecraft or instrument telemetry packet from the EDU.		0
F-TLM-00410		passed	The FOS shall accept a CCSDS Version-1 format telemetry packet of a predefined type and length.	The packets to be processed are defined within the Project Data Base and are organized by APID.	0
F-TLM-00440		passed	The FOS shall extract from the telemetry packet primary header field the following: a. The 11-bit packet APID. b. The 14-bit packet sequence count. c. The two (2) octet packet length count.	The FOS will examine the CCSDS packet sequence count located within the primary header to determine a proper packet sequence and to detect missing packets.	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-00450		passed	<p>The FOS shall be capable of extracting from the telemetry packet application data field the following:</p> <ul style="list-style-type: none"> a. An optional CCSDS packet secondary header field b. The packet application process telemetry information. 	<p>CCSDS defines the packet secondary header as being an optional data field within each CCSDS packet. However, it is envisioned that this field will be used throughout the EOS missions and will contain an eight (8) octet packet time stamp. The application process telemetry information contains the telemetered spacecraft and instrument sample point values.</p>	0
F-TLM-00490		passed	<p>The FOS shall provide the capability to convert the packet time stamp according to a specified spacecraft time code conversion algorithm.</p>	<p>Examples of time codes are CCSDS Unsegmented Time Code and CCSDS Day Segmented Time Code. AM-1 uses CCSDS Day Segmented Time Code and does not require spacecraft time fly wheeling. Spacecraft time flywheel is not required for AM-1, but may be necessary for future missions.</p>	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				(Reference "Time Code Formats", Blue Book, CCSDS 301.0-B-2.)	
F-TLM-00510		passed	The FOS shall support the decommutation of spacecraft housekeeping telemetry for the EOS spacecraft.		0
F-TLM-00515		passed	The FOS shall support the decommutation of instrument housekeeping telemetry for the EOS instruments.		0
F-TLM-00525		passed	The FOS shall determine the decommutation algorithm for a telemetered CCSDS packet application data field based upon the packet application process identifier (APID).	The FOS supports the processing of engineering data for engineering telemetry downlinked with its own CCSDS packet application identifier.	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-00530		passed	The FOS shall decommutate telemetry based upon predefined spacecraft and instrument specific decommutation information.	The decommutation information will consist of data necessary for the retrieval and storage of downlinked spacecraft telemetry parameters. This decommutation information will be based on the Project Data Base.	0
F-TLM-01430		passed	The FOS shall initialize/baseline all decommutated and converted value areas when no telemetry data is available.	For example, this would occur during pre-contact system configuration when telemetry data is yet to be	0
F-TLM-10415		passed	The FOS shall accept AM-1 1664 octet housekeeping telemetry packets.		0
F-TLM-10440		passed	The FOS shall extract from the telemetry packet primary header field the following:	The FOS will examine the AM-1 CCSDS 0 packet sequence count located within the primary header to determine a	

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			<ul style="list-style-type: none"> a. The 11-bit packet APID. b. The 14-bit packet sequence count. c. The two (2) octet packet length count. 	<p>proper major cycle sequence and to detect missing cycles.</p>	
F-TLM-10455		passed	The FOS shall be capable of extracting the 1649 octet telemetry information from the 16 Kbps AM-1 housekeeping packet application data field.		0
F-TLM-10460		passed	The FOS shall be capable of extracting the 1649 octet telemetry information from the 16 Kbps AM-1 diagnostic packet application data field .		0
F-TLM-10490		passed	The FOS shall provide the capability to convert the packet time stamp according to the CCSDS Day Segmented Time Code time conversion		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			algorithm.		
F-TLM-10525		passed	The FOS shall determine the decommutation algorithm for a telemetered AM-1 CCSDS packet based upon the packet application process identifier (APID) and packet sequence count fields.		0
F-TLM-10535		passed	The FOS shall be capable of continuously decommutating real-time spacecraft housekeeping telemetry at a rate of 16 Kbps.		0
F-TLM-10540		passed	The FOS shall be capable of continuously decommutating real-time instrument housekeeping telemetry at a rate of 16 Kbps.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
<u><i>TLM-2020B</i></u>					
	F-DMS-10110	unverified	The FOS shall provide the capability to exclude processing of duplicate CERES data.	This requirement will be handled by context dependent definitions.	08783
	F-RMS-00070	unverified	The EOC shall provide an EOC operator access to real-time data.		08783
	F-RMS-00130	unverified	The EOC shall provide an IST operator access to real-time data.		08783
	F-TLM-00610	unverified	The FOS shall initially mark all defined telemetry parameters as being static and as having no data available.	A static indicator is associated with each parameter and is accessible for display or other processing.	08783

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-00635		unverified	The FOS shall mark a parameter as being active when it has been successfully decommutated.		08783
F-TLM-00810		unverified	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.	The context switch may be either a telemetered or derived discrete parameter.	08783
F-TLM-00815		unverified	The FOS shall support up to sixteen (16) distinct, predefined ranges for each context switch parameter.	Data base validation will disallow any undefined context switch parameter states. The sixteen context switches will encompass all possible switch parameter values.	08783
F-TLM-00820		unverified	The FOS shall only decommutate a	If a context switch is poor quality or	08783

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			context-dependent parameter when the context switch is of good quality and has been marked active.	has been marked static, the context-dependent parameter will be marked static.	
F-TLM-00920		unverified	The FOS shall provide the capability to select an EU conversion algorithm based upon the value of an associated predefined discrete telemetry point.	This capability permits a context switched EU conversion. Up to sixteen (16) predefined switch ranges are available. The discrete may be either a decommutated or derived telemetry parameter.	08783
F-TLM-01410		unverified	The FOS shall make available the values for every predefined telemetry parameter.		08783
F-TLM-10810		unverified	FOS shall provide decommutation of a given location of a given major cycle to be associated with any one of various		08783

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			parameter mnemonics, depending on the value of a discrete telemetry context switch parameter.		
<u>TLM-2030B</u>					
	F-TLM-00525	passed	The FOS shall determine the decommutation algorithm for a telemetered CCSDS packet application data field based upon the packet application process identifier (APID).	The FOS supports the processing of engineering data for engineering telemetry downlinked with its own CCSDS packet application identifier.	0
	F-TLM-00530	passed	The FOS shall decommutate telemetry based upon predefined spacecraft and instrument specific decommutation information.	The decommutation information will consist of data necessary for the retrieval and storage of downlinked spacecraft telemetry parameters. This decommutation information will be based on the Project Data Base.	0
	F-TLM-00910	passed	The FOS shall allow one predefined EU		0
			C-557		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			conversion algorithm to be active for each parameter.		
F-TLM-00935		partially passed	The FOS shall be capable of performing EU conversions using seventh order or lower polynomials with a minimum of two coefficients.	Polynomial conversion will use the following equation: $y = C_0 + C_1x + C_2x^2 + \dots + C_7x^7$ where x is the raw value, C_i is a data base defined coefficient, and y is the converted value.	04023, 08683
F-TLM-00945		failed	The FOS shall be capable of performing EU conversions using linear interpolation with no more than 15 pairs of start and end-points that specify 15 contiguous line segments of increasing value.	Linear interpolation conversion will use the following equation: $y = mx + b$ where x is the raw value, m is the slope of the given segment, b is the y-axis intercept, and y is the converted value.	09040
F-TLM-00960		passed	The FOS shall mark accordingly any	For example, conversion errors could	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			telemetry parameter that results in an error during the EU conversion	occur in the case of overlapping line segment end points. Such errors should be eliminated during telemetry data base validation.	
F-TLM-00985		passed	The FOS shall allow specification of up to eight (8) different EU segments for each analog parameter.	A separate EU conversion can be specified for each segment.	0
F-TLM-00990		passed	The FOS shall be capable of performing conversion of segmented EUs.	Segmented EU conversion will use the following equation: $y = C0 + C1X + C2X^{**2} + C3X^{**3}$ where X is the decoded value, Ci is a data base defined coefficient, and y is the converted value.	0
F-TLM-01420		passed	The FOS shall retain the parameter data until replaced by more recent data		0
			C-559		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			and/or system reconfiguration.		
	F-TLM-10955	passed	The FOS shall be capable of performing EU conversions using an exponential function with three coefficients.	Exponential conversion will use the following equation: $y = C_0 + C_1 e^{(C_2 x)}$ where x is the raw value, C _i is a data base defined coefficient, e has a value of 2.718, and y is the converted value.	0
<u>TLM-2040B</u>					
	F-RMS-00100	passed	The EOC shall provide multiple EOC operators access to the same data stream.	A data stream is defined as a real-time, replay or simulated telemetry stream.	0
	F-TLM-00915	partially passed	The FOS shall allow for the selection from up to four (4) EU conversion algorithms for each parameter.		08684

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
	F-TLM-00925	partially passed	The FOS shall provide the capability for the user to select a predefined EU conversion algorithm.		08684
	F-TLM-00970	passed	The FOS shall provide the capability for the user to adjust the predefined EU conversion algorithm coefficient values.	Changing of the coefficient values via user directive is temporary. Permanent alterations may be accommodated through changes in the coefficient values resident within the Project Data Base. Whenever a new set of limits is loaded, the data base defined values will be restored.	0
<u>TLM-2050B</u>	F-TLM-00635	passed	The FOS shall mark a parameter as being active when it has been successfully decommutated.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-00710		passed	The FOS shall provide for the assembly of parameters from multiple and contiguous bits.		0
F-TLM-00715		passed	The FOS shall provide for the assembly of parameters from multiple and non-contiguous bits.	The parameter construction information will be based on the Project Data Base and will include the location of data in the downlink telemetry (packet), the parameter start bit, and the number of bits to gather. This and the previous requirement allow for the decommutation of parameters that cross word boundaries.	0
F-TLM-00720		passed	The FOS shall be capable of extracting a maximum of 8 "components" for any one telemetry parameter.	Each component is considered a contiguous grouping of bits that are capable of being extracted simultaneously. for each parameter,	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				FOS will have the ability to extract and assemble from one (1) to eight (8) groups of bits whose total number of bits does not exceed thirty-two (32).	
F-TLM-00725		passed	The FOS shall provide a mechanism to collect all components before any subsequent processing can be initiated for telemetry parameters with multiple components.	Examples of subsequent processing whoud include limit sensing, EU conversion, etc.	0
F-TLM-00730		passed	The FOS shall extract all components for a telemetry parameter from the same packet.	The quality of the parameter composite value will be based upon the quality of all components.	0
F-TLM-00735		passed	The FOS shall be capable of extracting a maximum of 32 bits for any one telemetry parameter.	The exact bit pattern extracted for a given parameter is referred to as the raw value.	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
<u>TLM-2060B</u>					
	F-TLM-00315	unverified	The FOS shall mark all parameters decommutated from a packet containing an error as having questionable quality.	The FOS performs derived parameter calculations and marks the result as having questionable quality if a data point with questionable quality is required for use in calculating the derived parameter.	08772
	F-TLM-01035	unverified	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.	Limits for both decommutated and derived parameters are specified through the Project Data Base.	08772
	F-TLM-01050	unverified	The FOS shall perform limit checking only on good quality data.		08772

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-01235		unverified	The FOS shall allow for adjusting the limit values of any boundary limit group for parameters having multiple boundary limit groups defined.	The telemetry data base values are restored when a new limit group is loaded or upon initialization.	008772
F-TLM-01310		unverified	The FOS shall evaluate derived parameters based on specified, predefined equations.	The derived parameter algorithms will be obtained from telemetry data base definitions.	08772
F-TLM-01315		unverified	The FOS shall use analog telemetry values, discrete telemetry values, constants, or other derived parameters to build new derived parameters.	The FOS telemetry data base will limit the number of input parameters for each derived parameter equation to six (6).The maximum number of derived parameters that may be processed at any given time will be determined for each mission.	08772

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-01320		unverified	The FOS shall be capable of using either decoded or converted values when evaluating derived telemetry parameters.	The Telemetry parameter values used as inputs to the derived parameter equation will be specified as either decoded or converted via the telemetry database.	08772
F-TLM-01325		unverified	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 ACOS Arccosine TAN Tangent ATAN Arctangent	The arithmetic operators are used to generate numerical results.	08772
F-TLM-01330		unverified	The FOS shall support the use of basic logical operators when building the derived parameters. The allowable	The logical operators are used to generate Boolean results, where a zero result represents false and all	08772

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			<p>logical operators shall include: = Equal other values represent true.</p> <p>to != Not equal to < Less than <=</p> <p>Less than or equal to > Greater than</p> <p>>= Greater than or equal to AND</p> <p>Logical AND OR Logical OR NOT</p> <p>Logical NOT</p>		
	F-TLM-01335	unverified	<p>The FOS shall mark a derived parameter as having questionable quality whenever any of the input parameters are marked as questionable.</p>		08772
	F-TLM-01345	unverified	<p>The FOS shall flag the derived parameter as static if any of the input parameters are static.</p>	<p>The FOS will not perform an algorithm when a parameter marked static is required for use in that algorithm, and the previous result shall be marked static.</p>	08772

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-01350		unverified	The FOS shall evaluate derived parameters in the specified order.	The order is based upon the specified re-evaluation (update) rates of the parameters and how the derived parameters were organized within the data base.	08772
F-TLM-01355		unverified	The FOS shall allow individual derived parameter evaluations to be enabled or disabled.		08772
F-TLM-01360		unverified	The FOS shall provide the capability to adjust individual derived parameter re-evaluation rates based on a user specified interval.	Derived parameter processing will be invoked after the update interval for that parameter has been modified, and every Nth time interval thereafter, N being the interval in spacecraft clock seconds.	08772
F-TLM-01365		unverified	The FOS shall support a derived	The evaluation interval will be based on	08772
			C-568		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			parameter evaluation interval of no less than one (1) spacecraft clock second.	the spacecraft clock time extracted from the telemetry packets. This provides for the consistent evaluation of derived parameters whether they are going processed at the real-time or some alternate replay rate.	
F-TLM-01415		unverified	The FOS shall make available the status for every predefined telemetry parameter.		08772
F-TLM-01425		unverified	The FOS shall make available, on a per-parameter basis, the following: <ul style="list-style-type: none"> a. last decommutated raw value b. associated converted value (if applicable) c. limit range values (if applicable) d. limit sense interval 		08772

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			<p>e. no data available indicator</p> <p>f. static/active indicator</p> <p>g. quality status indicator</p> <p>h. out-of-limits low indicators (if applicable)</p> <p>i. out-of-limits high indicators (if applicable)</p> <p>j. delta limit error indicator</p> <p>k. conversion error indicator</p>		
	F-TLM-11320	unverified	The FOS shall provide the capability to process a maximum of fifty (50) AM-1 derived parameters at a given time.		08772
<u>TLM-2070B</u>					
	F-FUI-07200	passed	The FOS shall provide alphanumeric displays that are capable of displaying		0
			C-570		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			<p>the following:</p> <ul style="list-style-type: none">a. the descriptor or mnemonic of a telemetry parameterb. the current state of a discrete telemetry parameterc. the current value of an analog telemetry parameterd. the current state of an analog telemetry parameter based on a range of predefined valuese. whether data associated with a telemetry parameter is suspect (bad quality)f. whether data associated with a telemetry parameter is staticg. whether an analog telemetry value has violated a range limith. whether an analog telemetry value		

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			<ul style="list-style-type: none"> has violated a delta limit i. descriptive labels j. static descriptive text k. horizontal and vertical separator lines l. Universal Time Coordinated (UTC)m. spacecraft time n. current orbit number o. data source (real-time, replay, simulated) p. current major/minor frame counts q. current telemetry format r. current telemetry rate s. spacecraft Id 		
F-FUI-07330		passed	<p>The FOS shall have the capability to capture all occurrences of a parameter between screen updates, and then</p>		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			display the captured data at the next update.		
F-FUI-07425		passed	The FOS shall provide the user with the capability to capture all occurrences of a telemetry value between screen updates, and then display the captured data at the next screen update.		0
F-RMS-00110		passed	The EOC shall provide a single EOC operator access to multiple data streams.	The number of streams a single operator is allowed to access at one time will not be restricted by the RMS software.	0
F-TLM-00310		passed	The FOS shall base the quality of a packet on the quality indicator received in the EDU header.	EDOS discards packets containing errors which are not correctable via the Reed-Solomon error detection and correction algorithm. The FOS will	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				process all packets which are	
	F-TLM-00315	passed	The FOS shall mark all parameters decommuted from a packet containing an error as having questionable quality.	The FOS performs derived parameter calculations and marks the result as having questionable quality if a data point with questionable quality is required for use in calculating the derived parameter.	0
<u>TLM-2080B</u>					
	F-FUI-07200	passed	The FOS shall provide alphanumeric displays that are capable of displaying the following: a. the descriptor or mnemonic of a telemetry parameter b. the current state of a discrete telemetry parameter c. the current value of an analog		

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			telemetry parameter		
			d. the current state of an analog		
			telemetry parameter based on a range		
			of predefined values		
			e. whether data associated with a		
			telemetry parameter is suspect (bad		
			quality)		
			f. whether data associated with a		
			telemetry parameter is static		
			g. whether an analog telemetry value		
			has violated a range limit		
			h. whether an analog telemetry value		
			has violated a delta limit		
			i. descriptive labels		
			j. static descriptive text		
			k. horizontal and vertical separator		
			lines		
			l. Universal Time Coordinated (UTC)m.		

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			spacecraft time n. current orbit number o. data source (real-time, replay, simulated) p. current major/minor frame counts q. current telemetry format r. current telemetry rate s. spacecraft Id		
F-TLM-01010		passed	The FOS shall perform high/low limit checking on parameters when limits have been defined.		0
F-TLM-01015		passed	The FOS shall have the capability to limit check parameters for red high, red low, yellow high, and yellow low boundary violations.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-01020		failed	The FOS shall allow for the selection of a single boundary limit group from a limit set containing up to four groups of boundary limits per parameter.	Each boundary limit group is capable of accommodating red and yellow high/low limit values.	08748
F-TLM-01025		failed	The FOS shall provide the capability to select a boundary limit group based upon the value of an associated predefined discrete telemetry parameter.	This capability permits a context switched boundary group selection. Up to sixteen (16) predefined switch ranges are available. The discrete may be either a decommutated or derived telemetry parameter.	08748
F-TLM-01030		failed	The FOS shall provide the capability for the user to select a predefined boundary limit group.		08748
F-TLM-01035		partially passed	The FOS shall use high and low limit values in raw or EU counts as	Limits for both decommutated and derived parameters are specified	09048

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			specified for decommutated and derived parameters when limits have been defined.	through the Project Data Base.	
F-TLM-01040		passed	The FOS shall limit check telemetry data against its associated limit values for every occurrence of the parameter.		0
F-TLM-01050		passed	The FOS shall perform limit checking only on good quality data.		0
F-TLM-01055		passed	The FOS shall mark each telemetry parameter indicating the current limit condition.	Each parameter will have flags indicating whether any limit violations have occurred. These flags include high/low (if applicable) and delta limit violations.	0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-01110		passed	The FOS shall notify the user when a parameter violates high/low limits.		0
F-TLM-01115		passed	The FOS shall notify the user when a parameter returns to within high/low limits.		0
F-TLM-01125		passed	The FOS limit notification shall contain the current packet spacecraft time stamp, telemetry mnemonic, parameter value, limit condition, and assigned limit values.	Every notification (event) message is tagged with a ground time stamp. Additionally, each limit notification message will include the spacecraft time stamp within the message text field.	0
F-TLM-01130		passed	The FOS limit notification shall be reported when a telemetry point exceeds a limit, when the point comes		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			back in limits, and every Nth occurrence (based upon the limit sense interval).		
F-TLM-01135		passed	The FOS shall generate a notification without an alarm for limit violations in the yellow range.		0
F-TLM-01140		passed	The FOS shall generate a notification with an alarm for limit violations in the red range.	An alarm reflects the severity of the violation and may trigger an audible indicator, the display of high-lighted text, etc.	0
F-TLM-01145		failed	The FOS shall be capable of reporting limit violations based upon a predefined limit sense interval for each normal and derived parameter that has defined limits.	The limit sense interval modifies only the notification reporting rate and has no affect on limit checking and indicator updates. The FOS will use the predefined limit interval values as the	08751

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
				initial default limit notification period.	
F-TLM-01150		failed	The FOS shall provide notification of any out-of-limits status every Nth sample occurrence, where N is defined as the limit sense interval for that parameter.		08751
F-TLM-01155		passed	The FOS shall provide the capability of disabling (suppressing) or enabling notification messages concerning limits for all parameters.	Although the display of notification messages may be suppressed, the messages will continue to be stored or logged. The FOS default limit condition reporting mode will be 'enabled'.	0
F-TLM-01160		partially passed	The FOS shall provide the capability of disabling or enabling notification messages concerning limits at the parameter level.		08750

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-01165		passed	The FOS shall provide the capability of disabling or enabling notification messages concerning limits at the spacecraft subsystem/instrument level.		0
F-TLM-01210		failed	The FOS shall provide the user the capability of changing limit values, delta limit values, and limit sense intervals.	Changing of the limit values via user directive is temporary. Permanent alterations may be accommodated through changes in the limit values resident within the Project Data Base. Whenever a new set of limits is loaded, the data base defined limits and sense intervals will be restored.	08746
F-TLM-01220		passed	The FOS shall allow adjustment of limit values only for those telemetry parameters that have predefined limit values.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
	F-TLM-01225	failed	The FOS shall be able to modify boundary limit values, delta limit values, and limit sense intervals at the parameter level.		08751
	F-TLM-01230	failed	The FOS shall provide the capability to specify limit adjustments in raw counts or engineering units.		08746
<u>TLM-2090B</u>					
	F-FUI-07200	passed	The FOS shall provide alphanumeric displays that are capable of displaying the following: a. the descriptor or mnemonic of a telemetry parameter b. the current state of a discrete telemetry parameter		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			c. the current value of an analog telemetry parameter		
			d. the current state of an analog telemetry parameter based on a range of predefined values		
			e. whether data associated with a telemetry parameter is suspect (bad quality)		
			f. whether data associated with a telemetry parameter is static		
			g. whether an analog telemetry value has violated a range limit		
			h. whether an analog telemetry value has violated a delta limit		
			i. descriptive labels		
			j. static descriptive text		
			k. horizontal and vertical separator lines		

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			I. Universal Time Coordinated (UTC)m. spacecraft time n. current orbit number o. data source (real-time, replay, simulated) p. current major/minor frame counts q. current telemetry format r. current telemetry rate s. spacecraft Id		
F-TLM-01045		passed	The FOS shall compare the change of successive raw parameter values with the predefined delta value.	Delta limits are specified through the Project Data Base.	0
F-TLM-01050		passed	The FOS shall perform limit checking only on good quality data.		0

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
F-TLM-01055		partially passed	The FOS shall mark each telemetry parameter indicating the current limit condition.	Each parameter will have flags indicating whether any limit violations have occurred. These flags include high/low (if applicable) and delta limit violations.	05949
F-TLM-01120		passed	The FOS shall notify the user when a parameter incurs a delta limit violation.		0
F-TLM-01130		failed	The FOS limit notification shall be reported when a telemetry point exceeds a limit, when the point comes back in limits, and every Nth occurrence (based upon the limit sense interval).		08681
F-TLM-01145		failed	The FOS shall be capable of reporting	The limit sense interval modifies only	08681
			C-586		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			limit violations based upon a predefined limit sense interval for each normal and derived parameter that has defined limits.	the notification reporting rate and has no affect on limit checking and indicator updates. The FOS will use the predefined limit interval values as the initial default limit notification period.	
F-TLM-01150		failed	The FOS shall provide notification of any out-of-limits status every Nth sample occurrence, where N is defined as the limit sense interval for that parameter.		08681
F-TLM-01165		passed	The FOS shall provide the capability of disabling or enabling notification messages concerning limits at the spacecraft subsystem/instrument level.		0
F-TLM-01225		partially passed	The FOS shall be able to modify		08341
			C-587		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

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			boundary limit values, delta limit values, and limit sense intervals at the parameter level.		
<u><i>TLM-2100B</i></u>	F-FUI-07200	unverified	<p>The FOS shall provide alphanumeric displays that are capable of displaying the following:</p> <ul style="list-style-type: none"> a. the descriptor or mnemonic of a telemetry parameter b. the current state of a discrete telemetry parameter c. the current value of an analog telemetry parameter d. the current state of an analog telemetry parameter based on a range of predefined values e. whether data associated with a telemetry parameter is suspect (bad 		0
			C-588		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

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			quality)		
			f. whether data associated with a		
			telemetry parameter is static		
			g. whether an analog telemetry value		
			has violated a range limit		
			h. whether an analog telemetry value		
			has violated a delta limit		
			i. descriptive labels		
			j. static descriptive text		
			k. horizontal and vertical separator		
			lines		
			l. Universal Time Coordinated (UTC)m.		
			spacecraft time		
			n. current orbit number		
			o. data source (real-time, replay,		
			simulated)		
			p. current major/minor frame counts		
			q. current telemetry format		

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			<ul style="list-style-type: none"> r. current telemetry rate s. spacecraft Id 		
	F-FUI-07600	unverified	<p>The FOS shall display the following PDB information about discrete and analog telemetry parameters:</p> <ul style="list-style-type: none"> a. the descriptor b. the mnemonic c. the valid states of a discrete telemetry value d. the conversion polynomial of an analog telemetry value e. the delta limits for a telemetry value f. the high and low, red and yellow limits for a telemetry value g. the cycles from which the telemetry value is extracted h. the telemetry values on which a 		0

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			<p>derived telemetry value is based</p> <p>i. parameter Id</p> <p>j. spacecraft Id</p>		
F-FUI-07605		unverified	<p>The FOS shall provide the user with</p> <p>the capability to display up to 50</p> <p>telemetry parameters and their</p> <p>associated data in an Info window.</p>		0
F-FUI-07700		unverified	<p>The FOS shall provide a status</p> <p>window that displays:</p> <p>a. Universal Time Coordinated (UTC)</p> <p>b. spacecraft time</p> <p>c. count down clock</p> <p>d. current orbit number</p> <p>e. data source (real-time, replay, simulated)</p> <p>f. cycle count</p>		0
			C-591		324-CD-005-001/ 412-CD-002-001

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			<p>g. current telemetry format</p> <p>h. current telemetry rate</p> <p>i. spacecraft identifier</p>		
	F-FUI-07710	unverified	The FOS shall provide a count down clock. The count down clock will first count down to the acquisition of signal time (AOS). After AOS, it will count down to the loss of signal time (LOS).		0
	F-FUI-17600	unverified	The FOS shall display data base information about the master and major cycles that the telemetry value is extracted from.		0
	F-TLM-01215	unverified	The FOS shall provide the user the capability to access current limit values and delta limit values in both raw and	Where conversions from engineering units to raw results in a non-unique value, the value will be disallowed and	0
			C-592		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

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<u>TLM-2150B</u>			engineering units.	discarded.	
	F-TLM-00445	passed	The FOS shall generate a notification message whenever a missing packet is detected.	Each missing packet notification message will contain the detection time (UTC) and the total number of packets recognized as being missed.	0
	F-TLM-00620	passed	The FOS shall mark all parameters as static upon data dropout (i.e., no telemetry has been received for 5 seconds).	The default dropout detection period will be data base defined.	0
F-TLM-00625	passed	The FOS shall mark a parameter static if the given parameter has not been updated for more than a spacecraft major frame.	For example, the AM-1 major frame (master cycle) is repeated approximately every 64 seconds. The FOS will discontinue further parameter processing (e.g., limit checking) when the parameter has been marked static.	0	

FOS Requirement Status Matrix

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	F-TLM-10445	passed	The FOS shall generate a notification message whenever a missing AM-1 major cycle is detected.	Each missing major cycle notification message will contain the detection time (UTC) and the total number of major cycles recognized as being missed.	0
<u>TLM-2160B</u>	F-DMS-00710	passed	The EOC shall archive all telemetry data.		0
	F-DMS-00720	passed	The EOC shall maintain the telemetry data on-line for a minimum of 7 days.		0
	F-DMS-00730	passed	The EOC shall archive telemetry in chronological order.		0

FOS Requirement Status Matrix

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F-DMS-00810		passed	The EOC shall archive all ground-telemetry data.		0
F-DMS-00820		passed	The EOC shall maintain the ground-telemetry data on-line for a minimum of 7 days.		0
F-DMS-00830		passed	The EOC shall archive ground-telemetry in chronological		0
F-TLM-00115		passed	The EOC shall be capable of receiving EOS spacecraft simulator telemetry.	The spacecraft simulator data may originate at the spacecraft contractor facility, spacecraft software development facility, or EOC.	0

FOS Requirement Status Matrix

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F-TLM-00120		passed	The EOC shall be capable of receiving historical EOS spacecraft and instrument telemetry.	Historical telemetry data is nominally stored in the EOC short term archive for seven (7) days. Data older than seven (7) days can be retrieved from the GSFC DAAC.	0
F-TLM-01510		passed	The EOC shall store telemetry data as received from EDOS.	Telemetry data is received from EDOS in the form of EDUs containing spacecraft and instrument CCSDS telemetry packets.	0
F-TLM-01545		passed	The EOC shall provide the capability to enable and disable the storage of housekeeping and instrument engineering telemetry.		0
F-TLM-11515		passed	The EOC shall be capable of receiving and storing AM-1 real-time housekeeping telemetry at rates up to		0

FOS Requirement Status Matrix

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<u>TLM-2170B</u>			16 Kbps.		
	F-DMS-00610	passed	The EOC shall provide for operational use of the telemetry PDB definitions.		0
	F-FOS-00310	passed	The EOC shall receive simulated spacecraft and instrument telemetry from the EOS spacecraft simulators.	Reference the Interface Control Document between the EOC and Spacecraft Simulator for specifics pertaining to this interface.	0
	F-FOS-00350	passed	The EOC shall receive telemetry data from EDOS, including real-time and rate-buffered housekeeping and engineering data from EOS instruments and spacecraft.	Reference the Interface Control Document between the EOC and EDOS for specifics pertaining to this interface.	0
F-TLM-10125	passed	The EOC shall be capable of receiving	For example, the EOC will be able to	0	

FOS Requirement Status Matrix

<u>Test Case ID</u>	<u>Level 4</u>	<u>Status</u>	<u>Text</u>	<u>Clarification</u>	<u>NCR ID</u>
			AM-1 housekeeping and AM-1 diagnostic telemetry data from both the I-channel and Q-channel simultaneously.	accept telemetry with the I and Q channels in the following configurations: 2 - 16 kbps housekeeping or 1 - 16 kbps housekeeping and 1 - 16 kbps diagnostic	
	F-TLM-10130	passed	The EOC shall be capable of receiving the 1 kbps AM-1 health and safety telemetry data from both the TDRSS S-band and launch vehicle simultaneously.	This requirement assumes that AM-1 provides the capability of differentiating between the two health and safety streams.	0
<u>TLM-2190B</u>					
	F-DMS-00780	passed	The FOS shall provide the capability to replay archived telemetry at user selectable rates.		0

FOS Requirement Status Matrix

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F-FUI-02300		passed	The FOS shall provide the user the capability to select a time range for the replay data to play, including: a. start time b. stop time c. begin time	Replay data includes telemetry, NCC UPD Messages, and EDOS CODA Reports.	0
F-FUI-02305		passed	The FOS shall provide the user the capability to select the replay rate.		0
F-FUI-02310		passed	The FOS shall provide the means of stepping forward through the replay data by specifying the amount of time in seconds.	Replay data includes telemetry, NCC UPD Messages, and EDOS CODA Reports.	0
F-FUI-02315		passed	The FOS shall allow the user to pause the replay data sequence.	Replay data includes telemetry, NCC UPD Messages, and EDOS CODA	0

FOS Requirement Status Matrix

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				Reports.	
F-FUI-02320		passed	The FOS shall allow the user to resume the paused replay data sequence.	Replay data includes telemetry, NCC UPD Messages, and EDOS CODA Reports.	0
F-FUI-02325		passed	The FOS shall provide the user the capability to reset the begin time when the replay is in pause mode.		0
F-FUI-02330		partially passed	The FOS shall provide a visual indication of the location of the replay data. This display will include: <ul style="list-style-type: none"> a. start time b. stop time c. position of current time 		08682

FOS Requirement Status Matrix

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F-FUI-02335		passed	The FOS shall provide the user a reset capability that will reset the replay time to the last established begin time.		0
F-FUI-07330		passed	The FOS shall have the capability to capture all occurrences of a parameter between screen updates, and then display the captured data at the next update.		0
F-FUI-07425		passed	The FOS shall provide the user with the capability to capture all occurrences of a telemetry value between screen updates, and then display the captured data at the next screen update.		0
F-FUI-08100		passed	The FOS shall provide a user the	A resource service request will	0
			C-601		324-CD-005-001/ 412-CD-002-001

FOS Requirement Status Matrix

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			capability to submit a resource service request.	contain the parameters needed by the Resource Management Subsystem to establish a logical string. These parameters include: _a. spacecraft Id _b. data base Id _c. service type (real-time, replay, simulation) _d. mode (operational, training, test)	
F-FUI-12310		passed	The FOS shall allow a user to select a replay rate from 1 kilobit per second up to 150 kilobits per second.		0
F-RMS-00035		passed	The EOC shall allow EOC operators to specify a version of the project data base to use in processing data.	For real-time data, the default will be the current project data base, and for historical data the default will be the project data base from the	0

FOS Requirement Status Matrix

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				corresponding timeframe.	
F-RMS-00080		passed	The EOC shall provide an EOC operator access to replay data.	Replay data consists of both real-time and spacecraft recorder data currently archived in the ECS.	0
F-TLM-01610		passed	The FOS shall replay telemetry data based upon a user specified time period.		0
F-TLM-01625		passed	The FOS shall process all telemetry packets for the requested period, during the replay operation.		0
F-TLM-01630		passed	The FOS shall be capable of processing stored housekeeping and engineering telemetry for analysis at	This requirement is derived from the fact that the FOS must be able to analyze twenty-four (24) hours of	0
			C-603		324-CD-005-001/ 412-CD-002-001

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			twelve (12) times the real-time rate.	stored telemetry data within two (2) hours. This capability is used for off-line batch processing and when the immediate display of information is not necessary or desired (i.e. gathering statistics on a particular parameter over several weeks of stored telemetry data).	
F-TLM-01635		passed	The FOS shall be capable of processing stored housekeeping and engineering telemetry for display at rates up 150 Kbps.	This requirement permits the rapid replay and display of stored telemetry, and may be useful during contact simulations.	0
F-TLM-01640		passed	The FOS shall be able to replay and process the telemetry data at the real-time or at a user specified rate.		0