Telemetry Processing and Logging Confidence Test - EOC1

Background Information:

The Telemetry Processing Service provides the capabilities needed to ingest, decommutate, engineering unit (EU) convert, and limit check housekeeping (H/K), health and safety (H&S), and diagnostic/memory dump telemetry from the EOS spacecraft (S/C) subsystems and on-board instruments. The processing of diagnostic/memory dump telemetry is covered in the EOC2, Command Processing Confidence Test.

The telemetry data will be downlinked through a TDRSS S-band Single Access (SSA), S-band Multiple Access (MA) or Ku-band Single Access (KSA) service with a dual channel interface. During normal operations, the H/K data is recorded on the EOS AM-1 solid state recorders (SSRs) and played back during a TDRSS KSA return service at 150 Mbps (75 Mbps/75 Mbps). Recorded H/K telemetry is also played back at 256 kps using the SSA service for anomaly investigations. The real-time H/K (16 kbps) and H&S (1 kbps), and diagnostic/dump (1 kbps, 16 kbps) telemetry will be downlinked through a SSA or MA service. TDRSS ground terminals (WSGT/STGT) forward the telemetry data which is in Consultative Committee for Space Data Systems (CCSDS) packets to EDOS in Channel Access Data Unit (CADU) format via EBnet. Low-rate telemetry is forwarded directly to the EDOS Level Zero Processing Facility (LZPF). High-rate telemetry is first sent to the EDOS Ground Station Interface Facilities (GSIF) and then transferred to the LZPF at reduced rates.

EDOS receives telemetry in CADU format. It extracts the CCSDS packets and Command Link Control Words (CLCWs). The CCSDS telemetry packets are processed and converted to EDOS Data Units (EDUs) based on the Application Process Identifier (APID), the Virtual Channel Identifier (VCID), and the replay flag. An EDU consists of an EDOS Service Header (ESH) and a Path Service Data Unit (SDU). The ESH contains the quality and accounting data. The Path SDU is simply the Version-1 CCSDS packet. The real-time Path Service EDUs are sent to the EOC via EBnet using UDP, to specific multicast IP addresses (operational and test) and UDP ports per mission as defined in the applicable Operations Agreement (OA). The recorded EDUs are transferred in rate-buffered data files via EBnet using KFTP. The KFTP interface details such as EOC User IDs, IP addresses, host names, and file directories are defined in the applicable OA. Customer Operations Data Accounting (CODA) Report (which includes a Ground Message Header) is also sent to the EOC via EBnet using UDP. The CODA Report describes the operational activities of EDOS per S/C, this includes summaries of quality and accounting information (e.g., status of EDOS return and forward links, and VCDU service; and SCS statistics), but no information about Operations Management data is provided.

Upon receiving real-time telemetry, the Telemetry Processing Service decommutates the contents of the packets, performing the necessary EU conversions and parameter derivations. Various forms of limit checking are performed on the telemetry parameters, including boundary limit checking on analog parameters, and delta limit checking

(examining the difference between successive parameter samples). For each parameter being checked for boundary limits, the Telemetry Processing Service uses one of several limit sets, in which each limit set consists of definition for one or more upper and lower boundaries for the parameter (e.g., red high/low and yellow high/low limit sets.) All parameters, along with associated limits, quality, and event information, are made available to the operator via the FOS User Interface Service.

Eventually, the telemetry data, and related event and configuration data are sent to the FOS DMS for temporary storage. The FOS DMS maintains the data files for a user configurable number of days, then the data is sent to the Science Data Processing Segment (SDPS) for permanent archival. The data remains at the FOS DMS for minimum of seven days, but the data may be removed after seven days if confirmation of successful storage is received from the SDPS Data Server. FOS DMS also provides access to the Operational Database (ODB).

Test Objectives:

The objectives of the test are to:

- Verify that EOC can ingest and process the following types of telemetry packets from the ETS, SSIM, or AM-1 S/C at the specified data rates:
    1. Real-time instrument and S/C bus H/K telemetry (16 kbps)
    2. Real-time instrument and S/C bus H&S telemetry (1 kbps)
    3. Command/Telemetry Interface Unit (CTIU) standby telemetry (1 kbps)
- Verify that the EOC can ingest and process real-time data (e.g., two 16 kbps data streams) sent simultaneously.
- Verify that all telemetry types can be decommutated and the results displayed in soft copy and hardcopy form.
- Verify proper EU conversion, limit and alarm check processing.
- Verify that when any critical telemetry parameter limit is exceeded, the violations are reported and any related alarm mechanisms respond properly.
- Verify proper checking of discrete state values of telemetry parameters.
- Verify that the EOC can store and retrieve telemetry data from the temporary (FOS DMS).

Test Configuration:

Hardware and software configurations at each ECS site are managed and tracked by the M&O organization at that site. The configuration that is tested against will be provided in the test report.

(See Exhibits EOC1-1.1, EOC1-1.2, and EOC1-1.3)

Participants and Support Requirements:

Participants:

FOT, ETS Operators, EBnet personnel, EDOS (M&O personnel),
I&T conductor

Communications:

Voice - SCAMA and CCL circuits **TBS-1**
Data - EBnet
IP addresses: **TBS-2**

Equipment and Software:

Servers: Real-time Server, Data Server, Multicast Server
Data Storage Unit (File Servers, RAID Units)
Printers: Laser, Line, Color
EOC Workstations
FOS Telemetry Subsystem
FOS User Interface Subsystem
FOS Data Management Subsystem
FOS Resource Management System

Test Tools:

1. **ETS MPS** (S/C simulation mode) - sends telemetry in CADU format to the EDOS. **ETS MPS** (EDOS simulation mode) - sends telemetry in EDU format to the EOC (Note: This mode will be used if the ETS LRS is not available.).
2. **ETS LRS** - simulates EDOS, serving as a functional EDOS interface between the EOC and the AM-1 S/C or an AM-1 S/C simulator.
3. **ETS HRS** - provides high-rate telemetry (150 Mbps) in CADU format to EDOS or to the ETS MPS via a H/K file.

Test Prerequisites:

Dynamic pages containing alphanumerics, tables, graphs, and "NODATA" and "STATIC" flag indicators (use the Display Builder); rooms (use the Room Builder); tables containing predetermined telemetry parameter values to be compared with resulting decommutated and EU converted values; and ETS scenario script files.

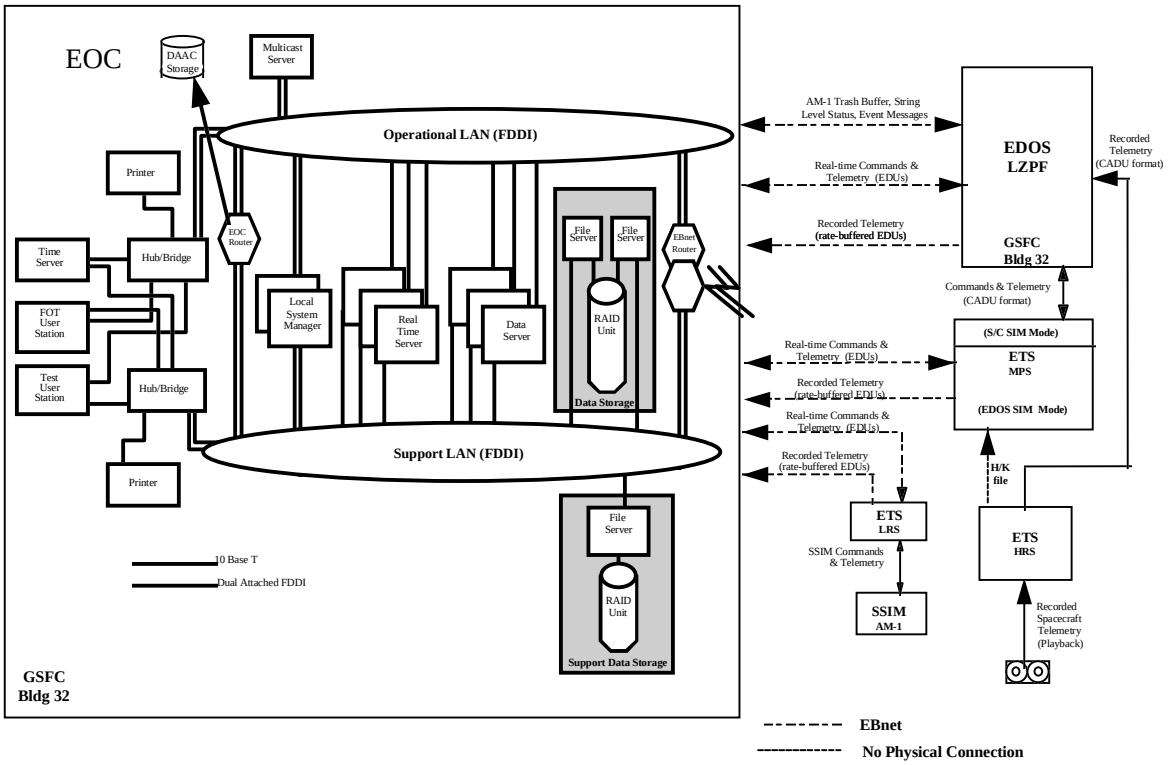

EXHIBIT EOC1-1.1: Telemetry Processing and Logging using ETS and SSIM

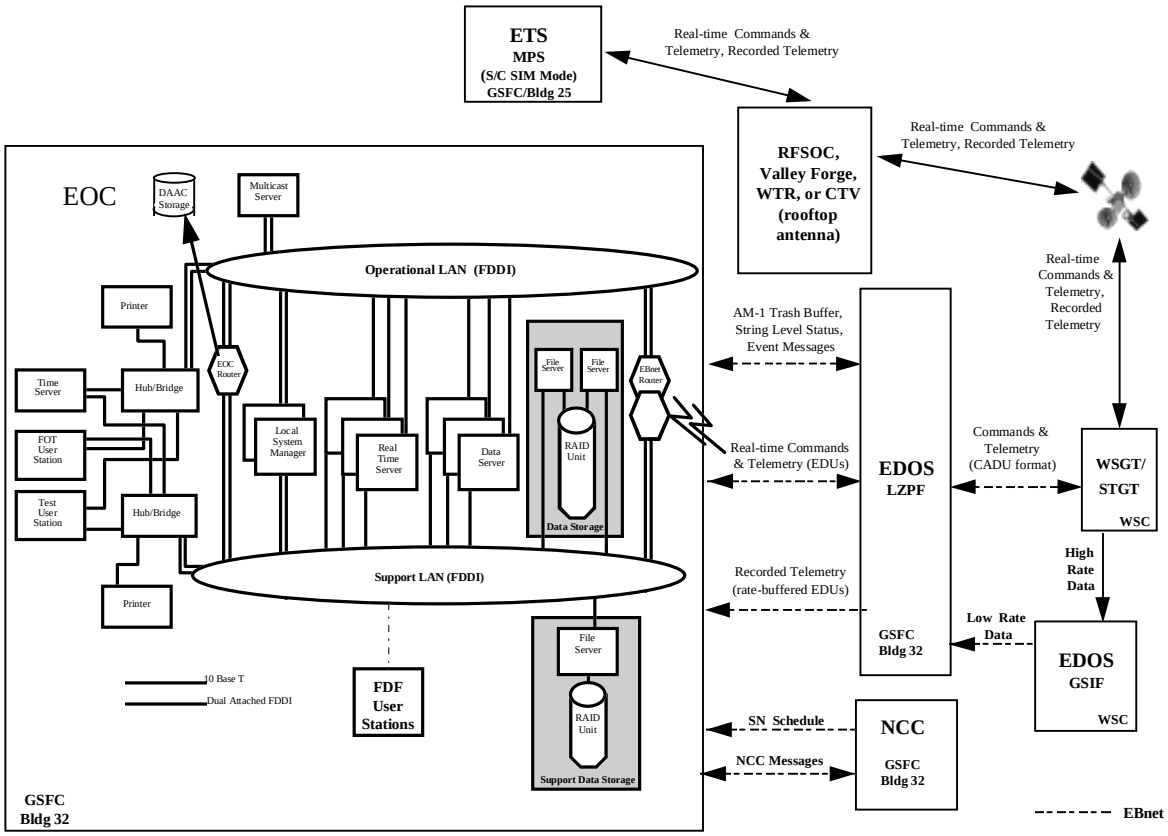

EXHIBIT EOC1-1.2: Telemetry Processing and Logging using RFSOC & ETS MPS

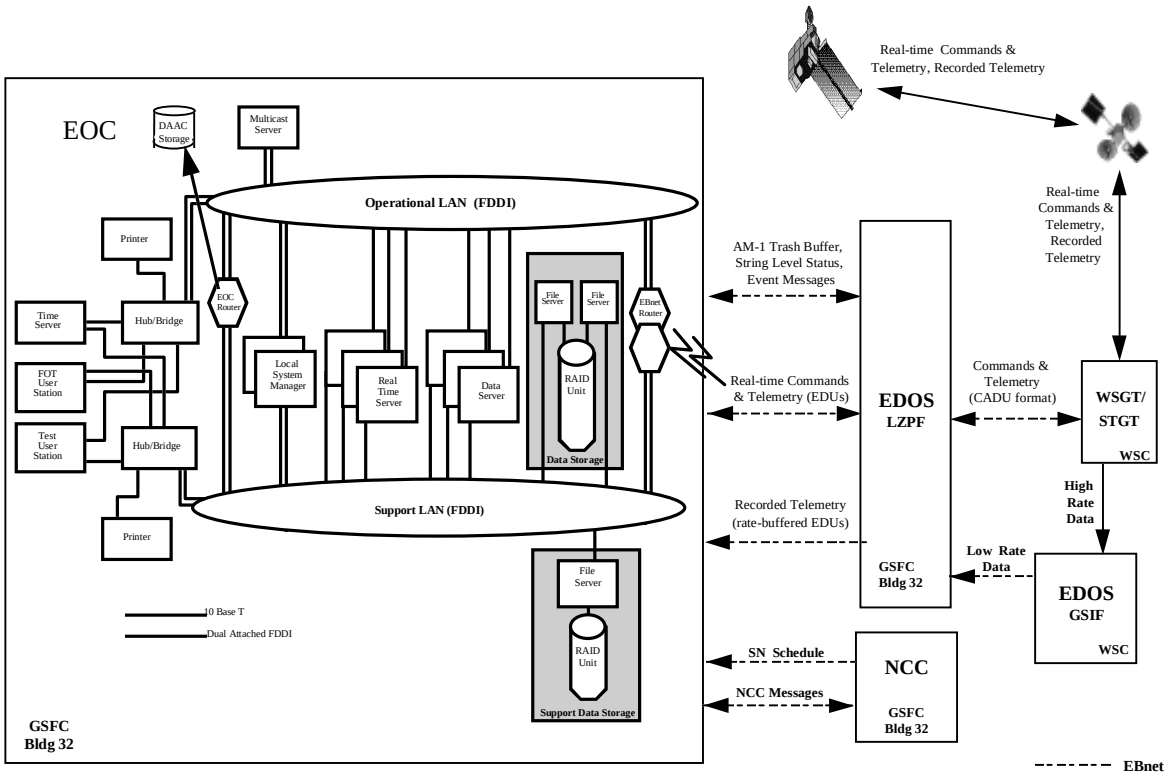

EXHIBIT EOC1-1.3: Telemetry Processing and Logging using TDRSS and AM-1 S/C

Test Data:

Will use the Telemetry Records in the PDB to assist in the definition of the telemetry parameter mnemonics associated with the required test data.

Description / Characteristics	Source	File/script name and physical location
AM-1 real-time data in CCSDS telemetry (TLM) packets in the form of Path Service EDUs (one of each TLM value bit size - 1, 8, 16, 32, 48; representative set of both discrete and analog parameters): • S/C bus and instrument H/K telemetry data (16 kbps, APID = 1, VCID = 1)	ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS	**rt_hk.scn**
AM-1 real-time data in CCSDS telemetry (TLM) packets in the form of Path Service EDUs (one of each TLM value bit size - 1, 8, 16, 32, 48; representative set of both discrete and analog parameters): • S/C bus and instrument H&S telemetry data (1 kbps, APID = 2, VCID = 2)	ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS	**hs_standby.scn**
CTIU standby telemetry in the form of EDUs (1 kbps [all telemetry sources except SSIM], APID = 5, VCID = 2) - one of each TLM value bit size - 1, 8, 16, 32, 48; representative	ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS	**hs_standby.scn**

Description / Characteristics	Source	File/script name and physical location
set.		
AM-1 real-time data in CCSDS telemetry (TLM) packets in the form of Path Service EDUs (one of each TLM value bit size - 1, 8, 16, 32, 48): • S/C bus and instrument H/K telemetry data (16 kbps, APID = 1, VCID = 1) with red & yellow high/low, and delta limit violations. • S/C bus H&S telemetry data (1 kbps, APID = 2, VCID = 2) with red & yellow high/low, and delta limit violations.	ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS	**eulimhk.scn** **eulimhs.scn** **deltalim.scn**
AM-1 real-time data in CCSDS telemetry packets in the form of Path Service EDUs (containing at a minimum: one of each telemetry sample type - current, voltage, temperature, power; one of each of the telemetry point source type - real or raw data, flight software generated data, pseudo or derived data, passive analog, and active analog; one of each possible APID/VCID combination; one of each EU conversion type - line segment [up to 15 line segments - 1, 2, 5, 8, 11, 14, 15]; polynomial [1st, 2nd, 3rd, 4th, 5th, 6th, and 7th order]); exponential.	ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS	**eulimhk.scn** **eulimhs.scn**
Dynamically modeled telemetry parameters.	ETS	**model.scn**

EOC1.1 Real-Time Telemetry Processing and Logging

This test verifies that the EOC can ingest and decommutate real-time S/C bus and instrument health and safety EDUs, and display the resulting parameter mnemonics and values.

- EOC is configured for real-time telemetry (R/T) processing. R/T logical strings are created on R/T server(s). One of each type of connection (mirrored and tailored) is established. A set of dynamic pages with previously assigned data sources is invoked.
- EDOS or the ETS LRS receives telemetry in Channel Access Data Unit (CADU) format from the ETS MPS (S/C simulator mode) or the AM-1 S/C. The ETS LRS can also receive telemetry from the SSIM or any AM-1 S/C simulator. EDOS or the ETS LRS extracts the Consultative Committee for Space Data Systems (CCSDS) packets and Command Link Control Words (CLCWs). The CCSDS telemetry packets are processed and converted to EDOS Data Units (EDUs) based on the Application Process Identifier (APID) and the Virtual Channel Identifier (VCID), and the replay flag. Real-time EDUs are transmitted to the EOC via EBnet using UDP, in real-time.

- EOC receives the telemetry in EDUs from EDOS or an EDOS simulator (ETS LRS or ETS MPS) and extracts the telemetry data. It decommutates the data based on the APID and telemetry decommutation information in the ODB. EOC limit checks (high, low, delta) the telemetry parameters of the R/T data and produces a Parameter Out-of-Limits report. During decommutation, a selected set of context dependent, analog, and discrete parameters are exercised. Derived telemetry parameters are generated and exercised as well.
- The selected analog, discrete, and derived decommutated parameter values with their corresponding mnemonics are shown in telemetry display window(s). Every event that occurred during the decommutation process is shown in an event display window. A selected set of displays are printed out for review and verification of resulting telemetry values.
- Telemetry processing reports are generated. The reports are displayed on-line and printed out for review off-line.
- The R/T telemetry data is forwarded to a hourly file. This hourly file will continue to receive data for a period of one hour, then the hourly file will be archived at the FOS DMS along with related event and configuration data for temporary storage. At a user-specified time or per the request of a user, the data is forwarded to the SDPS for permanent archival. The data is maintained at the FOS DMS for a minimum of seven days.

Verified Requirements:
EDOS-4.1.1.3#A
EDOS-4.6.1.2#A
EOC-0040#A
EOC-5010#A
EOC-5015#A
EOC-5080#A
EOC-6060#A
EOC-6070#A

Procedures:

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.001	EOC	Initialize the FOS EOC hardware. Refer to the FOS Operations Tool Manual for the ECS Project, Section 4.1.1, Hardware Initialization.	FOS EOC hardware: DEC RAID (no name), RAID Server (foseoc2), Data Server (foseoc7), Real-Time Server (foseoc6), and EOC User Stations (HP and Sun) are up and running.	RAID contains the users' home directories and the operational FOS software in /fos, which needs to be mounted by the other machines.The FOS EOC hardware is already initialized so this step is not performed - step skipped.		4/17/97
1.002	ETS (MPS)	Initialize the ETS MPS hardware (Power On).	ETS MPS hardware is up and running.	The ETS MPS hardware is already initialized so this step is not performed - step skipped.		4/17/97
1.003	EDOS	Initialize the EDOS hardware.	EDOS hardware is up and running.			4/17/97
1.004	ETS(MPS)X-terminal	If the ets2 login window is not up, restart the server and select ets2.Login to the ETS X-terminal (UNIX OS). account: si_t <Return> password: [password] <Return>Bring-up the MPS Graphical User Interface (GUI).Type ets_mps <Return>	The MPS Menu Controller appears with MPS and OMDSIM buttons.	Home directory: /usr/si_t/MPS executable directory: /usr/si_t/release/bin		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.005	ETS (MPS)X-terminal	Select MPS Exec from the MPS Menu Controller Window.	The MPS main window appears			4/17/97
1.006	ETS(MPS PDOS terminal	Reset the MVME177 card and bring-up the MPS software.Press the reset button for the MVME177 card.Login to the ETS PDOS terminal.Change to the directory where the MPS startup script resides.Option 1: Type gotosi (alias cd 10:/si_t/release1)Option 2: Type cd /ets/devType RUNACPT.	The following message is shown at the bottom of the PDOS terminal: TY_main ... waiting for messageA MPS ready message is shown in the event log window of the MPS main window.	The MVME 177 card and the PDOS terminal are in the back room.Use Option 2.		4/17/97
1.007	ETS(MPS)X-terminal	Select S/C simulation mode for MPS.Select the Spacecraft radio button for Simulation Mode from the MPS main window.	The Spacecraft radio button is sensitized.			4/17/97
1.008	ETS(MPS)X-terminal	Select the PDB as the data source for the telemetry being generated by the MPS.Select the PDB radio button under Data Source from the MPS main window.	The PDB radio button is sensitized.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.009	ETS(MPS)X-terminal	Set and record the S/C and UTC times to the GMT time provided at the EOC.Select Set Time from the Control pull-down menu in MPS main window and enter the GMT time values or accept the GMT times provided by ETS.	The Spacecraft Time and UTC displays on the MPS main window are updated.	Use the following Unix command to help in defining GMT time: date -uTime Format: yy ddd hh mm ssThis step is optional.		4/17/97
1.010	EOC (Data & R/T Servers)	Start the Sybase servers on the Data Server and Real-Time Server.	Sybase server #1 has started on Data Server, "foseoc7". Sybase server #2 has started on Real-Time Server, "foseoc6".	The Sybase servers are already up and running so this step is not performed-step skipped.		4/17/97
1.011	EOC(User Station)	Login to an EOC User Station, "foseXoe" or "msseoc2". Enter ivvtest <Return> Enter [password] <Return>	The SparcStation console with the One room button is sensitized.	X is 5, 8, 9, or 10.		4/17/97
1.012	EOC(User Station)	Select room Two from the SparcStation console.	The Two room button is sensitized.			4/17/97
1.013	EOC(User Station)	In a X-terminal window:Type netscape & <Return>Check to see if any FOS process endpoints exist.Invoke the URL http://198.118.199.20/FosDbHome.htmlSelect	The NETSCAPE window appears.The FOS Database Access Page appears.A message is displayed which states that 0 endpoints are found.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Nameserver Database.Click on Clear Form.Click on Submit				
1.014	EOC(User Station)	Select room One from the SparcStation console.	The SparcStation console with the One room button is sensitized.			4/17/97
1.015	EOC(Data Server)	Start up the FOS software for the Data Server.In a X-terminal window, remotely login to the FOS Data Server, "foseoc7".Type rlogin foseoc7 <Return>Enter [password] <Return> at password prompt.Type ps -ef <Return>; look for FOS processes and delete them using the kill -9 [PID].Type test <Return> (alias for cd /fos/test/am1/scripts/setup) Type source A2_DataServerStartup <Return>	Fourteen FOS software processes are now running on the Data Server.The following messages are displayed: Successful installation of signal handler FqLqSigHand, and a repeating Waiting for activity.	The FOS software processes are the ODB and FOS subsystem processes.rlogin has a -l <username> option to specify the user or it defaults to the login account name.PID stands for process ID.Alias test will be used to change directory.		4/17/97
1.016	EOC(Real -Time Server)	Start up the FOS software for the Real-Time Server.In a X-terminal window, remotely login to the FOS	Thirty-four FOS software processes are now running on the Real-Time Server.R/T logical string	The FOS software processes are the ODB and FOS subsystem processes.rlogin has a -l		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Real-Time Server, "foseoc6".Type rlogin foseoc6 <Return>Enter [password] <Return> at password prompt.Type ps -ef <Return>; look for FOS processes and delete them using the kill -9 [PID].Type test <Return> (alias for cd /fos/test/am1/scripts/setup) Type source A2_RealTimeServerStartup <Return>	100 is created.The following messages are displayed: Creating a ptp coupler	<username> option to specify the user or it defaults to the login account name PID stands for process ID.Alias test will be used to change directory.		
1.017	EOC(User Station)	Select room Two from the SparcStation console.	The Two room button is sensitized.			4/17/97
1.018	EOC(User Station)	Check to see if 14 FOS process endpoints exist for the Data Server.Click on Back.Enter foseoc7 in the Entry Id field.Click on Submit.	A message is displayed which states that 14 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/17/97
1.019	EOC(User Station)	Check to see if 34 FOS process endpoints exist for the R/T Server.Click on Back.Enter foseoc6 in the Entry Id field.Click on Submit.	A message is displayed which states that 34 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.020	EOC(User Station)	Check to see if 0 FOS process endpoints exist for the User Station "foseXoe".Click on Back.Enter "foseXoe" in the Entry Id field.Click on Submit.Exit Netscape.	A message is displayed which states that 0 endpoints are found.Netscape window is no longer displayed.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/17/97
1.021	EOC(User Station)	Select room One from the SparcStation console.	The SparcStation console with the One room button is sensitized.			4/17/97
1.022	EOC(User Station)	Start up the FOS software for the User Station, "foseXoe".Login to the EOC User Station, "foseXoe" Enter ivvtest3 <Return> Enter [password] <Return>In a terminal window, type test <Return>(alias for cd /fos/test/am1/scripts/setup) Type source A2_UserStationStartup <Return>	The appropriate FOS software processes are now running on the EOC User Station.The following windows are displayed: Control Window , General Scheduler, EOS Timeline, Load Manager, Load Generator, BAP Definer, and Activity Definer.	The FOS software processes are the ODB and FOS subsystem processes.X is 5, 8, 9, or 10.		4/17/97
1.023	EOC (User Station)	Iconify the six Planning and Scheduling windows: General Scheduler, EOS Timeline, Load Manager, Load Generator, BAP	The Planning and Scheduling windows are now icons.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Definer, and Activity Definer				
1.024	EOC (User Station)	Bring up the Event Display Window via the Tools Button on the Control Window.Click on Tools.Select Event_Display.Click on OK.	The Event Display Window appears.	Make sure that Netscape is not up in any of the workstation rooms.		4/17/97
1.025	EOC (User Station)	Enable telemetry data archiving.Archiving is automatically enabled.	An event message stating that telemetry archiving is enabled. The Release A message that is displayed in the R/T Server startup window is myTlmArchiveFlag: 1.	Release A: Archiving is already enabled.Release B: The ECL directive ARCHIVE will control the archiving modes: ARCHIVE TLM =ENABLE <tlm TYPE>		4/17/97
1.026	EOC (User Station)	In a terminal window, invoke the script that generates the Test Configuration Report.Type config (alias cd /home/ivvtest3/config)Type tconfig (alias /home/ivvtest3/scripts/tconfig.scr)Type mv testconfig test#Yr_config_eoc1.<date>	A file named test#Yr_config_eoc1.<date>, which contains the "As Run" Configuration details, is in the /home/ivvtest3/config directory.	A directory ~/config has already been created. Aliases config and tconfig have already been added to the ivvtest3 .cshrc.# is 1 thru 10.Y is d or f.		4/17/97
1.027	~	Record the system	The "As Run"			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		configuration on the execution cover sheet.	Configuration details are recorded on the execution cover sheet.			
2.001	EOC(User Station)	Connect to this R/T logical string in mirrored mode.STRING CONNECT STRING=100 TLMTYPE=ALL CONFIG=MIRROR	A mirrored connection is established. An event message confirming that the connection to the logical string 100 was successful is displayed in the event display on the Control Window and in the Event Display Window.	100 is the <string ID> (e.g., STRING=100 or 1xx).Release A: Only mirrored connections to logical strings are supported.Release B: Both mirrored and tailored connections to logical strings will be supported.		4/17/97
2.002	EOC(User Station)	Request Ground Control privilege for the R/T logical string 100.TAKE GROUNDCONTROL STRING=100	Ground Control privilege for string 100 is obtained. An event message confirming that Ground Control privilege was granted is displayed in the event display on the Control Window and in the Event Display Window.	100 is the <string ID> (e.g., STRING=101 or 1xx).The Ground Control Privilege is granted to one EOC user per logical string for the purpose of modifying the ground configuration of the HW and SW resources within that logical string. These privileges are granted only to local EOC users (not IST) that are pre-authorized by the FOT to perform in these roles.		4/17/97
2.003	~	Verify that telemetry can be				4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		received simultaneously, on both the I & Q channels in the following combinations:two 16 kbps streams - H/K telemetrytwo 1 kbps streams - H&S and Standby telemetry				
2.004	~	Obtain the port numbers for Parameter Server I and Q channels for H/K, H&S, and Standby.				4/17/97
2.005	EOC(User Station)	Return to the user station with the remote Data and R/T Server windows and select room Two from the SparcStation console.In one of the X-terminal windows:Type netscape & <Return>Invoke the URL http://198.118.199.20/FosDbHome.html(select from Bookmarks)Select Nameserver Database.Click on Clear Form.Enter 100 in the String Id field.Enter "foseXoe" in the Host Name field.Click on Submit	Two X-terminal windows appear and the Two room button is sensitized.The NETSCAPE window appears.The FOS Database Access Page appears.A list of String 100 processes appear. The port number information for the Parameter Server I and Q channels is displayed for H/K, H&S, and Standby.	X is 5, 8, 9, or 10.Host Name is the User Station that you are working on.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.006	EOC(User Station)	Record the port numbers for Parameter Server I and Q channels for H/K, H&S, and Standby.Scan down the process list until you reach ParameterServer. The first entry is for the I channel and the second entry is for the Q channel. The very last line in the entry will contain the port number. Write down the first number before the colon. Take a snapshot of the Netscape display.	The port numbers are documented for future use.			4/17/97
2.007	~	Verify that two 16 kbps streams of H/K telemetry can be received simultaneously, on both the I & Q channels.				4/17/97
2.008	EOC(User Station)	Return to the original User Station (room One) where the User Station processes were invoked.	The UNIX screen is displaying an Event Display Window, a Control Window, and three Terminal windows.			4/17/97
2.009	EOC(User Station)	Use the psutil driver to view the Parameter Server on the H/K I and Q	Psutil configurations are complete. The psutil prompt ">" is awaiting	The port numbers are obtained from procedural step # 6.Pid stands for		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		channels for parameters with the Parameter Server pids: 1516, 1524, 1256, 1549, 1718, 2023, 3362, and 3477.In a new Terminal window, type the following:script ~/eoc1/testfr#/pshkI.log# test (alias for cd /fos/test/am1/scripts/setup) setenv SCRIPT UserStation source FosEnvVars cd ..psutil "foseXoe" <port # for the Parameter Server I channel> > c> 1> 1enter pid: 1516> 1enter pid: 1524> 1enter pid: 1256> 1enter pid: 1549> 1enter pid: 1718> 1enter pid: 2023> 1enter pid: 3362> 1enter pid: 3477> 3> fIn a new Terminal window, type the following:script ~/eoc1/testfr#/pshkQ.log# test (alias for cd /fos/test/am1/scripts/setup) setenv SCRIPT	input	parameter ID.'#' is 1, 2, 3, ... or 10.X is 5, 8, 9, or 10.		

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		UserStation source FosEnvVars cd ..psutil "foseXoe" <port # for the Parameter Server Q channel> > c> 1> 1enter pid: 1516> 1enter pid: 1524> 1enter pid: 1256> 1enter pid: 1549> 1enter pid: 1718> 1enter pid: 2023> 1enter pid: 3362> 1enter pid: 3477> 3> fKeep the psutil windows up to start the recording of telemetry data reception at a later time.				
2.010	EOC(User Station)	Capture the data being received at the EOC on the I channel.In a terminal window, type:tcpdump -w /tmp/dumphkI# port 20000Do not hit <Return>.	UNIX prompt awaiting user input.			4/17/97
2.011	EOC(User Station)	Capture the data being received at the EOC on the Q channel..In a terminal window, type:tcpdump -w /tmp/dumphkQ# port 20010Do not hit <Return>.	UNIX prompt awaiting user input.			4/17/97
2.012	EOC(User	The telemetry display called	The HEADERS2 telemetry	ECL directive PAGE opens		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	Station)	HEADERS2, which has pre-defined data sources, is invoked at the EOC user station.P HEADERS2	display appears. The previously selected ground parameters (packet header and ESH) appear on the display page.	page in the current room.		
2.013	EOC(User Station)	The R/T telemetry display called TLMDECOM3, which has pre-defined data sources, is invoked at the EOC user station.P TLMDECOM3	The TLMDECOM3 telemetry display appears. The previously selected parameters (H/K, H&S, and STANDBY) appear on the display page.	ECL directive PAGE opens page in the current room.TLMDECOM3raw will be used when the raw value display feature is fixed.		4/17/97
2.014	EOC(User Station)	Produce a screen snapshot.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')	Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/17/97
2.015	EDOS	Notify EDOS personnel so they can prepare for 16 kbps HK data transmission on the I and Q channels.	Receive response back from EDOS personnel that EDOS is configured and ready.			4/17/97
2.016	ETS(MPS)X-terminal	Configure the MPS to transmit S/C bus and instrument data (16 kbps) as CADUs.Select TLM	An event message is displayed in the MPS event log window that the telemetry configuration for	Make sure that a set of MPS configuration files are generated to reduce the steps required for selecting		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		from the Configure pull-down menu from the MPS main window.Select the following radio buttons: SN and Internal for Clock Source on both channels 1 and 2.Enter a value of 16000 into the Bit Rate field for Channel 1 and 2.Click on OK.	S/C Sim Mode has been set.	or entering values in MPS dialog boxes; then configurations can be selected.The clock source may be external.		
2.017	ETS (MPS)X-terminal	Set the telemetry packet configuration to H/K for channels 1 and 2.Select Packet Format from the Configure pull-down menu in the MPS main window. Select the HK radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	HK and R/S radio buttons are sensitized.An event message is displayed in the MPS event log window that the packet format configuration (S/C Sim Mode) has been set.	R/S stands for Reed Solomon encoding.		4/17/97
2.018	~	Send the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs to EDOS or the ETS LRS in real-time.				4/17/97
2.019	ETS(MPS)X-terminal	Start sending H/K telemetry to EDOS.Select Start TLM from the Control pull-down menu in	Telemetry is being received at EDOS and eventually the EOC.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		the MPS main window.Select Both from the Start TLM pull-down menu.				
2.020	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called rt_hk.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, rt_hk.scn, contains both analog and discrete parameters.Release B: The scenario script will include analog, discrete, derived, and context dependent parameters.		4/17/97
2.021	EOC(User Station)	Return to each of the psutil windows and type:> 2> 3Keep the psutil windows up to verify that H/K telmetery data is updated on the both the I and Q channels.	Continuous updates will be received for the parameters with the Parameter Server pids: 1516, 1524, 1256, 1549, 1718, 2023, 3362, and 3477.			4/17/97
2.022	EOC(User Station)	Return to the tcpdump windows and type:<Return>	Data is being captured in the dump files (dumphkI# and dumphkQ#) in the /tmp directory.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.023	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.	Status and event messages regarding the telemetry data reception, processing , and transmission to the EOC will be displayed.	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		4/17/97
2.024	EOC(User Station)	Look for telemetry value changes and produce screen snapshots when CDH_NR_SSR2_HKRECTR (counter) is equal to 1, 3, 5, 7, 9, 11, 13, 16.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The TLMDECOM3 telemetry display is being updated as it receives the telemetry sent by the MPS--telemetry parameter values are changing.No parameter values change when the data transmission stops and a Static Flag 'S' is placed next to each parameter field.Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Due to the ETS 16-Bit handling problem (SMOdr00200), the snapshot values of the counter correspond to the following displayed values: 256, 768, 1280, 1792, 2304, 2816, 3328, 4096.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.025	ETS(MPS)X-terminal	Stop sending H/K telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	Telemetry is no longer being received at EDOS or the EOC.			4/17/97
2.026	EOC(User Station)	Terminate tcpdump and scripting of psutil output.Type Ctrl -C in tcpdump windows.Type Ctrl-D in psutil scripting windows.	Messages are displayed that inform you of the termination of tcpdump for the HK channels and the psutil scripting.			4/17/97
2.027	EOC(User Station)	Move the HK dump files generated by tcpdump to the formal test directory and list the directory contents to verify the move.mv /tmp/dump* ~/eoc1/testfr#ll (alias ls -la)	The HK dump files are in the formal test directory listing.	#' is 1, 2, 3, ... or 10.		4/17/97
2.028	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values specified in the Table RT H/K. Use the tcpdump files	The values of the parameter mnemonics shown in the snapshots match the values in the Table RT H/K. The ESH and CCSDS packet header values in the			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		and the snapshots to verify the ESH and CCSDS packet header values.	tcpdump files and the snapshots also match the values in the Table RT H/K.			
2.029	~	Verify that two 1 kbps telemetry streams (H&S and Standby) telemetry can be received simultaneously, on both the I & Q channels, respectively.				4/17/97
2.030	EOC(User Station)	Use the psutil driver to view the Parameter Server on the H/S I and Q channels for parameters with the Parameter Server pids: 1516, 1524, 1256, 1549, and 2023.In a new Terminal window, type the following:script ~/eoc1/testfr#/pshsI.log# test (alias for cd /fos/test/am1/scripts/setup) setenv SCRIPT UserStation source FosEnvVars cd ..psutil "foseXoe" <port # for the Parameter Server I channel> > c> 1> 1enter	Psutil configurations are complete. The psutil prompt ">" is awaiting input	The port numbers are obtained from procedural step # 6.Pid stands for parameter ID.#' is 1, 2, 3, ... or 10.X is 5, 8, 9, or 10.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		pid: 1516> 1enter pid: 1524> 1enter pid: 1256> 1enter pid: 1549> 1enter pid: 2023> 3> fIn a new Terminal window, type the following:script ~/eoc1/testfr#/pshsQ.log# test (alias for cd /fos/test/am1/scripts/setup) setenv SCRIPT UserStation source FosEnvVars cd ..psutil "foseXoe" <port # for the Parameter Server Q channel> > c> 1> 1enter pid: 1516> 1enter pid: 1524> 1enter pid: 1256> 1enter pid: 1549> 1enter pid: 2023> 3> fKeep the psutil windows up to start the recording of telemetry data reception at a later time.				
2.031	EOC(User Station)	Capture the data being received at the EOC on the I channel.In a terminal window, type:tcpdump -w /tmp/dumphsI# port	UNIX prompt awaiting user input.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		20001Do not hit <Return>.				
2.032	EOC(User Station)	Capture the data being received at the EOC on the Q channel.In a terminal window, type:tcpdump -w /tmp/dumphsQ# port 20011Do not hit <Return>.	UNIX prompt awaiting user input.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Packet Format from the Configure pull-down menu in the MPS main window. Select the H&S radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	message is displayed in the MPS event log window that the packet format configuration (S/C Sim Mode) has been set.			
2.036	~	Send the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs to EDOS or the ETS LRS in real-time.				4/17/97
2.037	ETS(MPS)X-terminal	Start sending H&S telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	Telemetry is being received at EDOS and eventually the EOC.			4/17/97
2.038	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called hs_standby.scn.Click on OK.Click on the Start push	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, hs_standby.scn, contains		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		button.	dialog as they are queued for execution.	both analog and discrete parameters.Release B: The scenario script will include analog, discrete, derived, and context dependent parameters.		
2.039	EOC(User Station)	Return to each of the psutil windows and type:> 2> 3Keep the psutil windows up to verify that H/S telmetery data is updated on the both the I and Q channels.	Continuous updates will be received for the parameters with the Parameter Server pids: 1516, 1524, 1256, 1549, and 2023..	Test will be modified in the future when Standby data and ETS support for Standby telemetry is provided:One possible combination would be H&S telemetry data on the I channel and Standby telemetry data on the Q channel.		4/17/97
2.040	EOC(User Station)	Return to the tcpdump windows and type:<Return>	Data is being captured in the dump files (dumphsI# and dumphsQ#) in the /tmp directory.			4/17/97
2.041	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific	Status and event messages regarding the telemetry data reception, processing , and transmission to the EOC will be displayed.	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		multicast IP addresses (operational) and UDP ports in real-time.				
2.042	EOC(User Station)	Look for telemetry value changes and produce screen snapshots when CDH_NR_SSR2_HKRECTR (counter) is equal to 1, 3, 5, 7. 9, 11, 13, 16.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The TLMDECOM3 telemetry display is being updated as it receives the telemetry sent by the MPS--telemetry parameter values are changing.No parameter values change when the data transmission stops and a Static Flag 'S' is placed next to each parameter field.Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Due to the ETS 16-Bit handling problem (SMOdr00200), the snapshot values of the counter correspond to the following displayed values: 256, 768, 1280, 1792, 2304, 2816, 3328, 4096.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/17/97
2.043	ETS(MPS)X-terminal	Stop sending H&S telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM	Telemetry is no longer being received at EDOS or the EOC.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		pull-down menu.				
2.044	EOC(User Station)	Terminate tcpdump and scripting of psutil output.Type Ctrl -C in tcpdump windows.Type Ctrl-D in psutil scripting windows.	Messages are displayed that inform you of the termination of tcpdump for the H&S channels and the psutil scripting.			4/17/97
2.045	EOC(User Station)	Move the H&S dump files generated by tcpdump to the formal test directory and list the directory contents to verify the move.mv /tmp/dump* ~/eoc1/testfr#ll (alias ls -la)	The H&S dump files are in the formal test directory listing.	#' is 1, 2, 3, ... or 10.		4/17/97
2.046	EOC(User Station)	Close the TLMDECOM3 telemetry page.	The TLMDECOM3 telemetry page disappears.			4/17/97
2.047	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values specified in the Tables RT H&S and RT Standby. Use the tcpdump files and the snapshots to verify the ESH and CCSDS packet header values.	The values of the parameter mnemonics shown in the snapshots match the values in the Tables RT H&S and RT Standby. The ESH and CCSDS packet header values in the tcpdump files and the snapshots also match the values in the Tables RT H&S and RT Standby.			4/17/97
2.048	EOC(User	The R/T telemetry display	The MODEL1a telemetry	This page will not be		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	Station)	called MODEL1a, which have pre-defined data sources, is invoked at the EOC user station.P MODEL1a	display appears. The previously selected parameters (H/K and H&S) appear on the graphical display page.	opened due to the problem noted in DR SMOdr00177 which results in a FOS system hang. This step is skipped and so are steps 49 through 59 with the exception of steps 50, 51, and 52.ECL directive PAGE opens page in the current room.Reopen HEADERS2 telemetry page if it is not already open.		
2.049	EOC(User Station)	Produce a screen snapshot.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	Screen dump to a printer, file, or both.	Step is skipped due to the problem noted in DR SMOdr00177. Refer to step 48 comment.Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/17/97
2.050	EDOS	Notify EDOS personnel so they can prepare for 16 kbps HK data transmission	Receive response back from EDOS personnel that EDOS is configured and			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		on the I and Q channels.	ready.			
2.051	ETS(MPS)X-terminal	Configure the MPS to transmit S/C bus and instrument data (16 kbps) as CADUs.Select TLM from the Configure pull-down menu from the MPS main window.Select the following radio buttons: SN and Internal for Clock Source on both channels 1 and 2.Enter a value of 16000 into the Bit Rate field for Channel 1 and 2.Click on OK.	An event message is displayed in the MPS event log window that the telemetry configuration for S/C Sim Mode has been set.	Make sure that a set of MPS configuration files are generated to reduce the steps required for selecting or entering values in MPS dialog boxes; then configurations can be selected.The clock source may be external.		4/17/97
2.052	ETS (MPS)X-terminal	Set the telemetry packet configuration to H/K for channels 1 and 2.Select Packet Format from the Configure pull-down menu in the MPS main window. Select the HK radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	HK and R/S radio buttons are sensitized.An event message is displayed in the MPS event log window that the packet format configuration (S/C Sim Mode) has been set.	R/S stands for Reed Solomon encoding.		4/17/97
2.053	~	Send the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs to EDOS or the		Step is skipped due to the problem noted in DR SMOdr00177. Refer to step 48 comment.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		ETS LRS in real-time.				
2.054	ETS(MPS)X-terminal	Start sending H/K telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	Telemetry is being received at EDOS and eventually the EOC.	Step is skipped due to the problem noted in DR SMOdr00177. Refer to step 48 comment.		4/17/97
2.055	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called model.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	Step is skipped due to the problem noted in DR SMOdr00177. Refer to step 48 comment.A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, model.scn, contains analog parameters.Release B: The scenario script will include analog, derived, and context dependent parameters.		4/17/97
2.056	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two	Status and event messages regarding the telemetry data reception, processing ,	Step is skipped due to the problem noted in DR SMOdr00177. Refer to		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		streams of 16 kbps H/K) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.	and transmission to the EOC will be displayed.	step 48 comment.EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		
2.057	EOC(User Station)	During the data transmission, take screen snapshot(s) to capture the entire graphical function (exponential, linear, step, or discrete) of each graph.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The MODEL1a graphical display is being updated as it receives the telemetry sent by the MPS-- telemetry parameter values are changing.No parameter values change when the data transmission stops - no more graph updates, the graph is static. The Static Flag 'S' is placed next to each ground parameter on the HEADERS2 page.Screen dump to a printer, file, or both.	Step is skipped due to the problem noted in DR SMOdr00177. Refer to step 48 comment.Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.There are four graphs on the MODEL1a page.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/17/97
2.058	ETS(MPS	Stop sending H/K telemetry	Telemetry is no longer	Step is skipped due to the		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	)X-terminal	to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	being received at EDOS or the EOC.	problem noted in DR SMOdr00177. Refer to step 48 comment.		
2.059	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values specified in the Table RT MODEL.	The values of the parameter mnemonics shown in the snapshots match.	Step is skipped due to the problem noted in DR SMOdr00177. Refer to step 48 comment		4/17/97
2.060	EOC(User Station)	The R/T telemetry display called MODEL2, which have pre-defined data sources, is invoked at the EOC user station.P MODEL2	The MODEL2 telemetry display appears. The previously selected parameters (H/K and H&S) appear on the graphical display page.	ECL directive PAGE opens page in the current room.Reopen HEADERS2 telemetry page if it is not already open.		4/17/97
2.061	EOC(User Station)	Produce a screen snapshot.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on	Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		the User Station pull-down menu (produces color snapshots).		printer, file, or both.		
2.062	~	Send the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs to EDOS or the ETS LRS in real-time.				4/17/97
2.063	ETS(MPS)X-terminal	Start sending H/K telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	Telemetry is being received at EDOS and eventually the EOC.			4/17/97
2.064	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called model.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, model.scn, contains analog parameters.Release B: The scenario script will include analog, derived, and context dependent		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
				parameters.		
2.065	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.	Status and event messages regarding the telemetry data reception, processing , and transmission to the EOC will be displayed.	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		4/17/97
2.066	EOC(User Station)	During the data transmission, take screen snapshot(s) to capture the entire graphical function (step) of the MODEL2 graph.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The MODEL2 graphical display is being updated as it receives the telemetry sent by the MPS-- telemetry parameter values are changing.No parameter values change when the data transmission stops - no more graph updates, the graph is static. The Static Flag 'S' is placed next to each ground parameter on the	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
			HEADERS2 page.Screen dump to a printer, file, or both.			
2.067	ETS(MPS)X-terminal	Stop sending H/K telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	Telemetry is no longer being received at EDOS or the EOC.			4/17/97
2.068	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values specified in the Table RT MODEL.	The values of the parameter mnemonics shown in the snapshots match.			4/17/97
2.069	EDOS	Notify EDOS personnel so they can prepare for 1 kbps H&S data transmission on the I and Q channels.	Receive response back from EDOS personnel that EDOS is configured and ready.			4/17/97
2.070	ETS(MPS)X-terminal	Configure the MPS to transmit S/C bus and instrument data (1 kbps) as CADUs.Select TLM from the Configure pull-down menu from the MPS main	An event message is displayed in the MPS event log window that the telemetry configuration for S/C Sim Mode has been set.	Make sure that a set of MPS configuration files are generated to reduce the steps required for selecting or entering values in MPS dialog boxes; then		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		window.Select the following radio buttons: SN and Internal for Clock Source on both channels 1 and 2.Enter a value of 1000 into the Bit Rate field for channels 1 and 2.Click on OK.		configurations can be selected. The clock source may be external.		
2.071	ETS (MPS)X-terminal	Set the telemetry packet configuration to H&S for channels 1 and 2.Select Packet Format from the Configure pull-down menu in the MPS main window. Select the H&S radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	H&S and R/S radio buttons for Channel 1 and 2 are sensitized.An event message is displayed in the MPS event log window that the packet format configuration (S/C Sim Mode) has been set.	R/S stands for Reed Solomon encoding.		4/17/97
2.072	~	Send the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs to EDOS or the ETS LRS in real-time.				4/17/97
2.073	ETS(MPS)X-terminal	Start sending H&S telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main	Telemetry is being received at EDOS and eventually the EOC.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		window.Select Both from the Start TLM pull-down menu.				
2.074	ETS(MPS)	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called model.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, model.scn, contains analog parameters.Release B: The scenario script will include analog, derived, and context dependent parameters.		4/17/97
2.075	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.	Status and event messages regarding the telemetry data reception, processing , and transmission to the EOC will be displayed.	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		4/17/97
2.076	EOC(User	During the data	The HEADERS2 telemetry	Release A: Generate a		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	Station)	transmission, take screen snapshot(s) to capture the entire graphical function (step) of the MODEL2 graph.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	display shows the telemetry transmission beginning and ending. The MODEL2 graphical display is being updated as it receives the telemetry sent by the MPS-- telemetry parameter values are changing.No parameter values change when the data transmission stops - no more graph updates, the graph is static. The Static Flag 'S' is placed next to each ground parameter on the HEADERS2 page.Screen dump to a printer, file, or both.	UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		
2.077	ETS(MPS)X-terminal	Stop sending H&S telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	Telemetry is no longer being received at EDOS or the EOC.			4/17/97
2.078	~	Off-line, verify that the	The values of the parameter			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		values of the parameter mnemonics shown in the snapshots match the values specified in the Table RT MODEL.	mnemonics shown in the snapshots match.			
2.079	EOC(User Station)	The R/T telemetry display called MODTAB, which has pre-defined data sources, is invoked at the EOC user station.P MODTAB	The MODTAB (table) telemetry display appears. The previously selected parameters (H/K and H&S) appear on the display pages.	ECL directive PAGE opens page in the current room.		4/17/97
2.080	EOC(User Station)	Produce a screen snapshot.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')	Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both..		4/17/97
2.081	~	Send the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs to EDOS or the ETS LRS in real-time.				4/17/97
2.082	ETS(MPS)X-terminal	Start sending H&S telemetry to EDOS.Select Start TLM from the	Telemetry is being received at EDOS and eventually the EOC.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.				
2.083	ETS(MPS)	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called model.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, model.scn, contains analog parameters.Release B: The scenario script will include analog, derived, and context dependent parameters.		4/17/97
2.084	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP	Status and event messages regarding the telemetry data reception, processing , and transmission to the EOC will be displayed.	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		ports in real-time.				
2.085	EOC(User Station)	During the data transmission, produce screen snapshots when the telemetry parameter values change on the MODTAB table display.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The MODTAB tabulated display is being updated as it receives the telemetry sent by the MPS-- telemetry parameter values are changing.No parameter values change when the data transmission stops - no more table updates, the table display is static. The Static Flag 'S' is placed next to each ground parameter on the HEADERS2 page.Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/17/97
2.086	ETS(MPS)X-terminal	Stop sending H&S telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM	Telemetry is no longer being received at EDOS or the EOC.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		pull-down menu.				
2.087	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values specified in the Table RT MODEL.	The values of the parameter mnemonics shown in the snapshots match.			4/17/97
2.088	EDOS	Notify EDOS personnel so they can prepare for 16 kbps HK data transmission on the I and Q channels.	Receive response back from EDOS personnel that EDOS is configured and ready.			4/17/97
2.089	ETS(MPS)X-terminal	Configure the MPS to transmit S/C bus and instrument data (16 kbps) as CADUs.Select TLM from the Configure pull-down menu from the MPS main window.Select the following radio buttons: SN and Internal for Clock Source on both channels 1 and 2.Enter a value of 16000 into the Bit Rate field for Channel 1 and 2.Click on OK.	An event message is displayed in the MPS event log window that the telemetry configuration for S/C Sim Mode has been set.	Make sure that a set of MPS configuration files are generated to reduce the steps required for selecting or entering values in MPS dialog boxes; then configurations can be selected.The clock source may be external.		4/17/97
2.090	ETS (MPS)X-terminal	Set the telemetry packet configuration to H/K for channels 1 and 2.Select	HK and R/S radio buttons are sensitized.An event message is displayed in the	R/S stands for Reed Solomon encoding.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Packet Format from the Configure pull-down menu in the MPS main window. Select the HK radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	MPS event log window that the packet format configuration (S/C Sim Mode) has been set.			
2.091	~	Send the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs to EDOS or the ETS LRS in real-time.				4/17/97
2.092	ETS(MPS)X-terminal	Start sending H/K telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	Telemetry is being received at EDOS and eventually the EOC.			4/17/97
2.093	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called model.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, model.scn, contains analog parameters.Release B: The		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
			for execution.	scenario script will include analog, derived, and context dependent parameters.		
2.094	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.				

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
			static. The Static Flag 'S' is placed next to each ground parameter on the HEADERS2 page.Screen dump to a printer, file, or both.			
2.096	ETS(MPS)X-terminal	Stop sending H/K telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	Telemetry is no longer being received at EDOS or the EOC.			4/17/97
2.097	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values specified in the Table RT MODEL.	The values of the parameter mnemonics shown in the snapshots match.			4/17/97
2.098	EOC (User Station)	Verify that archive files exist for H/K, H&S, and Standby for both the I&Q channels.Type cd /fos/test/am1/tlmarchiveType pwdType snapframe3 (alias for 'xwd -frame | xpr	The following hourly files will exist:AM1<year><day of the year><hour>.HKIAM1<year><day of the year><hour>.HKQAM1<year><day of the	The naming convention for hourly files follows:<S/C ><S/C time>"."< data type> <channel>(e.g., AM1199610010.HKI)Channel value is either I or Q.		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		-device ljet -rv | lp -onb -s -d fose3oe')	year><hour>.HSIAM1<year><day of the year><hour>.HSQAM1<year><day of the year><hour>.SBIAM1<year><day of the year><hour>.SBQ			
2.099	EOC	Generate telemetry processing reports. Display reports on-line and printed out for review off-line.	Reports are available in hardcopy and softcopy form.	This is a Release B capability.		4/17/97
2.100	EOC	Forward the telemetry data, and related event and configuration data to the SDPS for permanent archival.	Telemetry data, and related event and configuration data are archived at the SDPS (GSFC DAAC).	This is a Release B capability.		4/17/97
3.001	EOC (User Station)	Save the Event_Display data in the test run directory. In Event_Display menu:Select File.Select Save As.Change the filter directory to the file destination directory.Enter <event log filename>	A message is displayed which states that the event display contents have been saved in the entered <event log filename>.	Make sure that the event log filename includes the test name and the current date.		4/17/97
3.002	EOC (User Station)	Bring down User Stations. In the UNIX window where the User Stations	A series of messages stating that FOS processes are being killed is			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		were initiated, enter:MyKill	displayed.All FUI windows have disappeared.FOS applications are shutdown			
3.003	EOC (User Station)	After the "MyKill", check for undesirable FOS processes. ps -aux	No undesirable FOS processes remain.			4/17/97
3.004	EOC (User Station)	Open any iconized processes, or pages that didn't close. Close the windows.Select Quit from the File menu or Select the Close button on the window dialog orUse whatever other clean close window option that exists.	All FUI windows have disappeared.			4/17/97
3.005	EOC (User Station)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/... prefix and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type ps -aux again to verify the removal of the undesired FOS processes.	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the owner of the processes in order to kill them.		4/17/97
3.006	EOC(User Station)	Select room Two from the SparcStation console of the	The Two room button is sensitized.			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		User Station where the Real-Time and Data Servers were initiated.				
3.007	EOC(User Station)	In a X-terminal window:Type netscape & <Return>Invoke the URL http://198.118.199.20/FosDbHome.html	The NETSCAPE window appears.The FOS Database Access Page appears.			4/17/97
3.008	EOC (User Station)	Verify no endpoints exist on the User Stations:Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: "foseXoe".Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the User Stations using ps -aux . They must all be removed/killed prior to system startup.	X corresponds to the User Station number and can have a value of 5, 8, 9, or 10.		4/17/97
3.009	EOC(Real -Time Server)	Bring down Real-Time Server (foseoc6). In the UNIX window where the Real-Time Server was initiated, enter: MyKill. Wait 1-5 minutes.	A series of messages stating that FOS processes are being killed is displayed.FOS applications are shutdown			4/17/97
3.010	EOC(Real -Time Server)	After the "MyKill", check for undesirable FOS processes. ps -ef	No undesirable FOS processes remain.			4/17/97
3.011	EOC(Real -Time Server)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/ prefix	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type ps -ef again to verify the removal of the undesired FOS processes.		owner of the processes in order to kill them.		
3.012	EOC(Real -Time Server)	Verify no endpoints exist on Real-Time Server:Click on Back.Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: foseoc6.Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the Real-Time Server using ps -ef . They must all be removed/killed prior to system startup.			4/17/97
3.013	EOC(Data Server)	Bring down Data Server (foseoc7). In the UNIX window where the Data Server was initiated, enter:MyKill. Wait 1-5 minutes.	A series of messages stating that FOS processes are being killed is displayed.FOS applications are shutdown			4/17/97
3.014	EOC(Data Server)	After the "MyKill", check for undesirable processes. ps -ef	No undesirable FOS processes remain.			4/17/97
3.015	EOC(Data Server)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/ prefix	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type ps -ef again to verify the removal of the undesired FOS processes.		owner of the processes in order to kill them.		
3.016	EOC(Data Server)	Verify no endpoints exist on Data Server:Click on Back.Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: foseoc7.Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the Data Server using ps -ef . They must all be removed/killed prior to next system startup.			4/17/97
3.017	EOC	Verify no endpoints exist on FOS:Click on Back.Click on Nameserver DatabaseClick on Clear FormClick on Submit.Exit Netscape.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the User Work Stations, and the Real Time Server and Data Server using ps -aux and ps -ef, respectively. All processes must be removed/killed prior to system startup.Netscape window is no longer			4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
			displayed.			
3.018	EOC	End the remote login sessions.Type exit in the X-terminal windows where the Real-Time and Data Server processes were initiated.	The remote login sessions end and a message is displayed that reflects the session logouts. The UNIX prompts for foseoc6 and foseoc7 return to the regular User Station (foseXoe) prompt.			4/17/97
3.019	EOC	Log off the EOC UNIX workstation(s).	UNIX login sessions end.			4/17/97
3.020	ETS (MPS)PDOS terminal	Execute the MPS shutdown script.Change to the directory where the MPS shutdown script resides and type CLEAR at the PDOS terminal prompt; then type lt at the same prompt.	All the MPS task processes are killed-- they no longer appear in the task process listing.			4/17/97
3.021	ETS (MPS)X-terminal	Exit the MPS main window.	The MPS main window disappears.			4/17/97
3.022	ETS (MPS)X-terminal	Logout of the ETS X-terminal used for the MPS GUI.	UNIX login session ends.			4/17/97
3.023	ETS (LRS)	Exit the LRS monitor window.	The LRS monitor window disappears.	LRS was not used, EDOS Version 2 was used instead.		4/17/97
3.024	ETS	Close the ETS LRS Menu	The ETS LRS Menu	LRS was not used, EDOS		4/17/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	(LRS)	Controller window.	Controller window disappears.	Version 2 was used instead.		
3.025	ETS (LRS)	Logout of the ETS UNIX workstation used by the LRS.	UNIX login session ends.	LRS was not used, EDOS Version 2 was used instead.		4/17/97
4.001		Verify EDOS-4.1.1.3#A			EDOS-4.1.1.3#A	4/17/97
4.002		Verify EDOS-4.6.1.2#A			EDOS-4.6.1.2#A	4/17/97
4.003		Verify EOC-0040#A			EOC-0040#A	4/17/97
4.004		Verify EOC-5010#A			EOC-5010#A	4/17/97
4.005		Verify EOC-5015#A			EOC-5015#A	4/17/97
4.006		Verify EOC-5080#A			EOC-5080#A	4/17/97
4.007		Verify EOC-6060#A			EOC-6060#A	4/17/97
4.008		Verify EOC-6070#A			EOC-6070#A	4/17/97

EOC1.3 Telemetry Parameter EU Conversion, Limit and Alarm Processing

This test verifies that telemetry parameter limits are checked during decommutation and that violations are handled properly.

- Audible alarms are enabled. EOC receives telemetry that violates red limits (high and low) specified in the ODB. The appropriate event message is displayed and related audible alarms sound off. The audible alarm is disabled. The same telemetry is resent to verify the alarm disablement feature.
- EOC receives telemetry that violates yellow limits (high and low) specified in the ODB. The appropriate event message is displayed.
- EOC receives telemetry that violates the delta limits, which are specified in the ODB, for successive samples of selected telemetry parameters. The appropriate event messages are displayed.
- Each type of EU conversion (exponential, polynomial, and linear) and limit violation (red & yellow high/low, and delta) will be exercised for a specified limit set . Limit sets or values (temporarily) will be changed and the tests will be repeated.

<u>Verified Requirements:</u>
EOC-5090#A
EOC-5100#A
EOC-5110#A
EOC-6195#A
EOC-9025#A

Procedures:

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.001	EOC	Initialize the FOS EOC hardware. Refer to the FOS Operations Tool Manual for the ECS Project, Section 4.1.1, Hardware Initialization.	FOS EOC hardware: DEC RAID (no name), RAID Server (foseoc2), Data Server (foseoc7), Real-Time Server (foseoc6), and EOC User Stations (HP and Sun) are up and running.	RAID contains the users' home directories and the operational FOS software in /fos, which needs to be mounted by the other machines.The FOS EOC hardware is already initialized so this step is not performed - step skipped.		4/18/97
1.002	ETS (MPS)	Initialize the ETS MPS hardware (Power On).	ETS MPS hardware is up and running.	The ETS MPS hardware is already initialized so this step is not performed - step skipped.		4/18/97
1.003	EDOS	Initialize the EDOS hardware.	EDOS hardware is up and running.			4/18/97
1.004	ETS(MPS)X-terminal	If the ets2 login window is not up, restart the server and select ets2.Login to the ETS X-terminal (UNIX OS). account: si_t <Return> password: [password] <Return>Bring-up the MPS Graphical User Interface (GUI).Type ets_mps <Return>	The MPS Menu Controller appears with MPS and OMDSIM buttons.	Home directory: /usr/si_t/MPS executable directory: /usr/si_t/release/bin		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.005	ETS (MPS)X-terminal	Select MPS Exec from the MPS Menu Controller Window.	The MPS main window appears			4/18/97
1.006	ETS(MPS)PDOS terminal	Reset the MVME177 card and bring-up the MPS software.Press the reset button for the MVME177 card.Login to the ETS PDOS terminal.Change to the directory where the MPS startup script resides.Option 1: Type gotosi (alias cd 10:/si_t/release1)Option 2: Type cd /ets/devType RUNACPT.	The following message is shown at the bottom of the PDOS terminal: TY_main ... waiting for messageA MPS ready message is shown in the event log window of the MPS main window.	The MVME 177 card and the PDOS terminal are in the back room.Use Option 2.		4/18/97
1.007	ETS(MPS)X-terminal	Select S/C simulation mode for MPS.Select the Spacecraft radio button for Simulation Mode from the MPS main window.	The Spacecraft radio button is sensitized.			4/18/97
1.008	ETS(MPS)X-terminal	Select the PDB as the data source for the telemetry being generated by the MPS.Select the PDB radio button under Data Source from the MPS main window.	The PDB radio button is sensitized.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.009	ETS(MPS)X-terminal	Set and record the S/C and UTC times to the GMT time provided at the EOC.Select Set Time from the Control pull-down menu in MPS main window and enter the GMT time values or accept the GMT times provided by ETS.	The Spacecraft Time and UTC displays on the MPS main window are updated.	Use the following Unix command to help in defining GMT time: date -uTime Format: yy ddd hh mm ssThis step is optional.		4/18/97
1.010	EOC (Data & R/T Servers)	Start the Sybase servers on the Data Server and Real-Time Server.	Sybase server #1 has started on Data Server, "foseoc7". Sybase server #2 has started on Real-Time Server, "foseoc6".	The Sybase servers are already up and running so this step is not performed-step skipped.		4/18/97
1.011	EOC(User Station)	Login to an EOC User Station, "foseXoe" or "msseoc2". Enter ivvtest <Return> Enter [password] <Return>	The SparcStation console with the One room button is sensitized.	X is 5, 8, 9, or 10.		4/18/97
1.012	EOC(User Station)	Select room Two from the SparcStation console.	The Two room button is sensitized.			4/18/97
1.013	EOC(User Station)	In a X-terminal window:Type netscape & <Return>Check to see if any FOS process endpoints exist.Invoke the URL http://198.118.199.20/FosDbHome.htmlSelect	The NETSCAPE window appears.The FOS Database Access Page appears.A message is displayed which states that 0 endpoints are found.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Nameserver Database.Click on Clear Form.Click on Submit				
1.014	EOC(User Station)	Select room One from the SparcStation console.	The SparcStation console with the One room button is sensitized.			4/18/97
1.015	EOC(Data Server)	Start up the FOS software for the Data Server.In a X-terminal window, remotely login to the FOS Data Server, "foseoc7".Type rlogin foseoc7 <Return>Enter [password] <Return> at password prompt.Type ps -ef <Return>; look for FOS processes and delete them using the kill -9 [PID].Type test <Return> (alias for cd /fos/test/am1/scripts/setup) Type source A2_DataServerStartup <Return>	Fourteen FOS software processes are now running on the Data Server.The following messages are displayed: Successful installation of signal handler FqLqSigHand, and a repeating Waiting for activity.	The FOS software processes are the ODB and FOS subsystem processes.rlogin has a -l <username> option to specify the user or it defaults to the login account name.PID stands for process ID.Alias test will be used to change directory.		4/18/97
1.016	EOC(Real -Time Server)	Start up the FOS software for the Real-Time Server.In a X-terminal window, remotely login to the FOS	Thirty-four FOS software processes are now running on the Real-Time Server.R/T logical string	The FOS software processes are the ODB and FOS subsystem processes.rlogin has a -l		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Real-Time Server, "foseoc6".Type rlogin foseoc6 <Return>Enter [password] <Return> at password prompt.Type ps -ef <Return>; look for FOS processes and delete them using the kill -9 [PID].Type test <Return> (alias for cd /fos/test/am1/scripts/setup) Type source A2_RealTimeServerStartup <Return>	100 is created.The following messages are displayed: Creating a ptp coupler	<username> option to specify the user or it defaults to the login account name PID stands for process ID.Alias test will be used to change directory.		
1.017	EOC(User Station)	Select room Two from the SparcStation console.	The Two room button is sensitized.			4/18/97
1.018	EOC(User Station)	Check to see if 14 FOS process endpoints exist for the Data Server.Click on Back.Enter foseoc7 in the Entry Id field.Click on Submit.	A message is displayed which states that 14 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/18/97
1.019	EOC(User Station)	Check to see if 34 FOS process endpoints exist for the R/T Server.Click on Back.Enter foseoc6 in the Entry Id field.Click on Submit.	A message is displayed which states that 34 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.020	EOC(User Station)	Check to see if 0 FOS process endpoints exist for the User Station "foseXoe".Click on Back.Enter "foseXoe" in the Entry Id field.Click on Submit.Exit Netscape.	A message is displayed which states that 0 endpoints are found.Netscape window is no longer displayed.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/18/97
1.021	EOC(User Station)	Select room One from the SparcStation console.	The SparcStation console with the One room button is sensitized.			4/18/97
1.022	EOC(User Station)	Start up the FOS software for the User Station, "foseXoe".Login to the EOC User Station, "foseXoe" Enter ivvtest3 <Return> Enter [password] <Return>In a terminal window, type test <Return>(alias for cd /fos/test/am1/scripts/setup) Type source A2_UserStationStartup <Return>	The appropriate FOS software processes are now running on the EOC User Station.The following windows are displayed: Control Window , General Scheduler, EOS Timeline, Load Manager, Load Generator, BAP Definer, and Activity Definer.	The FOS software processes are the ODB and FOS subsystem processes.X is 5, 8, 9, or 10.		4/18/97
1.023	EOC (User Station)	Iconify the six Planning and Scheduling windows: General Scheduler, EOS Timeline, Load Manager, Load Generator, BAP	The Planning and Scheduling windows are now icons.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Definer, and Activity Definer				
1.024	EOC (User Station)	Bring up the Event Display Window via the Tools Button on the Control Window.Click on Tools.Select Event_Display.Click on OK.	The Event Display Window appears.	Make sure that Netscape is not up in any of the workstation rooms.		4/18/97
1.025	EOC (User Station)	Enable telemetry data archiving.Archiving is automatically enabled.	An event message stating that telemetry archiving is enabled. The Release A message that is displayed in the R/T Server startup window is myTlmArchiveFlag: 1.	Release A: Archiving is already enabled.Release B: The ECL directive ARCHIVE will control the archiving modes: ARCHIVE TLM =ENABLE <tlm TYPE>		4/18/97
1.026	EOC (User Station)	In a terminal window, invoke the script that generates the Test Configuration Report.Type config (alias cd /home/ivvtest3/config)Type tconfig (alias /home/ivvtest3/scripts/tconfig.scr)Type mv testconfig test#Yr_config_eoc1.<date>	A file named test#Yr_config_eoc1.<date>, which contains the "As Run" Configuration details, is in the /home/ivvtest3/config directory.	A directory ~/config has already been created. Aliases config and tconfig have already been added to the ivvtest3 .cshrc.# is 1 thru 10.Y is d or f.		4/18/97
1.027	~	Record the system	The "As Run"			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		configuration on the execution cover sheet.	Configuration details are recorded on the execution cover sheet.			
2.001	EOC(User Station)	Connect to this R/T logical string in mirrored mode.STRING CONNECT STRING=100 TLMTYPE=ALL CONFIG=MIRROR	A mirrored connection is established. An event message confirming that the connection to the logical string 100 was successful is displayed in the event display on the Control Window and in the Event Display Window.	100 is the <string ID> (e.g., STRING=100 or 1xx).Release A: Only mirrored connections to logical strings are supported.Release B: Both mirrored and tailored connections to logical strings will be supported.		4/18/97
2.002	EOC(User Station)	Request Ground Control privilege for the R/T logical string 100.TAKE GROUNDCONTROL STRING=100	Ground Control privilege for string 100 is obtained. An event message confirming that Ground Control privilege was granted is displayed in the event display on the Control Window and in the Event Display Window.	100 is the <string ID> (e.g., STRING=101 or 1xx).The Ground Control Privilege is granted to one EOC user per logical string for the purpose of modifying the ground configuration of the HW and SW resources within that logical string. These privileges are granted only to local EOC users (not IST) that are pre-authorized by the FOT to perform in these roles.		4/18/97
2.003	EOC(User	The telemetry display called	The HEADERS2 telemetry	ECL directive PAGE opens		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	Station)	HEADERS2, which has pre-defined data sources, is invoked at the EOC user station.P HEADERS2	display appears. The previously selected ground parameters (packet header and ESH) appear on the display page.	page in the current room.		
2.004	EOC(User Station)	The R/T telemetry display called EUCONV3, which has pre-defined data sources, is invoked at the EOC user station.P EUCONV3	The EUCONV3 telemetry display appears. The previously selected parameters (H/K, H&S, and STANDBY) appear on the display page.	ECL directive PAGE opens page in the current room.		4/18/97
2.005	EOC(User Station)	Produce a screen snapshot.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/18/97
2.006	EDOS	Notify EDOS personnel so they can prepare for 16 kbps HK data transmission on the I and Q channels.	Receive response back from EDOS personnel that EDOS is configured and ready.			4/18/97
2.007	ETS(MPS)X-	Configure the MPS to transmit S/C bus and	An event message is displayed in the MPS event	Make sure that a set of MPS configuration files are		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	terminal	instrument data (16 kbps) as CADUs.Select TLM from the Configure pull-down menu from the MPS main window.Select the following radio buttons: SN and Internal for Clock Source on both channels 1 and 2.Enter a value of 16000 into the Bit Rate field for Channel 1 and 2.Click on OK.	log window that the telemetry configuration for S/C Sim Mode has been set.	generated to reduce the steps required for selecting or entering values in MPS dialog boxes; then configurations can be selected.The clock source may be external.		
2.008	ETS (MPS)X-terminal	Set the telemetry packet configuration to H/K for channels 1 and 2.Select Packet Format from the Configure pull-down menu in the MPS main window. Select the HK radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	HK and R/S radio buttons are sensitized.An event message is displayed in the MPS event log window that the packet format configuration (S/C Sim Mode) has been set.	R/S stands for Reed Solomon encoding.		4/18/97
2.009	~	Send the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs to EDOS or the ETS LRS in real-time.				4/18/97
2.010	ETS(MPS)X-	Start sending H/K telemetry to EDOS.Select	Telemetry is being received at EDOS and eventually the			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	terminal	Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	EOC.			
2.011	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called eulimhk.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, eulimhk.scn, contains both analog and discrete parameters.A modified eulimhk.scn file called meulimhk.scn was used to workaround the ETS MPS 16-Bit handling problem (SMOdr00200).Release B: The scenario script will include analog, discrete, derived, and context dependent parameters.		4/18/97
2.012	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two	Status and event messages regarding the telemetry data reception, processing ,	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		streams of 16 kbps H/K) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.	and transmission to the EOC will be displayed.	the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		
2.013	EOC(User Station)	Look for telemetry value changes and produce screen snapshots when CDH_SR_ACT_CLCW_STAT (counter) is equal to the discrete parameter text that corresponds to the values 0, 1, 2, 3, 4, 5, 6, and 7.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The EUCONV3 telemetry display is being updated as it receives the telemetry sent by the MPS-- telemetry parameter values are changing.No parameter values change when the data transmission stops and a Static Flag 'S' is placed next to each parameter field.Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/18/97
2.014	ETS(MPS)X-	Stop sending H/K telemetry to EDOS when the scenario	Telemetry is no longer being received at EDOS or			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	terminal	script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	the EOC.			
2.015	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values and flags specified in the Table EU Conversions and Limit Checks for HK.	The values of the parameter mnemonics shown in the snapshots match.			4/18/97
2.016	EDOS	Notify EDOS personnel so they can prepare for 1 kbps H&S data transmission on the I and Q channels.	Receive response back from EDOS personnel that EDOS is configured and ready.			4/18/97
2.017	ETS(MPS)X-terminal	Configure the MPS to transmit S/C bus and instrument data (1 kbps) as CADUs.Select TLM from the Configure pull-down menu from the MPS main window.Select the following radio buttons: SN and Internal for Clock Source on both channels 1	An event message is displayed in the MPS event log window that the telemetry configuration for S/C Sim Mode has been set.	Make sure that a set of MPS configuration files are generated to reduce the steps required for selecting or entering values in MPS dialog boxes; then configurations can be selected. The clock source may be external.		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		and 2.Enter a value of 1000 into the Bit Rate field for channels 1 and 2.Click on OK.				
2.018	ETS (MPS)X-terminal	Set the telemetry packet configuration to H&S for channels 1 and 2.Select Packet Format from the Configure pull-down menu in the MPS main window. Select the H&S radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	H&S and R/S radio buttons for Channel 1 and 2 are sensitized.An event message is displayed in the MPS event log window that the packet format configuration (S/C Sim Mode) has been set.	R/S stands for Reed Solomon encoding.		4/18/97
2.019	~	Send the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs to EDOS or the ETS LRS in real-time.				4/18/97
2.020	ETS(MPS)X-terminal	Start sending H&S telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	Telemetry is being received at EDOS and eventually the EOC.			4/18/97
2.021	ETS(MPS	Execute the R/T scenario	The time elapsed since the	A Stop push button does		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	)X-terminal	script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called eulimhs.scn.Click on OK.Click on the Start push button.	scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, eulimhs.scn, contains both analog and discrete parameters.A modified eulimhs.scn file called meulimhs.scn was used to workaround the ETS MPS 16-Bit handling problem (SMOdr00200).Release B: The scenario script will include analog, discrete, derived, and context dependent parameters.		
2.022	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP	Status and event messages regarding the telemetry data reception, processing , and transmission to the EOC will be displayed.	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		ports in real-time.				
2.023	EOC(User Station)	Look for telemetry value changes. Produce screen snapshots when telemetry values change, particularly when COM_PR_SBT1_FWD_RF is equal to the values 5, 4.25, 3, 6.05, and 7.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The EUCONV3 telemetry display is being updated as it receives the telemetry sent by the MPS-- telemetry parameter values are changing.No parameter values change when the data transmission stops and a Static Flag 'S' is placed next to each parameter field.Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.The values of 4.25 and 6.05 are not displayed for COM_PR_SBT1_FWD_RF due to the problem described in DR SMOdr00217. The values 4 and 6 are displayed instead.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/18/97
2.024	ETS(MPS)X-terminal	Stop sending H&S telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	Telemetry is no longer being received at EDOS or the EOC.			4/18/97
2.025	~	Off-line, verify that the	The values of the parameter			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		values of the parameter mnemonics shown in the snapshots match the values and flags specified in the Table EU Conversions and Limit Checks for H&S.	mnemonics shown in the snapshots match.			
2.026	EOC(User Station)	Close the EUCONV3 telemetry page.	The EUCONV3 telemetry page disappears.			4/18/97
2.027	EOC(User Station)	The R/T telemetry display called LIMITS2, which has pre-defined data sources, is invoked at the EOC user station.P LIMITS2	The LIMITS2 telemetry display appears. The previously selected parameters (H/K and H&S) appear on the display page.	ECL directive PAGE opens page in the current room.		4/18/97
2.028	EOC(User Station)	Produce a screen snapshot.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both..		4/18/97
2.029	EDOS	Notify EDOS personnel so they can prepare for 16 kbps HK data transmission on the I and Q channels.	Receive response back from EDOS personnel that EDOS is configured and ready.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.030	ETS(MPS)X-terminal	Configure the MPS to transmit S/C bus and instrument data (16 kbps) as CADUs.Select TLM from the Configure pull-down menu from the MPS main window.Select the following radio buttons: SN and Internal for Clock Source on both channels 1 and 2.Enter a value of 16000 into the Bit Rate field for Channel 1 and 2.Click on OK.	An event message is displayed in the MPS event log window that the telemetry configuration for S/C Sim Mode has been set.	Make sure that a set of MPS configuration files are generated to reduce the steps required for selecting or entering values in MPS dialog boxes; then configurations can be selected.The clock source may be external.		4/18/97
2.031	ETS (MPS)X-terminal	Set the telemetry packet configuration to H/K for channels 1 and 2.Select Packet Format from the Configure pull-down menu in the MPS main window. Select the HK radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	HK and R/S radio buttons are sensitized.An event message is displayed in the MPS event log window that the packet format configuration (S/C Sim Mode) has been set.	R/S stands for Reed Solomon encoding.		4/18/97
2.032	~	Send the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs to EDOS or the ETS LRS in real-time.				4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.033	ETS(MPS)X-terminal	Start sending H/K telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	Telemetry is being received at EDOS and eventually the EOC.			4/18/97
2.034	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called deltalim.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, deltalim.scn, contains both analog and discrete parameters.A modified deltalim.scn file called mdeltalim.scn was used to workaround the ETS MPS 16-Bit handling problem (SMOdr00200).Release B: The scenario script will include analog, discrete, derived, and context dependent parameters.		4/18/97
2.035	EDOS or	EDOS or the ETS LRS	Status and event messages	EDOS Processing: The		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	ETS (LRS)	receives the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.	regarding the telemetry data reception, processing , and transmission to the EOC will be displayed.	Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		
2.036	EOC(User Station)	Look for telemetry value changes and produce screen snapshots when the MISR instrument parameters (MIS_IR_CAMERA_AN28V, MIS_IR_CAMERA_BA28V, MIS_IR_CAMERA_DA28V) change.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The LIMITS2 telemetry display is being updated as it receives the telemetry sent by the MPS-- telemetry parameter values are changing.No parameter values change when the data transmission stops and a Static Flag 'S' is placed next to each parameter field.Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		menu (produces color snapshots).				
2.037	ETS(MPS)X-terminal	Stop sending H/K telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	Telemetry is no longer being received at EDOS or the EOC.			4/18/97
2.038	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values and flags specified in the Table Delta Limits.	The values of the parameter mnemonics shown in the snapshots match.			4/18/97
2.039	~	Test the Limit Set selection feature.		The Limit Set selection feature is a Release B capability.		4/18/97
2.040	~	Send the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as CADUs to EDOS or the ETS LRS in real-time.				4/18/97
2.041	ETS(MPS)X-terminal	Start sending H/K telemetry to EDOS.Select Start TLM from the	Telemetry is being received at EDOS and eventually the EOC.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.				
2.042	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called limitsel.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, limitsel.scn, contains both analog and discrete parameters.A modified limitsel.scn file called mlimitsel.scn was used to workaround the ETS MPS 16-Bit handling problem (SMOdr00200).Release B: The scenario script will include analog, discrete, derived, and context dependent parameters.		4/18/97
2.043	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 16 kbps H/K) as	Status and event messages regarding the telemetry data reception, processing , and transmission to the	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.	EOC will be displayed.	Service Header (ESH) is added to each SDU to create a EDU.		
2.044	EOC(User Station)	Look for telemetry value changes and produce screen snapshots when COM_PR_SBT1_FWD_RF changes.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe') orUse Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The LIMITS2 telemetry display is being updated as it receives the telemetry sent by the MPS-- telemetry parameter values are changing.No parameter values change when the data transmission stops and a Static Flag 'S' is placed next to each parameter field.Screen dump to a printer, file, or both.	The discrete switch mnemonic, COM_BR_SBT1_XMTRPWR will change to a 0 then eventually a 1 to test both limit sets.Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.		4/18/97
2.045	ETS(MPS)X-terminal	Stop sending H/K telemetry to EDOS when the scenario script runs to completion.Select Stop TLM from the Control	Telemetry is no longer being received at EDOS or the EOC.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.				
2.046	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values specified in the Table Limit Sets.	The values of the parameter mnemonics shown in the snapshots match.	The Limit Set selection feature is a Release B capability.		4/18/97
2.047	EOC	Generate telemetry processing reports. Display reports on-line and printed out for review off-line.	Reports are available in hardcopy and softcopy form.	This is a Release B capability.		4/18/97
2.048	EOC	Forward the telemetry data, and related event and configuration data to the SDPS for permanent archival.	Telemetry data, and related event and configuration data are archived at the SDPS (GSFC DAAC).	This is a Release B capability. V1-EOC-01.003		4/18/97
3.001	EOC (User Station)	Bring down User Stations. In the UNIX window where the User Stations were initiated, enter:MyKill	A series of messages stating that FOS processes are being killed is displayed.All FUI windows have disappeared.FOS applications are shutdown			4/18/97
3.002	EOC (User Station)	After the "MyKill", check for undesirable FOS processes. ps -aux	No undesirable FOS processes remain.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
3.003	EOC (User Station)	Open any iconized processes, or pages that didn't close. Close the windows.Select Quit from the File menu or Select the Close button on the window dialog orUse whatever other clean close window option that exists.	All FUI windows have disappeared.			4/18/97
3.004	EOC (User Station)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/... prefix and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type ps -aux again to verify the removal of the undesired FOS processes.	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the owner of the processes in order to kill them.		4/18/97
3.005	EOC(User Station)	Select room Two from the SparcStation console of the User Station where the Real-Time and Data Servers were initiated.	The Two room button is sensitized.			4/18/97
3.006	EOC(User Station)	In a X-terminal window:Type netscape & <Return>Invoke the URL	The NETSCAPE window appears.The FOS Database Access Page appears.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		http://198.118.199.20/FosDbHome.html				
3.007	EOC (User Station)	Verify no endpoints exist on the User Stations:Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: "foseXoe".Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the User Stations using ps -aux . They must all be removed/killed prior to system startup.	X corresponds to the User Station number and can have a value of 5, 8, 9, or 10.		4/18/97
3.008	EOC(Real -Time Server)	Bring down Real-Time Server (foseoc6). In the UNIX window where the Real-Time Server was initiated, enter: MyKill. Wait 1-5 minutes.	A series of messages stating that FOS processes are being killed is displayed.FOS applications are shutdown			4/18/97
3.009	EOC(Real -Time Server)	After the "MyKill", check for undesirable FOS processes. ps -ef	No undesirable FOS processes remain.			4/18/97
3.010	EOC(Real -Time Server)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/ prefix and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type ps -ef again to verify the	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the owner of the processes in order to kill them.		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		removal of the undesired FOS processes.				
3.011	EOC(Real -Time Server)	Verify no endpoints exist on Real-Time Server:Click on Back.Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: foseoc6.Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the Real-Time Server using ps -ef . They must all be removed/killed prior to system startup.			4/18/97
3.012	EOC(Data Server)	Bring down Data Server (foseoc7). In the UNIX window where the Data Server was initiated, enter:MyKill. Wait 1-5 minutes.	A series of messages stating that FOS processes are being killed is displayed.FOS applications are shutdown			4/18/97
3.013	EOC(Data Server)	After the "MyKill", check for undesirable processes. ps -ef	No undesirable FOS processes remain.			4/18/97
3.014	EOC(Data Server)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/ prefix and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type ps -ef again to verify the	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the owner of the processes in order to kill them.		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		removal of the undesired FOS processes.				
3.015	EOC(Data Server)	Verify no endpoints exist on Data Server:Click on Back.Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: foseoc7.Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the Data Server using ps -ef . They must all be removed/killed prior to next system startup.			4/18/97
3.016	EOC	Verify no endpoints exist on FOS:Click on Back.Click on Nameserver DatabaseClick on Clear FormClick on Submit.Exit Netscape.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the User Work Stations, and the Real Time Server and Data Server using ps -aux and ps -ef, respectively. All processes must be removed/killed prior to system startup.Netscape window is no longer displayed.			4/18/97
3.017	EOC	End the remote login sessions.Type exit in the X-terminal windows where the Real-Time and Data Server processes were	The remote login sessions end and a message is displayed that reflects the session logouts. The UNIX prompts for foseoc6			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		initiated.	and foseoc7 return to the regular User Station (foseXoe) prompt.			
3.018	EOC	Log off the EOC UNIX workstation(s).	UNIX login sessions end.			4/18/97
3.019	ETS (MPS)PDOS terminal	Execute the MPS shutdown script.Change to the directory where the MPS shutdown script resides and type CLEAR at the PDOS terminal prompt; then type lt at the same prompt.	All the MPS task processes are killed-- they no longer appear in the task process listing.			4/18/97
3.020	ETS (MPS)X-terminal	Exit the MPS main window.	The MPS main window disappears.			4/18/97
3.021	ETS (MPS)X-terminal	Logout of the ETS X-terminal used for the MPS GUI.	UNIX login session ends.			4/18/97
3.022	ETS (LRS)	Exit the LRS monitor window.	The LRS monitor window disappears.	LRS was not used, EDOS Version 2 was used instead.		4/18/97
3.023	ETS (LRS)	Close the ETS LRS Menu Controller window.	The ETS LRS Menu Controller window disappears.	LRS was not used, EDOS Version 2 was used instead.		4/18/97
3.024	ETS (LRS)	Logout of the ETS UNIX workstation used by the LRS.	UNIX login session ends.	LRS was not used, EDOS Version 2 was used instead.		4/18/97
4.001		Verify EOC-5090#A			EOC-	4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
					5090#A	
4.002		Verify EOC-5100#A			EOC-5100#A	4/18/97
4.003		Verify EOC-5110#A			EOC-5110#A	4/18/97
4.004		Verify EOC-6195#A			EOC-6195#A	4/18/97
4.005		Verify EOC-9025#A			EOC-9025#A	4/18/97

EOC1.4 Telemetry Dropout

This test verifies that the EOC can appropriately mark telemetry parameters before data has been received and when an active R/T telemetry stream has not been received for a time period of 5 seconds or greater.

- The ETS MPS (S/C simulation mode) sends VCDUs with dropouts to EDOS or the ETS LRS. EDOS or the ETS LRS receives telemetry in Channel Access Data Unit (CADU) format. EDOS or the ETS LRS extracts the Consultative Committee for Space Data Systems (CCSDS) packets and Command Link Control Words (CLCWs). The CCSDS telemetry packets are processed and converted to EDOS Data Units (EDUs) based on the Application Process Identifier (APID) and the Virtual Channel Identifier (VCID), and the replay flag. These EDUs are transmitted to the EOC via EBnet using UDP, in real-time. EOC receives the telemetry in EDUs from EDOS or an EDOS simulator (ETS LRS or ETS MPS) and extracts the telemetry data. It decommutates the data based on the APID and telemetry decommutation information in the ODB. The appropriate missing packet event messages are displayed. The affected telemetry parameters are labeled "STATIC" on a previously invoked telemetry display page. The ECL DROPOUT directive will be used for the Release B testing effort. (Note: When a telemetry page is initially invoked, all telemetry parameters have the value of "NODATA".)
- The ETS MPS (S/C simulation mode) sends a stream of telemetry data in CADU format to EDOS or the ETS LRS. EDOS or the ETS LRS processes this stream of data and transmits it the EOC in the form of EDUs. This stream of data is stopped for a time period greater than 5 seconds and started back up again. When the EOC does not receive telemetry data for a time period greater than 5 seconds. The appropriate no data event messages are displayed. The affected telemetry parameters retain their last known value and are marked static; this signifies that no data is being received.

<u>Verified Requirements:</u>
EOC-5070#A

Procedures:

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.001	EOC	Initialize the FOS EOC hardware. Refer to the FOS Operations Tool Manual for the ECS Project, Section 4.1.1, Hardware Initialization.	FOS EOC hardware: DEC RAID (no name), RAID Server (foseoc2), Data Server (foseoc7), Real-Time Server (foseoc6), and EOC User Stations (HP and Sun) are up and running.	RAID contains the users' home directories and the operational FOS software in /fos, which needs to be mounted by the other machines.The FOS EOC hardware is already initialized so this step is not performed - step skipped.		4/18/97
1.002	ETS (MPS)	Initialize the ETS MPS hardware (Power On).	ETS MPS hardware is up and running.	The ETS MPS hardware is already initialized so this step is not performed - step skipped.		4/18/97
1.003	EDOS	Initialize the EDOS hardware.	EDOS hardware is up and running.			4/18/97
1.004	ETS(MPS)X-terminal	If the ets2 login window is not up, restart the server and select ets2.Login to the ETS X-terminal (UNIX OS). account: si_t <Return> password: [password] <Return>Bring-up the MPS Graphical User Interface (GUI).Type ets_mps <Return>	The MPS Menu Controller appears with MPS and OMDSIM buttons.	Home directory: /usr/si_t/MPS executable directory: /usr/si_t/release/bin		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.005	ETS (MPS)X-terminal	Select MPS Exec from the MPS Menu Controller Window.	The MPS main window appears			4/18/97
1.006	ETS(MPS)PDOS terminal	Reset the MVME177 card and bring-up the MPS software.Press the reset button for the MVME177 card.Login to the ETS PDOS terminal.Change to the directory where the MPS startup script resides.Option 1: Type gotosi (alias cd 10:/si_t/release1)Option 2: Type cd /ets/devType RUNACPT.	The following message is shown at the bottom of the PDOS terminal: TY_main ... waiting for messageA MPS ready message is shown in the event log window of the MPS main window.	The MVME 177 card and the PDOS terminal are in the back room.Use Option 2.		4/18/97
1.007	ETS(MPS)X-terminal	Select S/C simulation mode for MPS.Select the Spacecraft radio button for Simulation Mode from the MPS main window.	The Spacecraft radio button is sensitized.			4/18/97
1.008	ETS(MPS)X-terminal	Select the PDB as the data source for the telemetry being generated by the MPS.Select the PDB radio button under Data Source from the MPS main window.	The PDB radio button is sensitized.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.009	ETS(MPS)X-terminal	Set and record the S/C and UTC times to the GMT time provided at the EOC.Select Set Time from the Control pull-down menu in MPS main window and enter the GMT time values or accept the GMT times provided by ETS.	The Spacecraft Time and UTC displays on the MPS main window are updated.	Use the following Unix command to help in defining GMT time: date -uTime Format: yy ddd hh mm ssThis step is optional.		4/18/97
1.010	EOC (Data & R/T Servers)	Start the Sybase servers on the Data Server and Real-Time Server.	Sybase server #1 has started on Data Server, "foseoc7". Sybase server #2 has started on Real-Time Server, "foseoc6".	The Sybase servers are already up and running so this step is not performed-step skipped.		4/18/97
1.011	EOC(User Station)	Login to an EOC User Station, "foseXoe" or "msseoc2". Enter ivvtest <Return> Enter [password] <Return>	The SparcStation console with the One room button is sensitized.	X is 5, 8, 9, or 10.		4/18/97
1.012	EOC(User Station)	Select room Two from the SparcStation console.	The Two room button is sensitized.			4/18/97
1.013	EOC(User Station)	In a X-terminal window:Type netscape & <Return>Check to see if any FOS process endpoints exist.Invoke the URL http://198.118.199.20/FosDbHome.htmlSelect	The NETSCAPE window appears.The FOS Database Access Page appears.A message is displayed which states that 0 endpoints are found.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Nameserver Database.Click on Clear Form.Click on Submit				
1.014	EOC(User Station)	Select room One from the SparcStation console.	The SparcStation console with the One room button is sensitized.			4/18/97
1.015	EOC(Data Server)	Start up the FOS software for the Data Server.In a X-terminal window, remotely login to the FOS Data Server, "foseoc7".Type rlogin foseoc7 <Return>Enter [password] <Return> at password prompt.Type ps -ef <Return>; look for FOS processes and delete them using the kill -9 [PID].Type test <Return> (alias for cd /fos/test/am1/scripts/setup) Type source A2_DataServerStartup <Return>	Fourteen FOS software processes are now running on the Data Server.The following messages are displayed: Successful installation of signal handler FqLqSigHand, and a repeating Waiting for activity.	The FOS software processes are the ODB and FOS subsystem processes.rlogin has a -l <username> option to specify the user or it defaults to the login account name.PID stands for process ID.Alias test will be used to change directory.		4/18/97
1.016	EOC(Real -Time Server)	Start up the FOS software for the Real-Time Server.In a X-terminal window, remotely login to the FOS	Thirty-four FOS software processes are now running on the Real-Time Server.R/T logical string	The FOS software processes are the ODB and FOS subsystem processes.rlogin has a -l		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Real-Time Server, "foseoc6".Type rlogin foseoc6 <Return>Enter [password] <Return> at password prompt.Type ps -ef <Return>; look for FOS processes and delete them using the kill -9 [PID].Type test <Return> (alias for cd /fos/test/am1/scripts/setup) Type source A2_RealTimeServerStartup <Return>	100 is created.The following messages are displayed: Creating a ptp coupler	<username> option to specify the user or it defaults to the login account name PID stands for process ID.Alias test will be used to change directory.		
1.017	EOC(User Station)	Select room Two from the SparcStation console.	The Two room button is sensitized.			4/18/97
1.018	EOC(User Station)	Check to see if 14 FOS process endpoints exist for the Data Server.Click on Back.Enter foseoc7 in the Entry Id field.Click on Submit.	A message is displayed which states that 14 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/18/97
1.019	EOC(User Station)	Check to see if 34 FOS process endpoints exist for the R/T Server.Click on Back.Enter foseoc6 in the Entry Id field.Click on Submit.	A message is displayed which states that 34 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.020	EOC(User Station)	Check to see if 0 FOS process endpoints exist for the User Station "foseXoe".Click on Back.Enter "foseXoe" in the Entry Id field.Click on Submit.Exit Netscape.	A message is displayed which states that 0 endpoints are found.Netscape window is no longer displayed.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]		4/18/97
1.021	EOC(User Station)	Select room One from the SparcStation console.	The SparcStation console with the One room button is sensitized.			4/18/97
1.022	EOC(User Station)	Start up the FOS software for the User Station, "foseXoe".Login to the EOC User Station, "foseXoe" Enter ivvtest3 <Return> Enter [password] <Return>In a terminal window, type test <Return>(alias for cd /fos/test/am1/scripts/setup) Type source A2_UserStationStartup <Return>	The appropriate FOS software processes are now running on the EOC User Station.The following windows are displayed: Control Window , General Scheduler, EOS Timeline, Load Manager, Load Generator, BAP Definer, and Activity Definer.	The FOS software processes are the ODB and FOS subsystem processes.X is 5, 8, 9, or 10.		4/18/97
1.023	EOC (User Station)	Iconify the six Planning and Scheduling windows: General Scheduler, EOS Timeline, Load Manager, Load Generator, BAP	The Planning and Scheduling windows are now icons.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Definer, and Activity Definer				
1.024	EOC (User Station)	Bring up the Event Display Window via the Tools Button on the Control Window.Click on Tools.Select Event_Display.Click on OK.	The Event Display Window appears.	Make sure that Netscape is not up in any of the workstation rooms.		4/18/97
1.025	EOC (User Station)	Enable telemetry data archiving.Archiving is automatically enabled.	An event message stating that telemetry archiving is enabled. The Release A message that is displayed in the R/T Server startup window is myTlmArchiveFlag: 1.	Release A: Archiving is already enabled.Release B: The ECL directive ARCHIVE will control the archiving modes: ARCHIVE TLM =ENABLE <tlm TYPE>		4/18/97
1.026	EOC (User Station)	In a terminal window, invoke the script that generates the Test Configuration Report.Type config (alias cd /home/ivvtest3/config)Type tconfig (alias /home/ivvtest3/scripts/tconfig.scr)Type mv testconfig test#Yr_config_eoc1.<date>	A file named test#Yr_config_eoc1.<date>, which contains the "As Run" Configuration details, is in the /home/ivvtest3/config directory.	A directory ~/config has already been created. Aliases config and tconfig have already been added to the ivvtest3 .cshrc.# is 1 thru 10.Y is d or f.		4/18/97
1.027	~	Record the system	The "As Run"			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		configuration on the execution cover sheet.	Configuration details are recorded on the execution cover sheet.			
2.001	~	DROPOUT				4/18/97
2.002	EOC(User Station)	Connect to this R/T logical string in mirrored mode.STRING CONNECT STRING=100 TLMTYPE=ALL CONFIG=MIRROR	A mirrored connection is established. An event message confirming that the connection to the logical string 100 was successful is displayed in the event display on the Control Window and in the Event Display Window.	100 is the <string ID> (e.g., STRING=100 or 1xx).Release A: Only mirrored connections to logical strings are supported.Release B: Both mirrored and tailored connections to logical strings will be supported.		4/18/97
2.003	EOC(User Station)	Request Ground Control privilege for the R/T logical string 100.TAKE GROUNDCONTROL STRING=100	Ground Control privilege for string 100 is obtained. An event message confirming that Ground Control privilege was granted is displayed in the event display on the Control Window and in the Event Display Window.	100 is the <string ID> (e.g., STRING=101 or 1xx).The Ground Control Privilege is granted to one EOC user per logical string for the purpose of modifying the ground configuration of the HW and SW resources within that logical string. These privileges are granted only to local EOC users (not IST) that are pre-		

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.004	EOC(User Station)	The telemetry display called HEADERS2, which has pre-defined data sources, is invoked at the EOC user station.P HEADERS2	The HEADERS2 telemetry display appears. The previously selected ground parameters (packet header and ESH) appear on the display page.	ECL directive PAGE opens page in the current room.		4/18/97
2.005	EOC(User Station)	The R/T telemetry display called TLMDECOM3, which has pre-defined data sources, is invoked at the EOC user station.P TLMDECOM3	The TLMDECOM3 telemetry display appears. The previously selected parameters (H/K, H&S, and STANDBY) appear on the display page.	ECL directive PAGE opens page in the current room.		4/18/97
2.006	EOC(User Station)	Capture the data being received at the EOC on the I channel.In a terminal window, type:tcpdump -w /tmp/dumphsdoI# port 20001Do not hit <Return>.	UNIX prompt awaiting user input.	Release B: Add the following to the EOC1.4 test: 1) Use the telemetry log function of the ETS MPS to capture the telemetry leaving the MPS; 2) Request the capture of telemetry (pre- and post-processed) at EDOS to generate dump files for analysis off-line.		4/18/97
2.007	EOC(User Station)	Capture the data being received at the EOC on the Q channel.In a terminal window, type:tcpdump -w /tmp/dumphsdoQ# port	UNIX prompt awaiting user input.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		20011Do not hit <Return>.				
2.008	EOC(User Station)	Produce a screen snapshot.snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')	Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both..		4/18/97
2.009	EDOS	Notify EDOS personnel so they can prepare for 1 kbps H&S data transmission on the I and Q channels.	Receive response back from EDOS personnel that EDOS is configured and ready.	Release B: H/K telemetry dropouts will also be tested.		4/18/97
2.010	ETS(MPS)X-terminal	Configure the MPS to transmit S/C bus and instrument data (1 kbps) as CADUs.Select TLM from the Configure pull-down menu from the MPS main window.Select the following radio buttons: SN and Internal for Clock Source on both channels 1 and 2.Enter a value of 1000 into the Bit Rate field for channels 1 and 2.Click on OK.	An event message is displayed in the MPS event log window that the telemetry configuration for S/C Sim Mode has been set.	Make sure that a set of MPS configuration files are generated to reduce the steps required for selecting or entering values in MPS dialog boxes; then configurations can be selected. The clock source may be external.		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.011	ETS (MPS)X-terminal	Set the telemetry packet configuration to H&S for channels 1 and 2.Select Packet Format from the Configure pull-down menu in the MPS main window. Select the H&S radio buttons for Channel 1 and Channel 2.Select R/S.Click on OK.	H&S and R/S radio buttons for Channel 1 and 2 are sensitized.An event message is displayed in the MPS event log window that the packet format configuration (S/C Sim Mode) has been set.	R/S stands for Reed Solomon encoding.		4/18/97
2.012	~	Send the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs to EDOS or the ETS LRS in real-time.				4/18/97
2.013	ETS(MPS)X-terminal	Start sending H&S telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	Telemetry is being received at EDOS and eventually the EOC.			4/18/97
2.014	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		scenario file called hs_standby.scn.Click on OK.Click on the Start push button.	scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	telemetry.Release A: The scenario script, hs_standby.scn, contains analog parameters.Release B: The scenario script will include analog, derived, and context dependent parameters.		
2.015	EOC(User Station)	Look for the first packet to be received.SDU_PACKET_SEQ ground parameter is initially marked static and begins incrementing from its current value.	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending.The TLMDECOM3 telemetry display is being updated as it receives the telemetry sent by the MPS.			4/18/97
2.016	EOC(User Station)	Return to the tcpdump windows and type:<Return>	Data is being captured in the dump files (dumphsdoI# and dumphsdoQ#) in the /tmp directory.			4/18/97
2.017	ETS (MPS)X-terminal	Drop three VCDUs during the data transmission (channels 1 and 2).Select Drop TLM from the Control pull-down menu in the MPS main window.Select the following radio buttons:	An event message is displayed in the MPS event log window that three VCDUs have been dropped from the data transmission.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Channel 1 and Channel 2.Use the No. VCDUs to drop spinner to set the drop rate to 3 for Channel 1 and Channel 2.				
2.018	EOC(User Station)	Look for the "STATIC" flag by each telemetry parameter mnemonic in the TLMDECOM3 display window.	The "STATIC" flag is by each telemetry parameter mnemonic in the TLMDECOM3 display window.	This static condition should occur approximately 6 seconds into the return link session.		4/18/97
2.019	EOC(User Station)	Produce screen snapshots of the event messages and the telemetry displays to depict their states (data being received with data dropouts).snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')	Screen dump to a printer, file, or both.The HEADERS2 telemetry display shows the telemetry transmission beginning and ending.The TLMDECOM3 telemetry display shows no parameter values change when the data transmission stops.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both..		4/18/97
2.020	ETS (MPS)X-terminal	Drop three VCDUs during the data transmission (channels 1 and 2).Select Drop TLM from the Control pull-down menu in the MPS main window.Select the	An event message is displayed in the MPS event log window that sixteen VCDUs have been dropped from the data transmission.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		following radio buttons: Channel 1 and Channel 2.Use the No. VCDUs to drop spinner to set the drop rate to 16 for Channel 1 and Channel 2.				
2.021	EOC(User Station)	Look for the "STATIC" flag by each telemetry parameter mnemonic in the TLMDECOM3 display window	The "STATIC" flag is by each telemetry parameter mnemonic in the TLMDECOM3 display window.	This static condition should occur approximately 6 seconds into the return link session.		4/18/97
2.022	EOC(User Station)	Produce screen snapshots of the event messages and the telemetry displays to depict their states (data being received with data dropouts).snap (alias for 'xwd -root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')	Screen dump to a printer, file, or both.The HEADERS2 telemetry display shows the telemetry transmission beginning and ending.The TLMDECOM3 telemetry display shows no parameter values change when the data transmission stops.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both..		4/18/97
2.023	ETS(MPS)X-terminal	Stop sending H&S telemetry to EDOS when the last set of data dropouts due to the VCDU dropouts by the MPS are received at the EOC.Select Stop TLM	Telemetry is no longer being received at EDOS or the EOC.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.				
2.024	EOC(User Station)	Terminate tcpdump.Type Ctrl -C in tcpdump windows.	Messages are displayed that inform you of the termination of tcpdump for the H&S channels.	Release B: Sync up the S/C clock times at the ETS, EOC, and EDOS.		4/18/97
2.025	EOC(User Station)	Move the H&S dump files generated by tcpdump to the formal test directory and list the directory contents to verify the move.mv /tmp/dump* ~/eoc4/testfr#ll (alias ls -la)	The H&S dump files are in the formal test directory listing.			4/18/97
2.026	~	Review the snapshots off-line.	The snapshot shows a "STATIC" flag by each telemetry parameter mnemonic after the VCDU dropouts.			4/18/97
2.027	~	NODATA				4/18/97
2.028	EOC(User Station)	Produce a screen snapshot of the HEADERS2 and TLMDECOM3 pages to depict their static states.snap (alias for 'xwd -root | xpr -device ps | lpr -	Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')		feature to take a screen snapshot and send it to a printer, file, or both..		
2.029	~	Send the R/T S/C bus and instrument data (two streams of 1 kbps - H&S) as CADUs to EDOS or the ETS LRS in real-time.				4/18/97
2.030	ETS(MPS)X-terminal	Start sending H&S telemetry to EDOS.Select Start TLM from the Control pull-down menu in the MPS main window.Select Both from the Start TLM pull-down menu.	Telemetry is being received at EDOS and eventually the EOC.			4/18/97
2.031	ETS(MPS)X-terminal	Execute the R/T scenario script.Select Scenario from the Control pull-down menu in the MPS main window.Select an existing scenario file called hs_standby.scn.Click on OK.Click on the Start push button.	The time elapsed since the scenario started is shown in the Elapsed Time field in the Scenario dialog.The simulator directives in the scenario file are displayed in the event viewing window of the Scenario dialog as they are queued for execution.	A Stop push button does exist to terminate the scenario at any time; this button will not stop the transmission of the telemetry.Release A: The scenario script, hs_standby.scn, contains both analog and discrete parameters.Release B: The scenario script will include		4/18/97

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				analog, discrete, derived, and context dependent parameters.		
2.032	EDOS or ETS (LRS)	EDOS or the ETS LRS receives the R/T S/C bus and instrument data (two streams of 1 kbps H&S) as CADUs, processes the data to generate EDUs, and sends the data to the EOC via UDP to specific multicast IP addresses (operational) and UDP ports in real-time.	Status and event messages regarding the telemetry data reception, processing , and transmission to the EOC will be displayed.	EDOS Processing: The Version 1 CCSDS packets (SDUs) are extracted from the CADUs. A EDOS Service Header (ESH) is added to each SDU to create a EDU.		4/18/97
2.033	EOC(User Station)	Look for the first packet to be received.SDU_PACKET_SEQ ground parameter is initially marked static and begins incrementing from its current value.	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending.The TLMDECOM3 telemetry display is being updated as it receives the telemetry sent by the MPS.			4/18/97
2.034	EOC(User Station)	Produce screen snapshots of the event messages and the telemetry displays to depict their states (data being received).snap (alias for 'xwd -root | xpr -device ps | lpr -dlw')	Screen dump to a printer, file, or both.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')				
2.035	ETS(MPS)X-terminal	Stop sending H&S telemetry to EDOS when the parameters on the dynamic displays at the EOC have been in a non-static state (active) for at least one minute.Select Stop TLM from the Control pull-down menu in the MPS main window.Select Both from the Stop TLM pull-down menu.	Telemetry is no longer being received at EDOS or the EOC.			4/18/97
2.036	EOC(User Station)	Look for the static "S" flag by each telemetry parameter mnemonic in the TLMDECOM3 and HEADERS2 display windows.	The static "S" flag is by each telemetry parameter mnemonic in the TLMDECOM3 and HEADERS2 display windows.	This static condition should occur approximately 6 seconds into the return link session.		4/18/97
2.037	EOC(User Station)	Produce screen snapshots of the event messages and the telemetry displays to depict their states (data no longer being received - static).snap (alias for 'xwd -	Screen dump to a printer, file, or both.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both.Release B: Use the FUI Screen Snapshot		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		root | xpr -device ps | lpr -dlw') orsnap3(alias for 'xwd -root | xpr -device ps | lpr -dlw -P fose3oe')		feature to take a screen snapshot and send it to a printer, file, or both.		
2.038	~	Review the snapshots off-line.	The snapshot shows a static "S" flag by each telemetry parameter mnemonic before the data transmission begins and after data transmission stops.			4/18/97
3.001	EOC (User Station)	Save the Event_Display data in the test run directory. In Event_Display menu:Select File.Select Save As.Change the filter directory to the file destination directory.Enter <event log filename>	A message is displayed which states that the event display contents have been saved in the entered <event log filename>.	Make sure that the event log filename includes the test name and the current date.		4/18/97
3.002	EOC (User Station)	Bring down User Stations. In the UNIX window where the User Stations were initiated, enter:MyKill	A series of messages stating that FOS processes are being killed is displayed.All FUI windows have disappeared.FOS applications are shutdown			4/18/97
3.003	EOC (User	After the "MyKill", check for undesirable FOS	No undesirable FOS processes remain.			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
	Station)	processes. ps -aux				
3.004	EOC (User Station)	Open any iconized processes, or pages that didn't close. Close the windows.Select Quit from the File menu or Select the Close button on the window dialog orUse whatever other clean close window option that exists.	All FUI windows have disappeared.			4/18/97
3.005	EOC (User Station)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/... prefix and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type ps -aux again to verify the removal of the undesired FOS processes.	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the owner of the processes in order to kill them.		4/18/97
3.006	EOC(User Station)	Select room Two from the SparcStation console of the User Station where the Real-Time and Data Servers were initiated.	The Two room button is sensitized.			4/18/97
3.007	EOC(User Station)	In a X-terminal window:Type netscape &	The NETSCAPE window appears.The FOS Database			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		<Return>Invoke the URL http://198.118.199.20/FosDbHome.html	Access Page appears.			
3.008	EOC (User Station)	Verify no endpoints exist on the User Stations:Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: "foseXoe".Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the User Stations using ps -aux . They must all be removed/killed prior to system startup.	X corresponds to the User Station number and can have a value of 5, 8, 9, or 10.		4/18/97
3.009	EOC(Real-Time Server)	Bring down Real-Time Server (foseoc6). In the UNIX window where the Real-Time Server was initiated, enter: MyKill. Wait 1-5 minutes.	A series of messages stating that FOS processes are being killed is displayed.FOS applications are shutdown			4/18/97
3.010	EOC(Real-Time Server)	After the "MyKill", check for undesirable FOS processes. ps -ef	No undesirable FOS processes remain.			4/18/97
3.011	EOC(Real-Time Server)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/ prefix and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the owner of the processes in order to kill them.		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		ps -ef again to verify the removal of the undesired FOS processes.				
3.012	EOC(Real -Time Server)	Verify no endpoints exist on Real-Time Server:Click on Back.Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: foseoc6.Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the Real-Time Server using ps -ef . They must all be removed/killed prior to system startup.			4/18/97
3.013	EOC(Data Server)	Bring down Data Server (foseoc7). In the UNIX window where the Data Server was initiated, enter:MyKill. Wait 1-5 minutes.	A series of messages stating that FOS processes are being killed is displayed.FOS applications are shutdown			4/18/97
3.014	EOC(Data Server)	After the "MyKill", check for undesirable processes. ps -ef	No undesirable FOS processes remain.			4/18/97
3.015	EOC(Data Server)	Kill all undesirable processes - Processes with a /fos/test/am1/bin/ prefix and owner is not "root" (there may be others).If processes are still active use kill -9 "PID" for each undesirable process. Type	The killed FOS processes are no longer on the process listing.	PID stands for process ID.Notes: The user may need to be logged in as the owner of the processes in order to kill them.		4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		ps -ef again to verify the removal of the undesired FOS processes.				
3.016	EOC(Data Server)	Verify no endpoints exist on Data Server:Click on Back.Click on Nameserver Database.Click on Clear Form.In Entry Id field enter: foseoc7.Click on Submit.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the Data Server using ps -ef . They must all be removed/killed prior to next system startup.			4/18/97
3.017	EOC	Verify no endpoints exist on FOS:Click on Back.Click on Nameserver DatabaseClick on Clear FormClick on Submit.Exit Netscape.	"Total matches = 0".Note: If any endpoints exist recheck for live processes/endpoints on the User Work Stations, and the Real Time Server and Data Server using ps -aux and ps -ef, respectively. All processes must be removed/killed prior to system startup.Netscape window is no longer displayed.			4/18/97
3.018	EOC	End the remote login sessions.Type exit in the X-terminal windows where the Real-Time and Data	The remote login sessions end and a message is displayed that reflects the session logouts. The			4/18/97

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
		Server processes were initiated.	UNIX prompts for foseoc6 and foseoc7 return to the regular User Station (foseXoe) prompt.			
3.019	EOC	Log off the EOC UNIX workstation(s).	UNIX login sessions end.			4/18/97
3.020	ETS (MPS)PDOS terminal	Execute the MPS shutdown script.Change to the directory where the MPS shutdown script resides and type CLEAR at the PDOS terminal prompt; then type lt at the same prompt.	All the MPS task processes are killed-- they no longer appear in the task process listing.			4/18/97
3.021	ETS (MPS)X-terminal	Exit the MPS main window.	The MPS main window disappears.			4/18/97
3.022	ETS (MPS)X-terminal	Logout of the ETS X-terminal used for the MPS GUI.	UNIX login session ends.			4/18/97
3.023	ETS (LRS)	Exit the LRS monitor window.	The LRS monitor window disappears.	LRS was not used, EDOS Version 2 was used instead.		4/18/97
3.024	ETS (LRS)	Close the ETS LRS Menu Controller window.	The ETS LRS Menu Controller window disappears.	LRS was not used, EDOS Version 2 was used instead.		4/18/97
3.025	ETS (LRS)	Logout of the ETS UNIX workstation used by the LRS.	UNIX login session ends.	LRS was not used, EDOS Version 2 was used instead.		4/18/97

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4.001		Verify EOC-5070#A			EOC-5070#A	4/18/97