



ECS End of Contract Status

15 October 2002



Agenda & Introduction

Chuck Thomas

Agenda



- **Agenda and Introduction** Chuck Thomas
- **EOC Performance** Desryn Duncan
- **RMA Process/Analysis** Chuck Thomas
- **EOC COTS** Chuck Thomas
- **EOC Property Closeout** Chuck Thomas
- **EOC CDRLs** Chuck Thomas
- **EOC L3 Requirements Status** Joan Schessler
- **ECS Post-EOC** Randy Miller
- **NCR Liens** Randy Miller
- **Quality Assurance** Joe Spyrison
- **Conclusion** Chuck Thomas
- **Addenda: Requirements with Special Status**

Introduction



- **Started Planning EOC/Contract Closeout activities in October 2001**
- **Based on planning effort, activities were identified and planned**
- **Activities include:**
 - **Performance Improvements to cover expected DAAC workloads after 10/31/02**
 - **Upgrade COTs at End of life in 2002 (table will be presented in COTS section)**
 - **Hardware and Property Closeout**
 - **Improvements to ABC++**
 - Creation of online 305
 - **Updates to DID305 - Release 6B Segment/Design Specification for the ECS Project, DID311- Database Design and Database Schema Specifications for the ECS Project, and D313- Release 6B ECS Internal Interface Control Document for the ECS Project**

Introduction (cont.)



- **Activities include (cont.):**
 - Document Error Logging
 - Updates to 305/313 Parent Document
 - L3 requirements Closeout
 - Add Sony DTF functionality
- **Additional Activities were identified during 2002 and included:**
 - Updates to DID609 - Release 6B Operations Tools Manual, DID611- Mission Operation Procedures, DID625 - Release 6B, ECS Project Training Material, DID501- Quality Assurance Plan for the ECS SDPS Project, and DID335 - ECS COTS Deployment Plan
 - 508 Compliance
 - Additional COTS upgrades (example WhatsUpGold; indicated in table in COTS section)



EOC Performance

Desryn Duncan

Performance Enhancement Process



- **EOC performance ticket containing the workload specification for GSFC was negotiated with ESDIS**
- **Created test scenario that used large number of tiny granules to simulate system throughput**
- **Created large volume of test data (tiny granule)**
- **Configured PVC with S4P for MODIS and AIRS production**
- **Modified software to collect performance metrics**
- **Performed monthly performance runs to collect statistics**
- **Delivered intermediate builds to PVC for monthly testing**
- **Delivered Custom code changes as EOC patch to 6A.06**

Final Performance Statistics



INGEST	Granules
MODAPS	
Goal	18808
Actual	18777
MOD-T-R	
Goal	8640
Actual	8040
MOD-T-F	
Goal	4320
Actual	4320
MOD-A-R	
Goal	7488
Actual	8040
MOD-A-F	
Goal	3744
Actual	4320

AIRS-A-R	Granules
Goal	9600
Actual (S4PM)	8031
AIRS-A-F	
Goal	4800
Actual (S4P00)	4818
S4P PGE	
REPROC.	
Goal	6551
Actual	6551
FORWARD	
Goal	3851
Actual	3851

Final Performance Statistics (cont.)



DDIST	Granules
SUBS	
Goal	24000
Actual	25687
PDS	
Goal	833
Act. (Reqs)	1522
Other Act.	
Ftp pull Act.	4538
EcDpPrEM	38
S4PMTS1	440

Final Performance Statistics (cont.)



BMGT	Granules	Granules
Goal	20,000 (Science)	10,000 (Browse)
Actual	26,736 (13:07)	9,380 (13:11)
QAMUT		
Goal	117,180	
Actual	126,154	
Granule Deletion		
Goal	28,103	
Actual	50,320	

Final Performance Statistics



- **Total Ingested granules in 24 hrs: 73,593 : 114% of specification**
 - **Polling for multiple files was around 30 times faster**
- **Total Distribution of granules in 24 hrs: 31,747**
 - **116 % of that required by workload specification**
- **Data Deletion was 180% of that required by specification**
- **QA Update was 6.5 times that required by specification**
- **BMGT performance was 134% of that required by specification**
- **Total Data Pool exports were 149% of that required by specification**



RMA Analysis

Chuck Thomas

RMA Ticket



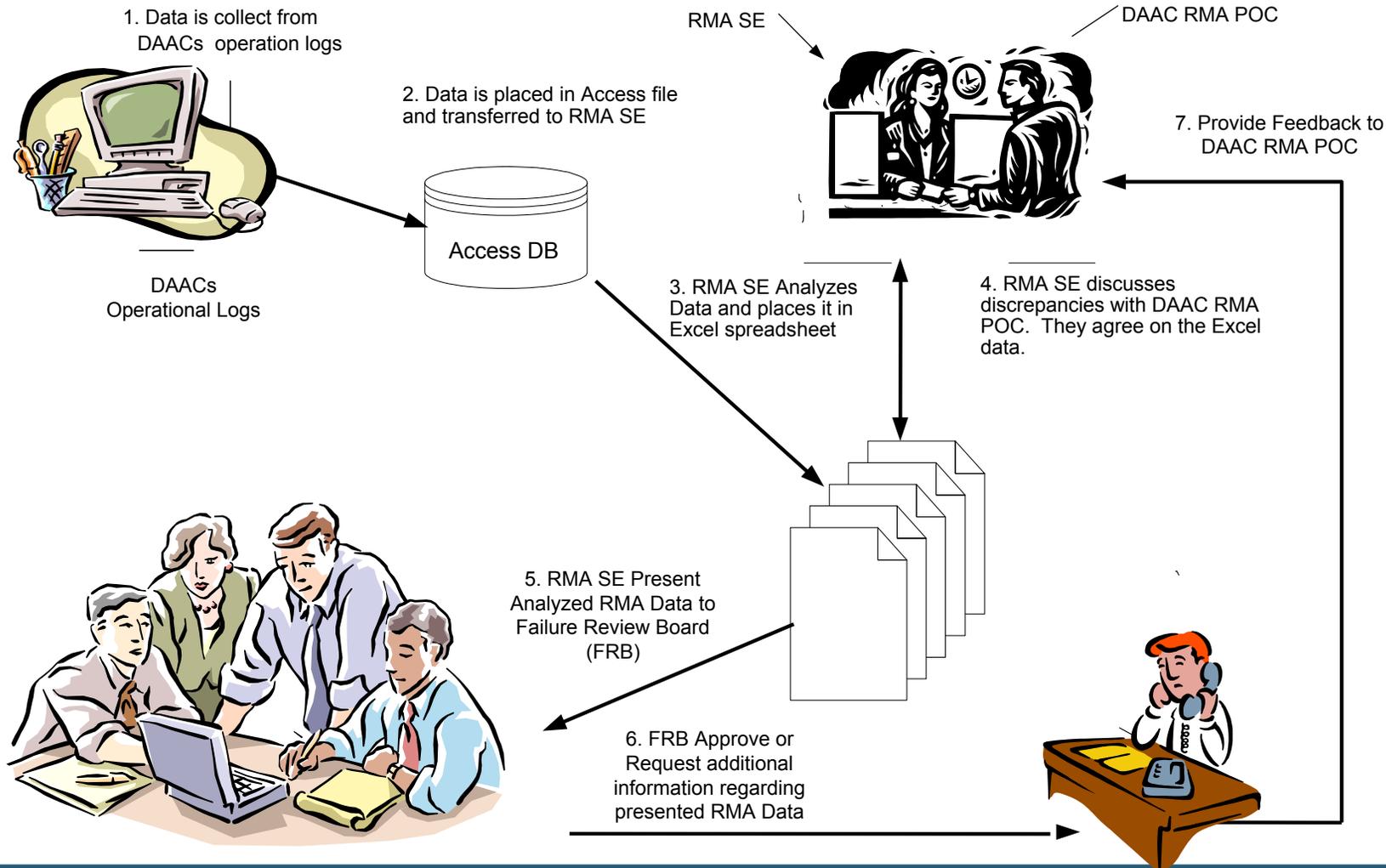
- Level 3 requirements are mapped in ESDIS approved ticket AB_ZZ_01.
- Ticket specifies process for data collection and analysis
 - Data was collected over 3 month window
- Operational Functions were defined in RMA Whitepaper 245-WP-001-001 - *Reliability, Maintainability, and Availability (RMA) Analysis for the ECS Project*
- The operational availability calculated as the total time a function is available divided by the total operating hours in the reporting period over the three-month reporting period is greater than or equal to 0.96

RMA Ticket (cont)



- To ensure sampling error does not lead to incorrect conclusions, conduct hypothesis testing on the mean down time for each function as follows:
 1. Use a null hypothesis that the function has a mean down time equal to or less than 4 hours since empirical evidence indicates that a given function is likely to meet mean down time requirements.
 2. Use an alternative hypothesis that the function has a mean down time of greater than 4 hours.
 3. Verify that the null hypothesis cannot be rejected at a 85% level of confidence and therefore the function meets mean down time requirements.

RMA DATA Analysis Process Overview



GDAAC RMA Results



Goddard DAAC RMA Analysis from April 1 thru June 30 2002 (91 Days)

Function	Allowable Budget for (91 Days) (Hours)	Remaining Budget to Date (Hours)	Number of Events with Chargeable Down Time	Total Down Time to Date (Hours)	Mean Down Time to Date (Hours)	Operational Availability to Date	
Ingest & Archive: Sources	EDOS	87.36	15.9	34	71.48	2.10	0.97
	XDAAC	87.36	11.1	36	76.23	2.12	0.97
	MODAPS	87.36	18.1	30	69.2	2.31	0.97
	EMOS	87.36	12.9	34	74.48	2.19	0.97
	DAO	87.36	10.7	34	76.63	2.25	0.96
	FDS/FDD	87.36	8.7	36	78.63	2.18	0.96
	Ancillary	87.36	15.3	33	72.08	2.18	0.97
Production: planning, data staging, PGE execution, data de-staging, subscription	Terra - AM MODIS	87.36	27.0	27	60.32	2.23	0.97
	Aqua - PM MODIS	87.36	63.6	14	23.80	1.70	0.97
	Aqua - AIRS	87.36	63.6	14	23.80	1.70	0.99
Fulfillment: Data Distribution & Order Tracking	FTP Push	87.36	19.5	27	67.88	2.51	0.97
	FTP Pull						
	8 mm	87.36	9.8	30	77.58	2.59	0.96
	DLT	87.36	9.8	30	77.58	2.59	0.96
	CD-ROM	87.36	9.8	30	77.58	2.59	0.96
Data Search	DVD	87.36	9.8	30	77.58	2.59	0.96
	MTMGW	87.36	27.4	20	59.92	3.00	0.97
Data Order	EDG	87.36	25.4	21	61.95	2.95	0.97
	MTMGW	87.36	27.4	20	59.92	3.00	0.97
Browse	EDG	87.36	25.4	21	61.95	2.95	0.97
	EDG	87.36	22.3	22	65.02	2.96	0.97
Total =	21 Functions						

Remaining Budget Legend (RB)

Color	Color Bar	After 91 of 91 days: Range of Values	Definition
Green		RB => 29.76	GOOD
Red		RB < 29.75	At Risk
		RB <= 0	Cannot meet A ₀

Mean Down Time Legend

Color	Color Bar	Range of Value	Definition
Green		MDT<=4	GOOD
Red		MDT= > 4	FAIL

Availability Legend

Color	Color Bar	Range of Value	Definition
Green		A ₀ => .96	GOOD
Red		A ₀ <= .96	FAIL

LDAAC RMA Results



Langley DAAC RMA Analysis from May 1 thru July 31 2002 (92 Days)

Function		Allowable Budget for (92 Days) (Hours)	Remaining Budget to Date (Hours)	Number of Events with Chargeable Down Time	Total Down Time to Date (Hours)	Mean Down Time to Date (Hours)	Operational Availability to Date
Ingest & Archive: Sources	EDOS	88.32	8.9	67	79.42	1.19	0.96
	XDAAC	88.32	3.1	74	85.25	1.15	0.96
	MOPPIT	88.32	13.3	63	75.00	1.19	0.97
	EMOS	88.32	8.9	67	79.42	1.19	0.96
	ACRIM	88.32	9.0	67	79.33	1.18	0.96
	FDS/FDD	88.32	8.9	67	79.42	1.19	0.96
	Ancillary	88.32	68.3	15	20.00	1.33	0.99
Production: planning, data staging, PGE execution, data de-staging,	Terra - MISR	88.32	29.4	41	58.92	1.44	0.97
	Terra - MOPPIT	88.32	25.1	45	63.25	1.41	0.97
Fulfillment: Data Distribution & Order Tracking	FTP Push	88.32	18.8	78	69.50	0.89	0.97
	FTP Pull	88.32	19.5	78	68.83	0.88	0.97
	8 mm	88.32	68.3	15	20.00	1.33	0.99
	DLT	88.32	68.3	15	20.00	1.33	0.99
	CD-ROM	88.32	68.3	15	20.00	1.33	0.99
	DVD	88.32	68.3	15	20.00	1.33	0.99
Data Search	MTMGW	88.32					
	EDG	88.32	28.7	38	59.58	1.57	0.97
Data Order	MTMGW	88.32					
	EDG	88.32	28.7	38	59.58	1.57	0.97
Browse	EDG	88.32	28.7	38	59.58	1.57	0.97
Total =	21 Functions						

Remaining Budget Legend

Color	Color Bar	After 92 days: Range of Values	Definition
Green		RB =>0	GOOD
Red		RB <= 0	At Risk
			Cannot meet A _o

Mean Down Time Legend

Color	Color Bar	Range of Value	Definition
Green		MDT<=4	GOOD
Red		MDT= > 4	FAIL

Availability Legend

Color	Color Bar	Range of Value	Definition
Green		A _o => .96	GOOD
Red		A _o <= .96	FAIL

NDAAC RMA Results



NSIDC RMA Analysis from February 27 thru May 27 2002 (90 Days)

Function	Allowable Budget for (91 Days) (Hours)	Remaining Budget to Date (Hours)	Number of Events with Chargeable Down Time	Total Down Time to Date (Hours)	Mean Down Time to Date (Hours)	Operational Availability to Date	
Ingest & Archive: Sources	MODAPS	29.12	25.3	5	3.78	0.76	0.99
	EDOS (GLAS)	0	0	0	0.00	0.00	0.00
	Ancillary	0.0	0.0	0	0.0	0.00	1.00
Production: planning, data staging, PGE execution, data de-staging, subscription							
Fulfillment: Data Distribution & Order Tracking	FTP Push	29.12	27.0	3	2.08	0.69	1.00
	FTP Pull						
	8 mm	29.12	27.0	3	2.08	0.69	1.00
	DLT	29.12	27.0	3	2.08	0.69	1.00
	CD-ROM	29.12	27.0	3	2.08	0.69	1.00
Data Search	DVD	29.12	27.0	3	2.08	0.69	1.00
	MTMGW						
Data Order	EDG	29.12	24.8	3	4.37	1.46	0.99
	MTMGW						
Browse	EDG	29.12	23.9	3	5.20	1.73	0.99
Total =	14 Functions						

Remaining Budget Legend

Color	Color Bar	After 91 of 91 days: Range of Values	Definition
Green		7.04 to 29.12	GOOD
Yellow		0 to 7.04	At Risk
Red		>= 0	Cannot meet A ₀

Mean Down Time Legend

Color	Color Bar	Range of Value	Definition
Green		MDT<=4	GOOD
Red		MDT= > 4	FAIL

Color	Color Bar	Range of Value	Definition
Green		A ₀ >= .96	GOOD
Red		A ₀ <= .96	FAIL

LP DAAC RMA Results



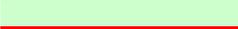
LP DAAC RMA Analysis from May 1 thru July 31 2002 (92Days)

Function	Allowable Budget for (92 Days) (Hours)	Remaining Budget to Date (Hours)	Number of Events with Chargeable Down Time	Total Down Time (Hours)	Mean Down Time (Hours)	Operational Availability	
Ingest & Archive: Sources	ASTER	88.32	7.0	19	81	4.28	0.96
	L7-IGS	88.32	11.4	16	77	4.81	0.97
	L7	88.32	6.2	17	82	4.83	0.96
	MODIS FPROC	88.32	5.6	20	83	4.14	0.96
Production: planning, data staging, PGE	EXPIDITED	88.32	18.8	16	70	4.34	0.97
	ON-DEMAND	88.32	18.8	16	70	4.34	0.97
	ROUTINE	88.32	18.8	16	70	4.34	0.97
Fulfillment: Data Distribution & Order Tracking	8 mm	88.32	33.9	14	54	3.89	0.98
	DLT	88.32	33.9	14	54	3.89	0.98
	CD-ROM	88.32	35.4	13	53	4.07	0.98
	FTP	88.32	11.1	17	77	4.54	0.97
	DVD	88.32	35.4	13	53	4.07	0.98
Data Search & Order	USER/EDG	88.32	22.3	14	66	4.72	0.97
Browse	USER/EDG	88.32	27.5	13	61	4.68	0.97
Total =	16 Functions						

Remaining Budget Legend

Color	Color Bar	Range of Values	Definition
Green		RB => 29.76	GOOD
Yellow		RB < 29.75	At Risk
Red		RB <= 0	Cannot meet A ₀

Mean Down Time Legend

Color	Color Bar	Range of Value	Definition
Green		MDT<=4	GOOD
Red		MDT= > 4	FAIL

Availability Legend			
Color	Color Bar	Range of Value	Definition
Green		A ₀ => .96	GOOD
Red		A ₀ <= .96	FAIL

LPDAAC Hypothesis Testing



- Performed in accordance with RMA Ticket AB_ZZ_01 criteria 140.
- Hypothesis Testing ensure sampling error does not lead to incorrect conclusions.
- Hypothesis testing is performed for each function that have a mean down time greater that 4 hours.
- Hypothesis testing verified that null hypothesis cannot be rejected at a 85 % confidence Level.

ASTER Ingest Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.28

Std Dev (s) = 6.39

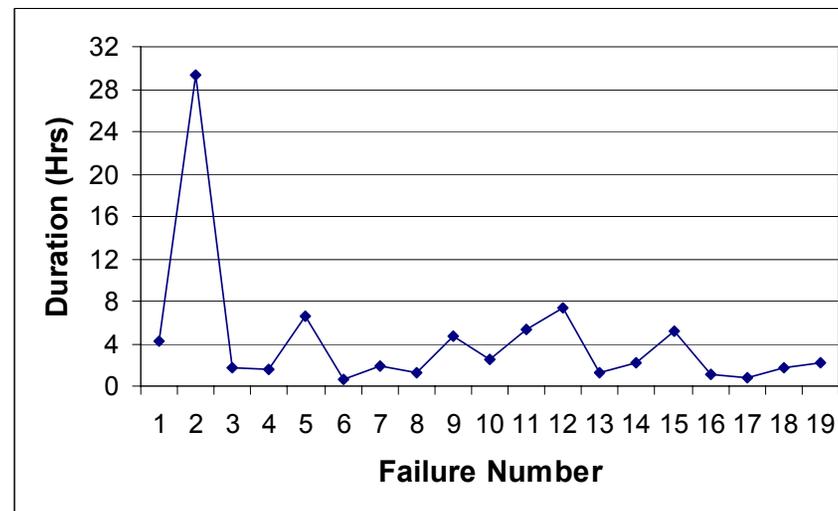
Count (n) = 19

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{n}} = .193$$

Degree of freedom = 18

P value = 0.425

Run Chart



Data contained on this slide verified that Aster Ingest at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

L7 IGS Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.81

Std Dev (s) = 6.83

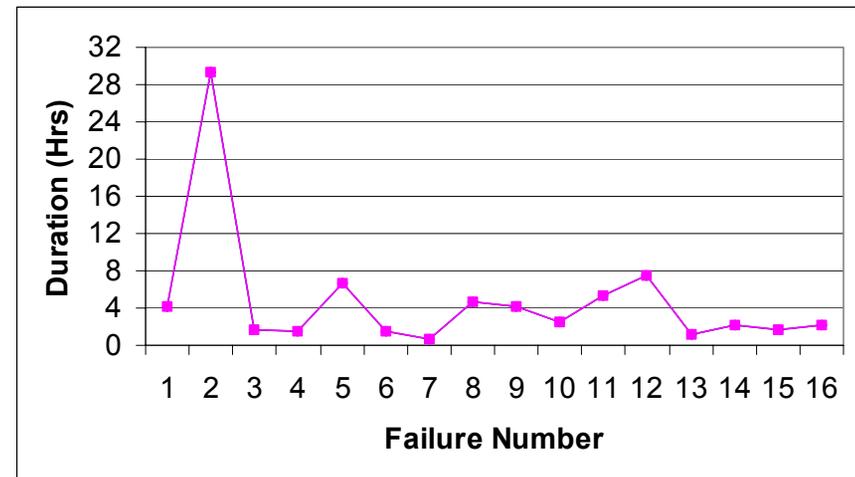
Count (n) = 16

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.474$$

Degree of freedom = 15

P value = 0.321

Run Chart



Data contained on this slide verifies that for L7 IGS at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

L7 Ingest Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.83

Std Dev (s) = 6.61

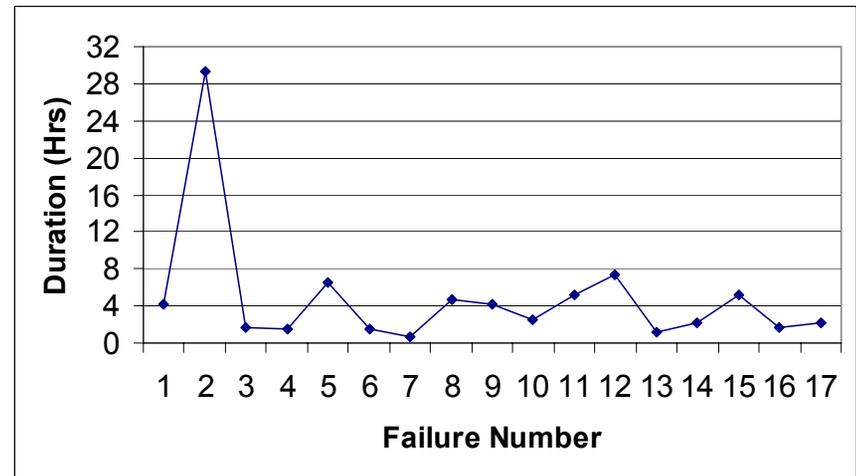
Count (n) = 17

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.518$$

Degree of freedom = 16

P value = 0.306

Run Chart



Data contained on this slide verifies that for L7 Ingest at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

MODIS FPROC Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.14

Std Dev (s) = 6.28

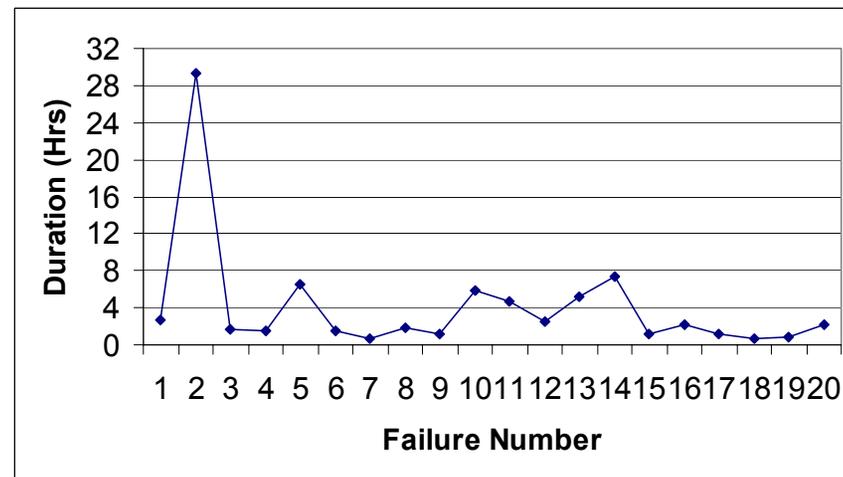
Count (n) = 20

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.096$$

Degree of freedom = 19

P value = 0.462

Run Chart



Data contained on this slide verifies that for MODIS FPROC at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

Expidited Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.34

Std Dev (s) = 6.88

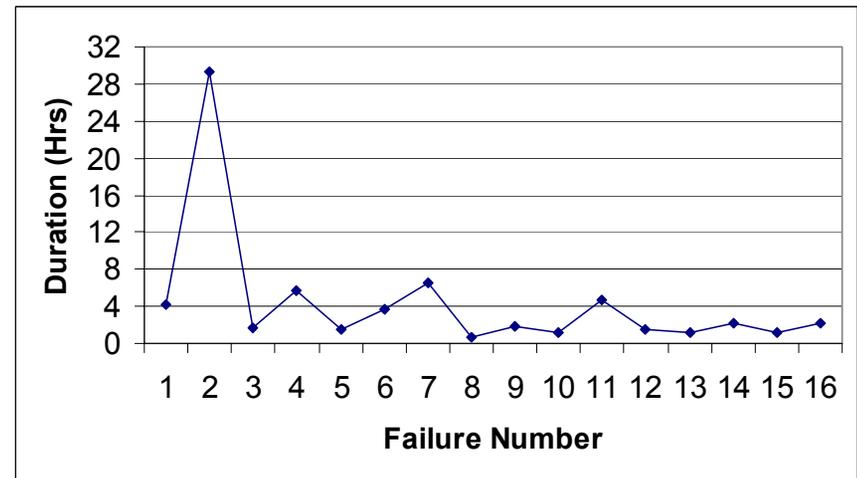
Count (n) = 16

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.200$$

Degree of freedom = 15

P value = 0.422

Run Chart



Data contained on this slide verifies that for Expidited at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

On Demand Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.34

Std Dev (s) = 6.88

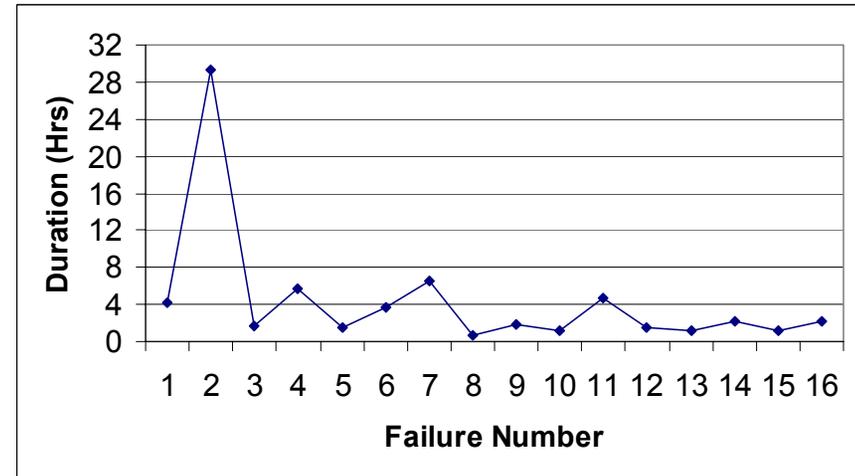
Count (n) = 16

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.200$$

Degree of freedom = 15

P value = 0.422

Run Chart



Data contained on this slide verifies that for On Demand at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

Routine Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.34

Std Dev (s) = 6.88

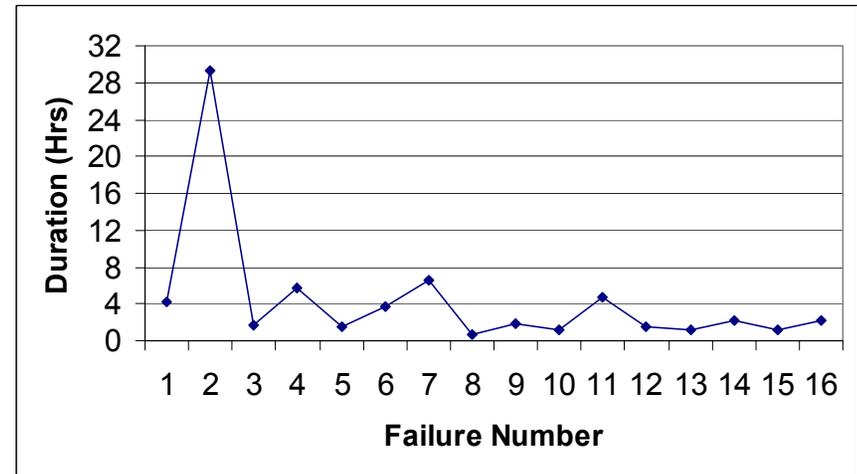
Count (n) = 16

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s\sqrt{n}} = 0.200$$

Degree of freedom = 15

P value = 0.422

Run Chart



Data contained on this slide verifies that for Routine at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

CD-ROM Distribution Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.07

Std Dev (s) = 7.69

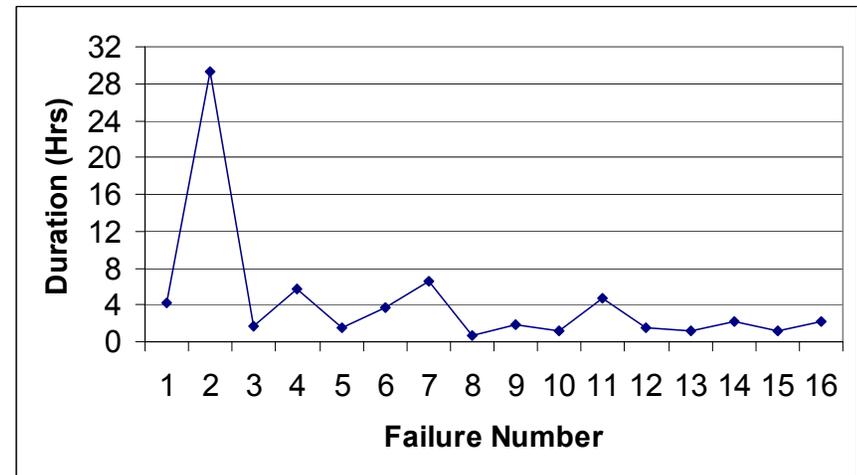
Count (n) = 13

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.032$$

Degree of freedom = 12

P value = 0.487

Run Chart



Data contained on this slide verifies that for CD-ROM at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

FTP Distribution Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.54

Std Dev (s) = 6.72

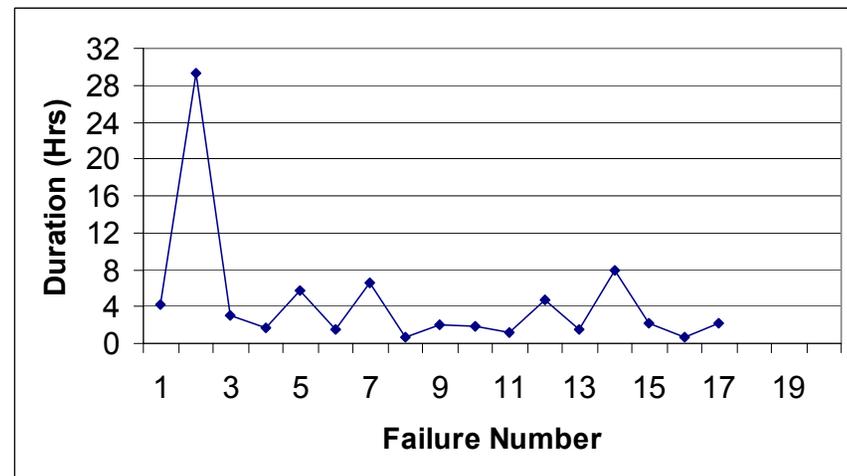
Count (n) = 17

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.331$$

Degree of freedom = 16

P value = 0.372

Run Chart



Data contained on this slide verifies that for FTP at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

DVD Distribution Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.07

Std Dev (s) = 7.69

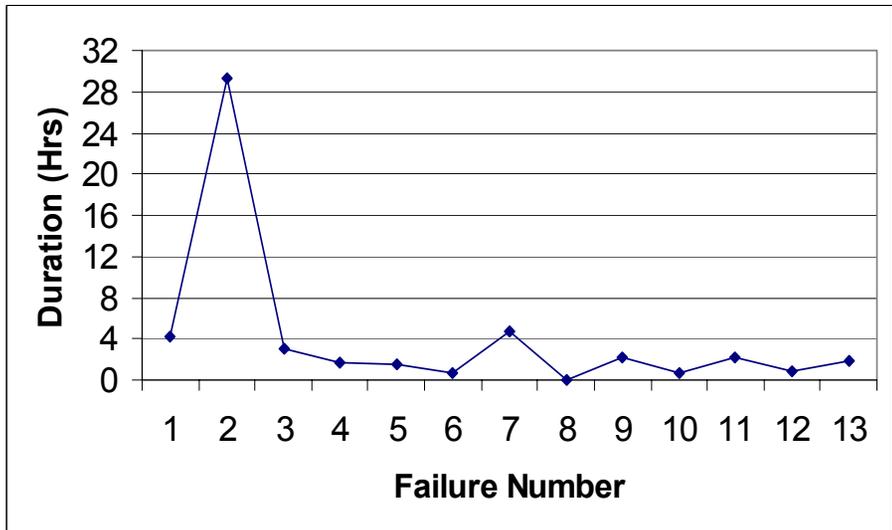
Count (n) = 13

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.331$$

Degree of freedom = 12

P value = 0.487

Run Chart



Data contained on this slide verifies that for DVD at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

Data Search Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.72

Std Dev (s) = 7.31

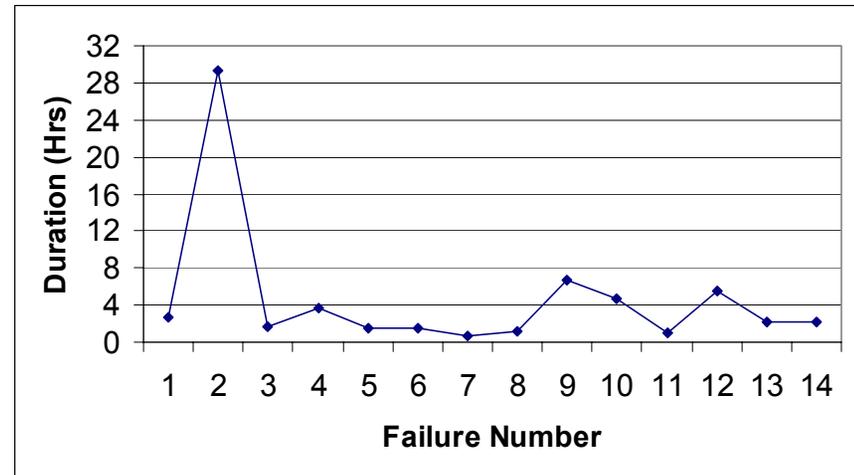
Count (n) = 14

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.368$$

Degree of freedom = 13

P value = 0.359

Run Chart



Data contained on this slide verifies that for Data Search at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

Browse Hypothesis Testing Results



Key Statistics

Mean (\hat{y}) = 4.68

Std Dev (s) = 7.59

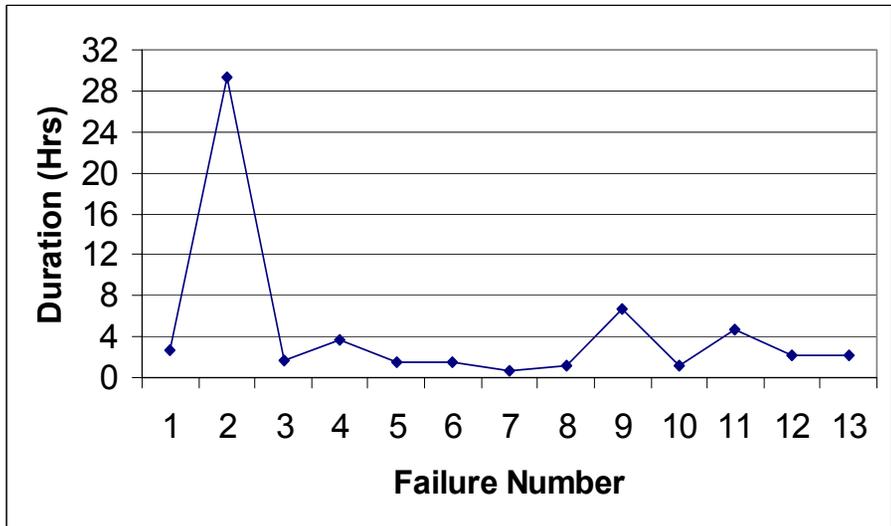
Count (n) = 13

$$T \text{ value} = \frac{\hat{y} - \hat{y}_0}{s \sqrt{\frac{1}{n}}} = 0.322$$

Degree of freedom = 12

P value = 0.376

Run Chart



Data contained on this slide verifies that for Browse at EDC, the Null Hypothesis at an 85 % confidence level cannot be reject, therefore this functional thread meets the MDT Requirements.

RMA Final Results



- **Successfully passed all RMA requirements for GSFC, LaRC, EDC, and NSIDC as documented in the approved ticket AB_ZZ_01.**
- **ESDIS is in agreement with results from statistical analysis.**



EOC COTS

Chuck Thomas

COTS Process



- **Followed standard process to determine the “End of Life” of a COTS product**
 - Use of process continues throughout the ECS extension
- **Any critical COTS product that would reach “End of Life” within 6 months of October 31st, 2002 is considered an EOC COTS product**
 - EOC COTS products were required to be updated before October 31st, 2002
 - Schedule was determined based on COTS availability and other project priorities
- **Followed standard COTS PSR procedures**

COTS Status



- **12 COTS were planned in Rolling Wave in October 2001**
 - Completed 9
 - Deferred 2
 - Complete 1 before 10/31/02
- **5 COTS were added during 2002**
 - Completed 2
 - Complete 1 before 10/31/02
 - Complete 1 during extension due to vendor software problems
 - Determined 1 not needed

COTS Needed Before 10/31/02 and Status



COTS Product	Status	When Planned
Sybase ASE 12.5	Completed for Sun on PSR 9/13/02; Completed PSR for SGI on 9/19/02	rolling wave
Tivoli Framework 3.7.1, TEC 3.7, SW Dist 4.1, Dist Mon 3.7.1	Completed PSR 10/01/02	rolling wave
AMASS	Completed PSR 5/22/2002	rolling wave
DDTS 4.7	Completed PSR 7/2/02	rolling wave
Autosys upgrade	Completed PSR 7/24/02	rolling wave
VolumeMgr	Completed PSR 8/1/02	rolling wave
WhatsUp Gold 7.0	Completed PSR 8/20/02	added
Purify	Completed PSR 8/29/02	added
Sybase Replication Server 12.1	Completed PSR 9/13/02	rolling wave
Sybase Central 4.0	Completed PSR 9/6/02	rolling wave
jConnect 5.5w/F137	Completed PSR 9/6/02	rolling wave

COTS Needed Before 10/31/02 and Status (cont.)



COTS Product	Status	When Planned
anlpasswd	Expect PSR 10/24/02	added
SQS 3.4.2.4	Need to complete load test in the PVC; expect to PSR before 10/31/02, however higher priority NCRs may delay	rolling wave
Sgi BDS/Hippi	waiting on code fixes from SGI will be PSRed after 10/31/02	added
Netscape Communicator 7.0	COTS not available	rolling wave
ClearCase 5.0	Decided not to upgrade since low risk, DAACs would not be able to install soon, and not at end of support	rolling wave
Sendmail Commercial 1.2.2	determined COTS upgrade not needed	added



EOC Property Closeout

Chuck Thomas

EOC Property Closeout



- **Inventories were conducted at the following sites**
 - GSFC
 - EDC
 - NSIDC
 - LaRC
 - EMOS
 - EMOSD
 - IST (ASF)
 - Synergy Universities
 - PVC
 - VATC
 - EDF
 - Property Room

- **Final Property Closeout will be done at the end of the ECS extension in accordance to processes agreed to by ESDIS**
 - Processes for EMOS Property Closeout will be negotiated with ESDIS



EOC CDRLS

Chuck Thomas

EOC and Extension CDRLs



- EOC and extension CDRLs spreadsheet

CDRL Item #	DID #	Title	CDRL* Schedule	No Future Delivery	EOC Delivery ¹	Extension Delivery	Comments
002	102/MG1	ECS Configuration Management Plan	1 week prior to PMR	X			No future delivery planned. All applicable updates made in April 2001 delivery.
008	108/MG3	Logic Network Diagrams	Electronic access provided to the government		EA	EA	Customer has electronic access (EA) as directed by CCR 505-01-41-181-R2 approved 9/15/98. Also receives hardcopy updates per the 447. P3 availability will continue through extension period.
009	109/MG3	Performance Measurement Status Report	Monthly		X	X	Will continue as scheduled. Should continue through extension.
011	111/MG3	Monthly Progress Report	Monthly	X			Verbal agreement between ECS Program Controls and ESDIS counterparts to stop delivery as data covered in this document is part of the PMR (Program Management Review). Waiting on formal agreement. (Last delivery made January 2002). Monthly PMR will conti
013	113/MG3	Intermediate Bar Charts	Electronic access provided to the government		EA	EA	Customer has electronic access as directed by CCR 505-01-41-181-R2 approved 9/15/98. Also receives hardcopy updates per the 447. P3 availability will continue through extension period.
015	115/MG3	3 Week Window Report	Electronic access provided to the government		EA	EA	Customer has electronic access as directed by CCR 505-01-41-181-R2 approved 9/15/98. Also receives hardcopy updates per the 447. Weekly reports will continue to be distributed during extension period.
019	119/MG3	Contractor Cost Reporting - 533 Requirements	Monthly & quarterly		X	X	Will continue as scheduled on a monthly basis during extension.
020	120/MG3	Monthly Manpower Report	Monthly	X			Verbal agreement between ECS Program Controls and ESDIS counterparts to stop delivery as data covered in this document is part of the PMR (Program Management Review). Last delivery made January 2002. Monthly PMR will continue during extension period.
025	205/SE1	Science User's Guide & Ops Procedures Handbook	Vol. 4 (D)SRR -1 Month (F)SDR; Vol. 1 - 3 (D) CDR -1 Month Delivery per DID 334	X			No future delivery planned, but change pages would be submitted as applicable during the extension period.
029	209/SE1(F) 209/SE2(External Interface Control Documents (ICDs)	Completed New interfaces per DID 334	X			No future delivery planned, but change pages would be submitted as applicable during the extension period.

EOC and Extension CDRLS (cont.)



CDRL Item #	DID #	Title	CDRL* Schedule	Future Delivery	Delivery 1	Extension Delivery	Comments
034A 034B	214/SE1	Information Technology Security Plan for Science System/Mission Systems	Final Science and Mission Systems Version December 15, 2000 Maintained through EOC			X/AR	Version to reflect security assessment requirements planned. Extension period update, as required.
035A 035B	215/SE3	Risk Management Plan for Science Systems/Mission Systems	Final Science and Mission Systems Version December 15, 2000 Maintained through EOC			X/AR	Version to reflect security assessment requirements planned. Extension period update, as required.
038	218/SE3	Project History & Lessons Learned	June-02	X			No future delivery planned. A pseudo-EOC version is satisfied by a jointly presented ESDIS/ECS Lessons Learned briefing. Additional program history information available via CCR history which is part of customer database..
039	219/SE1(F) 219/SE2(P)	Interface Requirements Documents	Completed New interfaces per DID 334	X			No future delivery planned, but change pages, resulting from any CCRs during the extension period, would be submitted.
043	302/DV1(P) 302/DV2(F)	ECS Facilities Plan	SDR -2 weeks Delivery per DID 334	X			No future delivery planned. CDRD says Delivery per the 334. Delivery was made in 1996 for Release B, per DAAC. Customer approved docs with comments.
045	304/DV1	Segment Requirements Specification	PDR/IDR - 2weeks Delivery per DID 334 Maintained through EOC		X (L3 Report) and EA	EA	Electronic delivery. Last formal delivery of document in 1996. Requirements transitioned to customer controlled Verification Database (VDB) post Mod86 Restructured Contract Requirement in 1999. ECS Level 3 Reconciliation Report provides the remaining in
046 049	305/DV3(P) 305/DV2(F) 305/DV2(UD) 308/DV2	Segment/Design Specifications Software Development Plan	PDR/IDR - 2weeks CDR - 2 weeks (F) RRR -2 weeks (U/D) Delivery per DID 334 Maintained through EOC		X	X	EOC version delivered August 2002. Web page access to design information will also be available.
049			Completed ¹	X			No future delivery planned.
050	311/DV2	Database Design and Database Schema Specifications	PDR/IDR +1 month (P), CDR +1 month (F), RRR +1 month (U/D) Delivery per DID 334 Maintained through EOC		X	X/AR	CDRL consists of multiple volumes which are planned for EOC delivery. Document updates resulting from Synergy 3 updates will be generated on an as required basis during the extension period.
051	313/DV3	ECS Internal ICDs	PDR/IDR -2 weeks (P), CDR -2 weeks (F) Delivery per DID 334 Maintained through EOC		X	X/AR	EOC version delivered August 2002. Document updates resulting from ongoing ECS activities and Synergy 3 will be generated on an as required basis during the extension period.

EOC and Extension CDRLS (cont.)



CDRL Item #	DID #	Title	CDRL* Schedule	Future Delivery	EOC Delivery ¹	Extension Delivery	Comments
062	333/DV1	PGS Toolkit Users Guide for the ECS Project	(F) SDR -6 months Delivery per DID 334		X	X/AR	EOC version planned. Will release in Extension on an as required basis, depending on ESDs or NCRs.
069	409/VE1	ECS Science Acceptance Test Plan	SDR -2 weeks Delivery per DID 334	X			Acceptance Test Plan prepared for releases prior to the IRR. No future delivery needed.
070	411/VE1	ECS Science Acceptance Test Procedures	3 months prior to RRR or per DID 334 Maintained through EOC		EA	EA	Electronic delivery. DID 411 procedures approved and posted to web prior to 6A acceptance (CSR). All procedures thru EOC have been posted. Synergy 3 procedures will be posted for electronic access as they are completed. This will cover pre and post EO
071	412/VE2	ECS Science Acceptance Test Report	Delivery per DID 334 Maintained through EOC		X		EOC version delivered in Jan 2002 after SRA for 6A. No subsequent formal release planned.
081	506/PA3	Audit Reports	RRR +4 weeks Delivery per DID 334		X		EOC version delivered for 6A.05 in January 2002. Current "real-time" PCA process eliminates need for future deliveries.
092	519/PA3	Maintainability Demonstration Test Reports	within 1 month of demonstration	X			No Maintainability Demonstration is applicable or planned for SDPS. GSFC 420-05-03 section 5.6 describes the Maintainability for critical real-time system functions and these exist in EMOS, but not in SDPS. The EOC RMA performance analysis of current D
102	529/PA3	Malfunctions/Failure Reports (MRs)	Electronic delivery		X/EA	X/EA	Electronic delivery. DDTs database satisfies this CDRL.
106	533/PA1	Response to Problem Notices and Alerts	As required	X			To date, no formal notices of hardware alerts have been received, so this no delivery is planned for this CDRL item.
107	534/PA1	Maintenance Records	On-going - available for review on request		X/EA	X/EA	Electronic delivery. Electronic database (ILM) will be delivered to customer, but hardcopy of specific records can also be requested in the interim.
108	535/PA1	Acceptance Data Package	Delivery per DID 334	X			Final version delivered for last formal release (6A) in January 2002. No future deliveries planned.
110	602/OP1	Property Management Plan	1 month after	X			Delivered June 2002. No future updates planned.
111	603/OP1	Operational Readiness Plan	months	X			Delivered for qualification. No future delivery planned.

EOC and Extension CDRLS (cont.)



CDRL Item #	DID #	Title	CDRL* Schedule	No Future Delivery	EOC Delivery ¹	Extension Delivery	Comments
115	608/OP1	ECS Operations Plan	Each calendar year	X			A delivery was made on 12/19/01. This doc is basically a manpower forecast, no future delivery planned for this contract.
116	609/OP1	Operations Tools Manual	CSR -2 weeks Maintained through EOC		X	X	EOC version delivered September 2002. Extension period update is planned to accommodate COTS upgrades after 9/5/2002, as well as those planned during the extension period.
117	611/OP3	Mission Operations Procedures	Delivery per DID 334 Maintained through EOC		X	X	planned. Updates introduced during extension period will be provided on an as required basis. However, with COTS upgrades and NCR changes anticipated, an extension period update is also anticipated.
124	618/OP3	Replacement Part List and Spare Parts List	Delivery per DID 334	X			Document submitted as final in Dec 2000. No additional spares planned during the extension period. Composition of ECS spares is recorded in the ILM database, which will be transitioned.
129	625/OP3	Training Material	Delivery per DID 334 Maintained through EOC		X	X	EOC version to reflect currently fielded system training information planned. Updates introduced during extension period will be provided on an as required basis. However, with COTS upgrades and NCR changes anticipated, an extension period update is al
143	714/PP3	CSR Presentation Package	2 weeks after CSR	X			No future delivery of this CDRL. The RRR presentation package will be delivered during the
146	222/SE2	COTS Analysis & Modeling Report	Semi-annually (April 1 & October 1)	X			spreadsheet. Contracts suspended delivery, pending decision. No current plans to deliver document.
147	334/DV1	Science System Release Plan	Submit and obtain government approval prior to start of work on science Release 5A, 5B, 6A, 6B	X			Final delivery made for last formal release (6A). No future delivery planned. Subsequent new capabilities and changes have been documented as part of the Release Notes and CCRs that are generated on an as required basis. This will continue during the ex
148	335/DV2	COTS (hardware and software) Deployment Plan	minimum of 6 months prior to deployment of COTS		X	X	EOC version delivered July 2002; delivery planned during extension period.
198A 198B	225/SE3	Security Contingency Plan for Science Systems/Mission Systems	Final Science and Mission Systems Version December 15, 2000 Maintained through EOC			X/AR	Version to reflect security assessment requirements planned. Extension period update, as required.

EOC CDRLS Published by 10/31/02



- **440-TP-600-001, Reference Guide for Documents Generated for the ECS Project (a.k.a The Parent Document)**
- **305-CD-610-002, Release 6B Segment/Design Specification for the ECS Project**
- **313-CD-610-002, Release 6B ECS Internal Interface Control Document for the ECS Project**
- **On-line 305 Release 6B Segment/Design Specification for the ECS Project**
- **609-CD-610-002, Release 6B Operations Tools Manual**
- **611 Mission Operation Procedures**

EOC CDRLS Published by 10/31/02



- **625-CD-601-002, Release 6B, ECS Project Training Material Volume 1: Course Outline**
- **625-CD-603-002, Release 6B, ECS Project Training Material Volume 3: Problem Management**
- **625-CD-604-002, Release 6B, ECS Project Training Material Volume 4: System Administration**
- **625-CD-606-002, Release 6B, ECS Project Training Material Volume 6: Production Planning and Processing**
- **625-CD-607-002, Release 6B, ECS Project Training Material Volume 7: Resource Planning**

EOC CDRLS Published by 10/31/02



- **625-CD-608-002, Release 6B, ECS Project Training Material Volume 8: Ingest**
- **625-CD-609-002, Release 6B, ECS Project Training Material Volume 9: Data Distribution**
- **625-CD-610-002, Release 6B, ECS Project Training Material Volume 10: Archive Processing**
- **625-CD-611-001, Release 6A, ECS Project Training Material Volume 11: Database Administration**
- **625-CD-612-002, Release 6B, ECS Project Training Material Volume 12: Configuration Management**

EOC CDRLS Published by 10/31/02



- **625-CD-613-002, Release 6B, ECS Project Training Material Volume 13: User Services**
- **625-CD-617-002, Release 6B, ECS Project Training Material Volume 17: System Troubleshooting**
- **625-CD-618-002, Release 6B, ECS Project Training Material Volume 18: Advanced Production Planning and Processing**
- **625-CD-620-002, Release 6B, ECS Project Training Material Volume 2A: Introduction and Detailed System Overview: Science Data Processing Internal Training**

EOC CDRLS Published by 10/31/02



- **311-CD-628-001, Release 6B Registry Database Design and Schema Specifications for the ECS Project**
- **311-CD-622-001, Release 6B Interoperability Subsystem (IOS) Database Design and Database Schema Specifications for the ECS Project**
- **311-CD-626-001, Release 6B Subscription Server Database Design and Schema Specifications for the ECS Project**
- **311-CD-631-001, Release 6B NameServer Database Design and Schema Specifications for the ECS Project**

EOC CDRLS Published by 10/31/02



- 311-CD-620-001, Release 6B Data Management Database Design and Schema Specifications for the ECS Project – **Completed - will be delivered by 10/31/02**
- 311-CD-621-001, Release 6B Ingest Database Design and Schema Specifications for the ECS Project – **Completed - will be delivered by 10/31/02**
- 311-CD-623-001, Release 6B PDPS Database Design and Schema Specifications for the ECS Project – **Completed - will be delivered by 10/31/02**
- 311-CD-624-001, Release 6B Science Data Server Database Design and Schema Specifications for the ECS Project – **Completed - will be delivered by 10/31/02**

EOC CDRLS Published by 10/31/02



- 311-CD-624-001, Release 6B Science Data Server Database Design and Schema Specifications for the ECS Project – **Completed - will be delivered by 10/31/02**
- 311-CD-625-001, Release 6B Storage Management Database Design and Schema Specifications for the ECS Project – **Completed - will be delivered by 10/31/02**
- 311-CD-627-001, Release 6B System Management Database Design and Schema Specifications for the ECS Project – **Completed - will be delivered by 10/31/02**
- 311-CD-630-001, Release 6B PDS Subsystem Database Design and Schema Specifications for the ECS Project – **Completed - will be delivered by 10/31/02**

EOC CDRLS Published by 10/31/02



- **501-PR-001-005, Quality Assurance Plan for the ECS SDPS Project**
- **335-CD-007-001, ECS COTS Deployment Plan Volume 7**
- **333-CD-605-001, Release 6A.07 SDP Toolkit Users Guide for the ECS Project**
- **412-CD-600-002, ECS Science Acceptance Test Report for Release 6A**
- **506-CD-600-001, Configuration Audit Reports for the Science Data Processing Segment, Release 6A for the ECS Project**



EOC L3 Requirements Status

Joan Schessler

L3 STATUS CONTENTS



L3 Verification Process

Requirement Tickets - post-5A

Acceptance Test Process

EVR Example

RVAR Example

Raytheon L3 Verification Status Report

EOC Verification Metrics

Requirements with Special Status

- **EMOS Requirements**
- **Inactive Requirements**
- **Post-EOC Requirements**

External Interface Requirements

Known Action Items

L3 VERIFICATION PROCESS



Reconciliation Plan Developed in December 2001

ESDIS Concurrence, January 2002

VDB Selected as Repository for All Reconciliation Records

VDB and F&PRS Compared; VDB Corrected via CCR

New EOC VDB Reports Commissioned

L3 VERIFICATION PROCESS (cont)



Following Instruments Guided/Tracked Work-off Activity:

- **ESDIS Lien Reports:**
 - **L3-criteria maps with Liens 01-19-2001.xls**
 - ***Actionable* list of L3-criteria verification problems and *Bad Maps* list**
 - **ESDIS L3 coverage analysis 01-19-2001.xls**
 - **-5A and post-5A L3 coverage problems**
- **ESDIS Reconciliation Status Report for 5A and Prior**
- **L3 Summary Status by Ticket**

L3 VERIFICATION PROCESS (cont)



Work Began in January 2002

Complex Updates to ESDIS Reconciliation Status Report for 5A and Prior Resulted in Severe Schedule Impact on:

- **Implementation of New VDB Reports**
- **Criteria Verification Record Keeping in VDB**
- **ECS Work-off of ESDIS Liens**

VDB L3 Comprehensive Status Report Added June 2002

L3 VERIFICATION PROCESS (cont)



Raytheon L3 Verification Status Report (Excel Worksheet)

- **Created to Ensure Correct Status Accounting**
- **Baselined by ESDIS and Raytheon on 18 July 2002**
- **Thereafter, Verification Status Was Controlled by CCRs for Parallel Changes in Raytheon Report and VDB.**

All Requirement Status CCRs in VDB by 11 October 2002

L3 VERIFICATION PROCESS (cont)



L3 Verification Was a 3-track Process. Applicability of Tracks to Each Requirement Had to Be Evaluated

- One, Two, or All Three Tracks Could Be Used
- Requirement Could Be Partially Verified On Each Track
- ESDIS Liens Considered in Selection of Tracks

Track 1. 5A and Prior Test Criteria Verification

- Relevant 5A and Prior L3 to Criteria Links Defined by "ESDIS L3RR Status for 5A and Prior Report"
- Verification by Acceptance Test or ECS Verification Report (EVR)
- Criteria Verification Status Maintained In VDB1

L3 VERIFICATION PROCESS (cont)



Track 2. Post-5A Test Criteria Verification

- Status Tracked on L3 Status Summary by Ticket Report
- Verification by Acceptance Test or EVR
- All Post-5A Criteria Are on Tickets in VDB2

Track 3. Verification by Analysis

- Requirement Verification by Analysis Report (RVAR)
- Some Requirements Were Verified Solely by Analysis
- For Others, Analysis Supplemented Criteria Verification

Requirements Tickets - post-5A



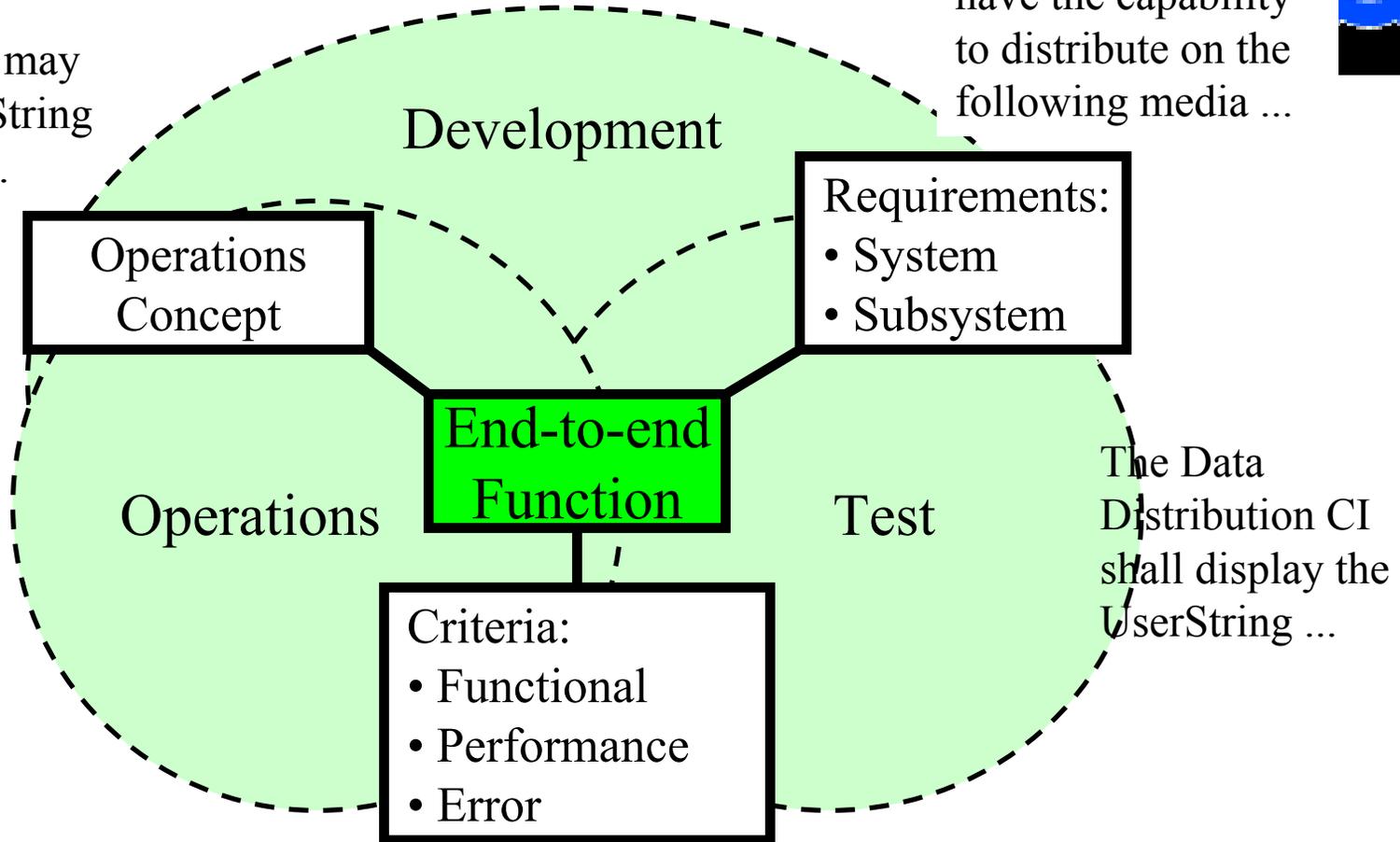
Tickets Created for Development of Specific Capabilities

- **CCB-Controlled**
- **Posted on VDB**
- **Contain**
 - **Operations Concept**
 - **L3 Requirements**
 - **Design Requirements**
 - **Test Criteria**

Requirement Tickets - post-5A (cont)



The ECS shall have the capability to distribute on the following media ...



Demonstrate that ... 4. the UserString appears in the Distribution Notification. Show that the command line interface can support 25 concurrent requests with ... Re-submit a request using the same UserString, verify that ...

ACCEPTANCE TEST PROCESS



- **Step-by-step Acceptance Test Procedures** were developed, mapped to Tickets, reviewed internally, and approved by ESDIS
- **Acceptance Tests** were the primary method of verifying Criteria prior to recent EOC effort
- **Acceptance Tests** were witnessed by IV&V or ESDIS
- **ECS Verification Reports (EVRs)** were used to verify Criteria in 2 categories:
 - **Criteria from previous drops** not statused as “verified”
 - **Criteria for which no Acceptance Test Procedures** were developed, e.g., RMA criteria (AB_ZZ_01 ticket) and Performance criteria (SL_ZZ_01 ticket)
- **EVRs** were the primary method of verifying Criteria during the EOC effort
- **EVRs** were witnessed by IV&V and approved by ESDIS
- **Criteria Status from Acceptance Tests and EVRs** were entered in the VDB

ECS Verification Report

Acceptance Criterion				
Report Id	Ticket Id	Key	Type	Description
V1954	RM_6A_09 <small>(Integration of the EDC Product Distribution System (PDS) With ECS)</small>	1954	<input checked="" type="checkbox"/> Functional Component <input type="checkbox"/> Error Condition <input type="checkbox"/> Performance Criteria	Submit search request messages in V0 ODL format to the V0 Gateway. Demonstrate that the V0 Gateway includes all media options (including CD-ROM, DLT, and DVD) in its V0 Inventory Search Result Messages.
Deviations (e.g., run at different site, use different data type)			ESDIS Deviation Approval	
Test Procedure Mapping				
Test Id(s)		Relevant Steps		Execution Site
Planned Execution Date		Execution Mode <input checked="" type="checkbox"/> OPS <input type="checkbox"/> TS1 <input type="checkbox"/> TS2		<input checked="" type="checkbox"/> PVC <input type="checkbox"/> VATC <input type="checkbox"/> EDC <input type="checkbox"/> GSFC <input type="checkbox"/> LaRC <input type="checkbox"/> NSIDC <input type="checkbox"/> Other _____
Additional Verification Steps / Justification (if applicable)				
Step	Action			Comment
	The MediaDistributionOptions for EcDmV0ToEcsGateway in the Registry GUI were configured for all media options (FTPPush, FTPPull, CD-ROM, DLT, DVD and 8MM). Bounced the Registry GUI and submitted search request messages in V0 ODL format to V0 Gateway. All the media options were displayed in Search Result Messages of V0 Gateway.			
Verification Results				
<input checked="" type="checkbox"/> V - Verified (No Severity 1,2, or 3 NCRs) <input type="checkbox"/> VW - Verified with Workaround (Severity 3 NCR that does not adversely impact criterion) <input type="checkbox"/> VN - Verified Near Performance (Performance Only) <input type="checkbox"/> I - Inadequate Performance (Performance Only) <input type="checkbox"/> NV - Not Verified (Severity 1, 2, or 3 NCR that adversely impacts criterion) <input type="checkbox"/> DE - Database Mapping Error				Date of Test July 11, 2002 ECS Version (i.e., Drop/Patch Id) 6A.06+
NCRs Written (include severity and test step, as applicable)				
Signatures				
Verified By				Date
Rosdiana Ginocchi				July 11, 2002
Witnessed By				Date
Herman Williams				July 11, 2002

**APPROVED
EVR EXAMPLE**

ECS Requirement Verification by Analysis Report

Report No.: 0148	L3 Req ID: EOSD1070
Current VDB Record	
CCR No.: 99-0496	CCR Date: 06/07/1999
Release: 6B Partial	Category: Performance
Requirement Text: The ECS shall make available to the users ECS-generated Level 3 Standard Products within 24 hours after the availability to ECS of all necessary Level 2 and other input data sets , except as approved by ESDIS.	
 Clarification Text: Current: Limited to products that can be produced with at-launch production rules and hardware phasing Future: All ECS-generated products	
Verification Analysis: At the time that the ECS requirements were written, it was envisioned that the ECS production subsystem would be responsible for end-to-end ECS production, and the Government had a plan for the fielded capacity of that subsystem that supported these requirements. Since then, responsibility for producing some of the Level 2, Level 3, and Level 4 products for some instruments has moved to other processing facilities. In addition, the build-up of processing capacity in the ECS production subsystem was delayed to save program funds. Finally, it has become clear through the day-to-day operation of ECS that production of a Level 3 product in 24 hours or a Level 4 product in a week may or may not be the critical priority for a DAAC at any given time; the DAAC may choose to sacrifice the timely production of one product in favor of the re-processing or production of some other product, in order to meet more urgent science needs. Given these changes in the ECS program implementation, this requirement is OBE. (Attach additional pages as needed)	
VDB Change Recommendations	
Release:	Category:
Clarification Text:	
(Attach additional pages as needed)	
Analysis by: JHS	Date: _____
AO Manager: _____	Date: _____
L3 Requirement Verified	Date: _____
ESDIS:	

APPROVED
RVAR
EXAMPLE

RAYTHEON L3 VERIFICATION STATUS REPORT



- **Baseline Created at July 18 2002 Meeting with ESDIS**
- **Baselined and under SCDV CCB Control via Following CCRs: 02-0603 (Baseline), 02-0628, 02-0649, 02-0682, 02-0704, 02-0715, 02-0735, 02-0765, 02-0792, 02-0829, 02-0871, 02-0923 (Final Status)**
- **Tracked Following for All Requirements During Reconciliation Process:**
 - **5A and Prior Criteria Verification (Test and EVRs)**
 - **post-5A Criteria Verification (Test and EVRs)**
 - **Verification by Analysis (RVARs)**
 - **NCR Liens**
 - **Linkage to External Interface Requirements ("IRDs")**
 - **Requirement Status: Active, Inactive, or post-EOC**
 - **Requirement Verified: V or N/A**

EOC VERIFICATION METRICS



- **ESDIS Approved 212 EVRs During EOC Activity**
 - **184 EVRs Stated as Verified**
 - 112 - Landover
 - 29 - LP DAAC
 - 16 - GSFC DAAC
 - 24 - LaRC DAAC
 - 3 - NSIDC DAAC
 - **28 EVRs Stated as OBE (criteria not valid in current ECS)**

EOC VERIFICATION METRICS

(cont)



- **Requirements in F&PRS (and VDB): 495**
- **SDPS-Applicable Requirements (= 495 Minus 19 EMOS): 476**

- **Active SDPS Requirements Verified: 443**
- **Requirements with Special Status**
 - **Inactive (“OBE”) Requirements: 21**
 - **Partially Inactive Requirements: 3**
 - **Verification to Be Completed Post-EOC: 9**

- **L3s solely verified by 5A and Prior Test Criteria: 150**
- **L3s solely verified by Post-5A Test Criteria: 38**
- **L3s solely verified by RVAR: 149**
- **L3s verified by combination: 139**

Requirements with Special Status



- **EMOS:** Requirements for which verification is N/A because they are applicable to EMOS only.
- **Inactive:** The requirement or part of the requirement is OBE.
- **Post-EOC:** Requirements for which verification is N/A because work was tasked to be completed after 31 October 2002.

EMOS REQUIREMENTS



- **19 Requirements Affect EMOS Only. The Value of the L3 Verified Column for Each of the Requirements Is "N/A" Because the Requirements Are Not Applicable to SDPS.**
- **4 Requirements Affect Both SDPS and EMOS**
- **SDPS Will Notify EMOS of This List**
- **The List of EMOS Requirements Is Attached to the End of the Presentation.**

INACTIVE REQUIREMENTS



Some Level 3 Requirements Are Inactive or Partially Inactive

- Requirement or Part of the Requirement Is OBE
 - Either Not Appropriate to The Evolved System Itself or
 - The System Environment Is Not as Expected
- EOC L3 Verified Column Value Is "Verified"
 - Inactive Status Has Been Verified by Analysis
- Each Requirement Has an Approved RVAR Explaining the Analysis
- The List of Inactive Requirements Is Attached to the End of the Presentation

Post-EOC REQUIREMENTS



Nine Requirements Will Be Verified Post-EOC.

- **As Directed by ESDIS**
- **L3 Verified Column Is N/A**
- **EOC Comment Column Contains Explanation**

Includes

- **Compression. To Be Satisfied by Synergy III Capability**
- **Aura. Requirements Fully Satisfied for Other Missions.**
- **EDOS Backup and Restore. Awaiting ESDIS direction for technology change.**

The List of Post-EOC Requirements Is Attached to the End of the Presentation.

EXTERNAL INTERFACE REQUIREMENTS



External Interface Requirements ("IRDs")

- **Linked to L3s in VDB2**
- **Links Identified in "IRDs Linked" Column of Raytheon L3 Verification Status Report**
- **IRDs Inherit Verified Status from Linked L3s.**
- **105 L3s linked**

All IRD Requirements Have Been Verified per Their L3 Links

KNOWN ACTION ITEMS



ESDIS: Contract Modification to --

- **Remove ASTER Interoperability from F&PRS**
 - **IMS-0380 (remove "ASTER GDS")**
 - **IMS-0626 (delete)**
 - **IMS-0828 (delete)**
- **ADD to SOW OSS List, the LP DAAC-Unique Extension for ASTER Expedited Processing**

ESDIS: Direction for EDOS Backup and Restore Capability

ECS: Addition of Any NCR Liens Existing on October 31 to Raytheon L3 Verification Report and VDB L3 Comprehensive Report

ECS: Notify EMOS of List of EMOS Requirements Found Within the SDPS List



ECS Post-EOC

Randy Miller

ECS POST-EOC



ECS Post-EOC Capabilities

- EDOS Backup and Restore
- Aura Support Completion
- Remaining SWGD Capacity Increase Deployment

System Enhancements

- Synergy III: Data Availability and Science User Interface Improvements
- Remote Data Storage

Sustaining Engineering

- COTS Upgrades
- XRP Replacement
- ECS and Synergy II Priority NCRs
- Security Architecture Trade

Process Adjustments

- RMA Maintenance
- VDB Addition: Synergy Tickets and Verification Status
- Test Automation
- Mission Milestone Focus



NCR Liens

Randy Miller

NCR Liens



NCR	L3 Impacted	Sev	Submit Date	Build Name	NCR Title	Merge Status	Comment
34941	DADS-0740	2	08/05/02	Drop 6A.06	OPS PVC: L7 Floating Scene B81 to B83 problems	29-Nov	Changing memory configuration did not work. The next step will require more analysis, likely significant code changes, and thorough regression testing.
34641	IMS-0610	2	06/25/02	Drop 6A.05	GSFC/SMC Processing errors encountered on EDG searches	Closed	Unreproducible at DAACs and Landover
34290		2	05/14/02	Drop 6A.05	Problems with the new QA-MUT	Closed	As agreed to by EDC
34775	DADS-2490	2	07/11/02	Drop 6A.06	PDS:Recompile l0out as 64-bit executable	Merged	Merged 10/3
34951	DADS-3100	2	08/06/02	Drop 6A.06+	Index on PDS table pdt_pdsinfo speeds distrib notification	Merged	Merged 10/2
34767	EOSD-2510	2	07/10/02	Drop 6A.06	Browse removed from AMASS archive without explanation	Merged	Merged 10/7
34926	IMS-0450	2	08/01/02	Drop 6A.06	Date discrepancies in ECS ODL	Merged	Merged 10/3
34451		2	06/04/02	Drop 6A.06+	SCLI can't recognize ShortNames with dash ("-")	Merged	
34963		2	08/07/02	Drop 6A.06	ALL modes:Change in requirements for SMCAccount Manager 'St	Merged	Dupe of 35251 which has been merged
35166		2	09/04/02	Drop 6A.06+	OnDemand Transactions Blocked by SYBASE PID	Merged	
35042	DADS-2494	2	08/15/02	Drop 6A.06	6A.06 OPS PDS shipping labels are printing out funky	Merged 10/11	
34918		2	08/01/02	Drop 6A.06	OPS:6A.06:DA:Media 'READ I/O' failures not being handled pr	REMOVED	
34512		2	06/11/02	Drop 6A.05	GSFC/SMC: Need Support on FtpPull Monitor Configuration/Statistics	REMOVED	
34729		2	07/03/02	Drop 6A.05	GSFC/SMC: Request firewall backup capability	REMOVED	
35128		2	08/28/02	Drop 6A.06	6A.06:OPS:Floating Scene order fails	Removed	Intermittent problem. Currently cannot reproduce, but have brought in data from EDC to try to reproduce. Problem does have a workaround in that when the floating scene acquire fails, reingesting the granule associated with that floating scene and the re

NCR Liens (cont)



L3 Requirement Mapped to NCR 34941

DADS0740: The ECS shall provide the capability to subset a Landsat subinterval granule based on defined criteria to include:

- a. Floating partial subinterval
- b. Spectral band
- c. WRS (fixed scene)



Quality Assurance

Joe Spyrison

QUALITY ASSURANCE STATEMENT



Test Folder Audits have confirmed VDB criteria status accuracy

Monitored L3RR team activities and CCRs

Verified the L3 Comprehensive Status Report

- **Application of final L3 status “algorithm”**
- **EVRs examined and signatory on CCRs**
- **RVARs examined**
- **Implementation of Requirements Status CCRs into VDB**
- **Sample audit of Pre-5A Verification status “roll-up”**

No findings

L3 Comprehensive Status Report is complete and accurate at EOC

Final FCA Report at RRR



Conclusion

Chuck Thomas

Accomplishments



- **Completed, tested and delivered ECS Performance Enhancements**
 - Patch was tested and delivered 1 month early to meet MODIS reprocessing effort
- **Completed 9 of 12 planned COTS upgrades**
 - 1 COTS product has been delayed because of vendor issues
 - 2 COTS products have been deferred in agreement with ESDIS because of COTS availability or need to upgrade
 - Completed 2 unplanned COTS upgrades and expect to complete a third by October 31st
- **Completed inventory of ECS property**

Accomplishments



- **Completed all planned document updates**
 - Completed 8 non-planned documents in addition, before EOC
- **Completed planned L3 Requirements Reconciliation**
 - Completed RMA Analysis of all DAACs
 - Helped resolve issues with VDB tracking
- **Completed Sony DTF capability in time to meet LP DAAC interface testing**
- **Achieved 508 Compliance**



ADDENDA: Requirements with Special EOC Status

ADDENDA

EMOS REQUIREMENT DETAILS



The EOC L3 Verified value for each of the following requirements is N/A because the requirement is applicable to EMOS only

EOSD0010, ECS shall use and support the Space Network (SN), via the EDOS/EBnet interface, to obtain the forward and return link data communications needed to achieve full end-to-end ECS functionality.

EOSD0015, ECS shall use and support the AGS, SGS and the Wallops Orbital Tracking Station (WOTS), via the EDOS/EBnet interface, as backup of the SN, to obtain forward and return link data communications.

EOSD0025, The ECS shall use EBnet for flight operations data transfers.

EOSD1000, The ECS shall contribute a loop delay of not greater than 2.5 seconds of the total system delay of five (5) seconds for emergency real-time commands, not including the time needed for command execution. The loop delay is measured from the originator to the spacecraft/instrument and back and only applies when a Tracking and Data Relay Satellite System (TDRSS) link is available for contact to the spacecraft.

ADDENDA

EMOS REQMNT DETAILS (CONT)



EOSD1480, ECS shall receive from the resident EOS Project Scientist the IWG's Long Term Science Plan (LTSP) and updates as required.

EOSD1490, ECS elements shall interface with the resident EOS Project Scientist for resolution of conflicts between observations of equal priority.

EOSD1500, ECS shall interface with the EOS spacecraft and with the EOS instruments in order to perform mission operations, including planning, scheduling, commanding, and monitoring functions.

EOSD1502, The ECS shall use EBnet for data communications for the following types of data: a. Production data sets (Level 0 data) b. Expedited data sets c. Real-time data (for health and safety) d. Command data e. Data requested from back-up archive f. TDRSS schedule requests g. Data exchange with the FDS h. Production Data Transfers between DAACs i. Management Data exchange with SMC j. Data Products Exchange with Landsat, NOAA and ASTER GDS

EOSD1510, ECS elements shall provide the FDF with subsets of spacecraft housekeeping data related to the on-board attitude and orbit systems.

EOSD1520, ECS elements shall receive TDRSS schedules from the Network Control Center (NCC).

EOSD1530, ECS elements shall submit TDRSS schedule requests to the NCC.

ADDENDA

EMOS REQMNT DETAILS (CONT)



EOSD1680, ECS elements shall receive simulated spacecraft and instrument telemetry from the EOS spacecraft simulators and shall receive flight software loads from the Software Development and Validation Facility (SDVF)

EOSD1690, ECS elements shall provide commands to the EOS spacecraft simulators.

EOSD3200, A minimum of one backup which is maintained in a separate physical location (i.e., different building) shall be maintained for ECS software and key data items (including security audit trails and logs).

EOSD3220, All media shall be handled and stored in protected areas with environmental and accounting procedures applied.

EOSD3710, The ECS shall have no single point of failure for functions associated with real-time operations of the spacecraft and instruments.

EOSD3800, The FOS shall have an operational availability of 0.9998 at a minimum (.99997 design goal) and an MDT of one (1) minute or less (0.5 minute design goal) for critical real-time functions that support: a. Launch b. Early orbit checkout c. Disposal d. Orbit adjustment e. Anomaly investigation f. Recovery from safe mode g. Routine real-time commanding and associated monitoring for spacecraft and instrument health and safety

ADDENDA

EMOS REQMNT DETAILS (CONT)



EOSD3810, The FOS shall have an operational availability of 0.99925 at a minimum (.99997 design goal) and a MDT of five (5) minutes or less (0.5 minute design goal) for non-critical real-time functions.

EOSD3820, The FOS shall have an operational availability of 0.992 at a minimum (.99997 design goal) and a MDT of one (1) hour or less (0.5 minute design goal) for functions associated with Targets Of Opportunity (TOOs).

EOSD5410, ECS shall enable the existence of additional ISTs if desired by the PI/TL to accommodate Co-Investigators and Team Members, who may be at geographically separate locations

ESN-1365, The ECS shall isolate FOS with secure interfaces.

ESN-1367, IST users not within FOS facilities shall communicate with secure interfaces only with the use of a data integrity service.

IMS-0120, The ECS shall ensure standard use of keys across custom ECS GUIs.

ADDENDA

INACTIVE REQMNT DETAILS



INACTIVE SECURITY REQUIREMENTS

Most of these contradict current NASA Security Policy

EOSD2480, ECS elements shall require unique sessions when security controlled data are being manipulated

SMC-5350, The ECS shall have the capability to initiate recovery procedures in response to a detected security compromise.

SMC-5355, The ECS shall isolate the compromised area, detach the compromised input I/O, and the compromised areas output I/O until the compromise has been eliminated.

SMC-5357, The ECS SMC shall maintain a repository of collection information related to all ECS security compromises.

SMC-5360, The ECS shall have the capability to manage encrypted information, including keys.

SMC-5365, The ECS shall generate recovery actions in response to the detection of compromises.

ADDENDA

INACTIVE REQMNT DETAILS (cont)



INACTIVE SECURITY REQUIREMENTS (cont)

SMC-8880, The SMC shall have the capability to generate the following security compromise reports indicating security compromises of ground resources and facilities:

- a. Security compromise type and description**
- b. Time of occurrence**
- c. Cause of security compromise**
- d. Impact on system**
- e. Status of security compromise resolution**
- f. Security compromise statistics**
- g. Results of security compromise risk analysis**

ADDENDA

INACTIVE REQMNT DETAILS (cont)



ASTER INTEROPERABILITY REMOVAL

An ESDIS CCR that will remove ASTER interoperability from the contract is being prepared but will not be approved before EOC. ASTER interoperability verification work has been canceled in anticipation of the change. The following requirements are thus OBE and have been classified as Inactive

- **IMS-0626**, The ECS shall provide an interface to the ASTER GDS to support: a. Access to ECS directory metadata, inventory data, and browse (including integrated access to browse data associated with a data product) b. Ordering ECS data products (including price estimates for Landsat 7 Level 0R fixed WRS scenes) c. Obtaining order status
- **IMS-0628**, The ECS shall provide an interface to ASTER GDS to support ECS users. a. Access to ASTER GDS inventory data b. Ordering of ASTER GDS data products
- **IMS-0380**, The ECS shall provide the capability to exchange directories on selected datasets with ASTER GDS and V0. (*Partially Inactive, ASTER GDS*)

ADDENDA

INACTIVE REQMNT DETAILS (cont)



MISCELLANEOUS

EOSD1050, The ECS shall make available to the users ECS-generated Level 1 Standard Products within 24 hours after the availability to ECS of all necessary input data sets.

EOSD1060, The ECS shall make available to the users ECS-generated Level 2 Standard Products within 24 hours after the availability to ECS of all necessary Level 1 and other input data sets.

EOSD1070, The ECS shall make available to the users ECS-generated Level 3 Standard Products within 24 hours after the availability to ECS of all necessary Level 2 and other input data sets , except as approved by ESDIS.

EOSD1080, The ECS shall make available to the users ECS-generated Level 4 Standard Products within one week after the availability to ECS of all necessary Level 3 and other input data sets.

EOSD3630, The ECS maximum down time shall not exceed twice the required MDT in 99 percent of failure occurrences

ADDENDA

INACTIVE REQMNT DETAILS (cont)



MISCELLANEOUS (cont)

EOSD5010, The ECS shall provide a machine-to-machine gateway for data retrieval by external sources at rates as specified in the SIPS ICD.

ESN-0490, The ECS shall provide a name-to-attribute mapping Directory Service.

ESN-0590, The ECS Directory Service shall be protected by access control capabilities.

ESN-0600, The ECS Directory service shall include services and supporting mechanisms to authenticate the credentials of a user for the purpose of granting access rights and authorizing requested operations.

IMS-0150, The ECS shall supply a user interface for access to the following services: a. User registration b. Data Acquisition Request submission and status c. Earth Science On-Line Directory d. On-Demand Processing (Partially Inactive, part c)

IMS-0360, The ECS shall maintain and provide access to an Earth Science On-Line Directory of information that describes whole data sets in the Earth science disciplines.

ADDENDA

INACTIVE REQMNT DETAILS (cont)



MISCELLANEOUS (cont)

PGS-0295, The ECS shall notify the DAAC staff that a specific execution of a PGE will not begin according to the time indicated in the original plan.

SMC-3380, The ECS shall evaluate the overall system performance including the analysis of EBnet related fault and performance information and their long term trend analysis to determine the impact to ECS system. (Partially Inactive, Ebnet)

SMC-8300, The ECS shall have a generalized report generator with the capability to customize output reports covering data previously captured in a management DBMS including: a. All or portions of the system b. Variable amounts of time

ADDENDA

Post-EOC REQMNT DETAILS



Verification of the following requirements will be post-EOC for the reasons shown. The EOC L3 Verified value for each of these is N/A to indicate that verification status will not be considered at EOC.

COMPRESSION

Requirement to be satisfied by the delivery of the Synergy Compression upon Distribution capability in November 2002.

IMS-0785, ECS shall allow users to request a compression format in which ECS archival data formats are to be distributed.

ADDENDA

Post-EOC REQMNT DETAILS (cont)



EDOS BACKUP AND RESTORE

The plan for EDOS backup and restore and related ICD changes will not be received in time for design documentation to be created and to be implemented before EOC.

DADS1450, The ECS shall, upon detection that L0 data has been lost, generate a request for a replacement product from EDOS, dispatch the request, and ingest the replacement product.

DADS2307, The ECS shall fulfill requests for L0 data from EDOS with L0.

ADDENDA

Post-EOC REQMNT DETAILS (cont)



AURA

The following requirements have been fully satisfied for all missions except Aura. Final verification will be accomplished post-EOC so that implementation of AURA interfaces can be included.

DADS0150, The ECS at the GSFC DAAC shall receive from the ICC the following: a. Instrument history log (or subset of history log) b. Associated Metadata

DADS0175, The ECS at the GSFC DAAC shall receive from FDS: a. Refined Orbit Data b. Attitude data c. Metadata

DADS0800, The ECS shall provide the capability to translate input data to the internal ECS format including HDF.

ADDENDA

Post-EOC REQMNT DETAILS (cont)



AURA (cont)

EOSD1600, The ECS shall exchange status data with EDOS.

EOSD1605, The ECS shall receive from EDOS telemetry data, including housekeeping, engineering, ancillary, and science data from EOS instruments and spacecraft.

PGS-0200, The ECS shall execute Science Software in accordance with the Production Rules specified by the responsible instrument team