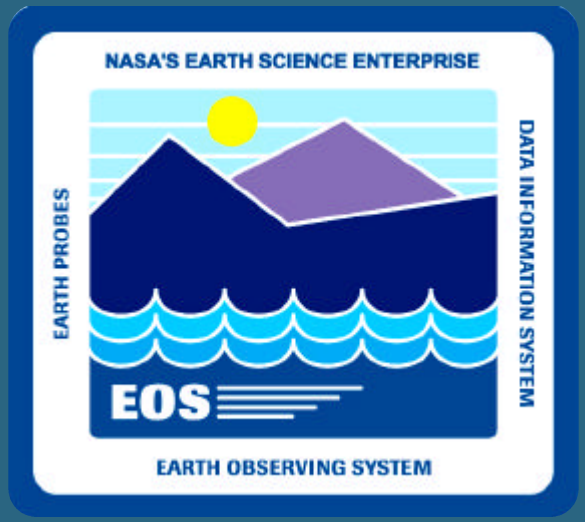
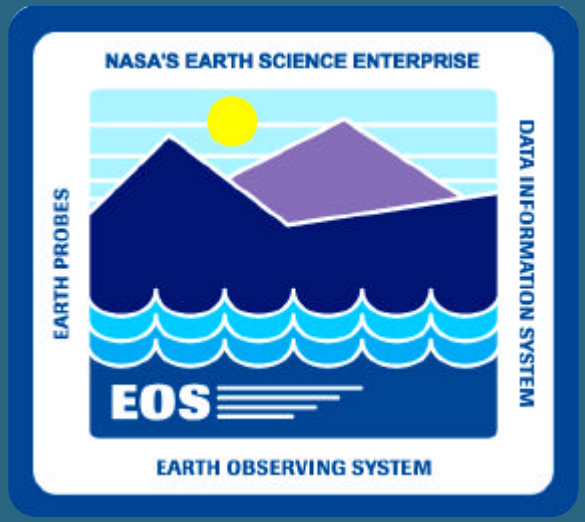


ECS SDPS
Release 6A Consent to Ship Review

17 April 2001

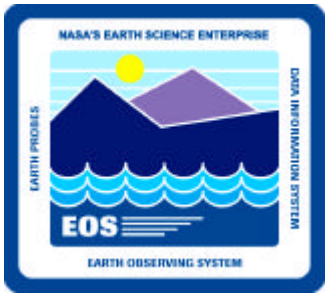
Raytheon



Introduction & Agenda

Valecia Maclin

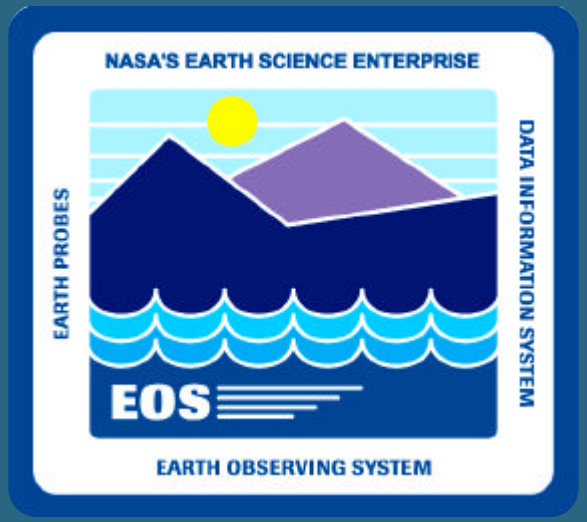
Agenda



• Introduction and Agenda	Valecia Maclin	10:00 AM
• 6A System Functionality	Evelyn Nakamura	10:10 AM
• Release 6A Test Status	John Rubenacker	10:25 AM
• Performance Verification Lab	Skip Linehan	10:40 AM
• Non-Conformance Report (NCR) Status	John Cockey	11:00 AM
• Break		11:20 AM
• Post-CSR Installation & Transition	Ravi Nirgudkar	11:30 AM

Agenda

• ECS Support to Site Readiness	Lonney Head	11:50 AM
• CDRL Documentation Summary	Joe Spyrison	12:00 PM
• Functional Configuration Audit	Joe Spyrison	12:05 PM
• Physical Configuration Audit	Steve Haupt	12:10 PM
• Liens Against 6A at CSR	Valecia Maclin	12:25 PM
• Concluding Remarks	Valecia Maclin	12:30 PM



Release 6A System Functionality

Evelyn Nakamura

Raytheon

6A New Mission Aspects

- **Reprocessing for Terra (ECS and SIPS)**
  - **Access & Deliver Reprocessing Inputs**
  - **Archive & Retrieval for Reprocessed Data**
  - **Support Deletion of Obsolete Data**
- **Processing and Archiving for Aqua (ECS and SIPS)**
  - **AIRS/AMSU/HSB Production**
  - **ICESat/GLAS, AMSR, Higher Level MODAPS Ingest**

Release Capabilities

Performance

- Hardware Upgrades
- Science Data Server Performance Improvements
- Production Planning and Processing Throughput Enhancements
- Archive Throughput
- Enhanced Logging to Help Plan the Future Improvements

Release Capabilities

External Interfaces

- **Machine to Machine Gateway**
- **SIPS Ingest of ICESat/GLAS, AMSR and MODAPS PM-1 Higher Level Products**

Release Capabilities

Science User

- V0 Gateway Enhancements
  - Non-spatial and/or Non-temporal, and Non-science Collections
  - User Can Select Results Set Attributes
- Attaching Processing Requests to a DAR
  - Integrated with DAR Tool
  - "Standing Production Order" Is Triggered Each Time L1B for the DAR Arrives
- FTP Pull Subscriptions
  - Operator Can Pick Acquire by FTP Pull

Release Capabilities

Operability & Robustness

- Reprocessing
- Operator Interface for Granule Deletion
- Logical Archive ID
- Storage Management Architecture Changes
  - Request Manager
  - Improved Fault Handling
- Distribution Options Configurable via ECS Registry

Requirements and Design Process

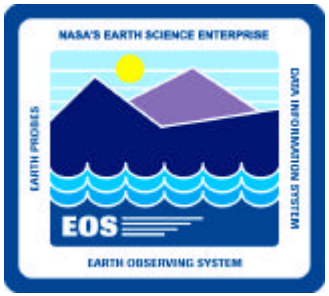
- Tickets map to single release capabilities to single tests (where possible)
- L4 requirements derived from L3 requirements
- Tickets created for test verification purposes
  - Set of acceptance criteria for Functional Components, Error Conditions and Performance Criteria (handled by PVC)
  - Mapping to development capabilities
  - Mapping of L4s
- Standard ESDIS approval cycle

6A Capabilities

- **6A Tickets**

EN_6A_04: Granule Deletion	Command line utility to logically delete granules from the archive and the catalog or from archive only. Clean-up utility to physically delete granules.
RM_6A_08: Landsat-7 Granule Deletion	Command line utility to delete Landsat-7 granules. Compatible with EN_6A_04 clean-up utility.
RM_6A_05: Machine-to-Machine Gateway	Provide DAAC configurable support of SIPS originated product order, search, and integrated search/order in support of reprocessing.
RS_6A_06: Ingest of 6A Data Types	Ingest of ICESat/GLAS data types and MODAPS PM-1 higher level products via SIPS.
RS_6A_05: Archive Improvements	Configuration of ESDT archives using logical archive ID. Support parallel AMASS I/O (Request Manager). Enhanced data access and staging activity logging.
RM_6A_07: EDC Processing Attached to a DAR	Support standing on-demand processing orders attached to a DAR.
RM_6A_01: Reprocessing	Capability to support reprocessing.
EN_6A_02: V0 Gateway Enhancements	Access to non-spatial and/or non-temporal collections, and non-science collections. Default, all, or user-selectable results set attributes.
RM_6A_04: FTP Pull Subscriptions	Distribute data for FTP Pull on subscriptions.
SL_6A_01: GSFC 24-Hour Workload Performance	6A workload specification for GSFC day-in-the-life.
SL_6A_02: EDC 24-Hour Workload Performance	6A workload specification for EDC day-in-the-life.

PDS / Release Deferred Capabilities



- **PDS Tickets**

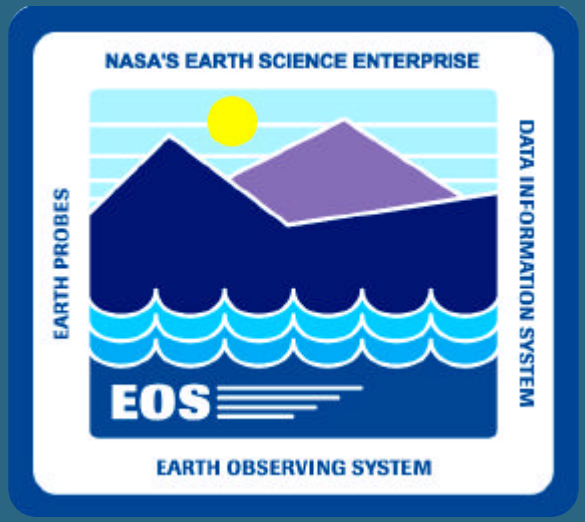
RM_5X_01: ECS Integration with PDS	Integration of the EDC Product Distribution System with ECS. New media types: CD-R, DVD-R, DLT.
RM_6A_09: ECS Integration with PDS	Client access to distribution options using the ECS configuration registry. V0GWY, ODFRM, SBSRV GUI, MTMGW.

- **"PDS - OBE" Tickets**

RS_6A_01: Additional Media Types	DLT and CD-ROM distribution. Retrieval of media options from the configuration registry.
RS_6A_04: Multi-Host Scheduling	Configurable load balancing and fail over of media servers.

- **Release Deferred Tickets**

RS_6A_02: Compression on Distribution	GZIP and Unix compression on distribution.
RS_6A_03: EDOS Backup	D3 tape distribution of L0 datasets to EDOS. Restore L0 data sets or files from an EDOS archive D3 tape.
EN_6A_01: Tape Ingest of IGS Browse Data and Metadata	8MM tape Ingest and catalog of IGS metadata and browse. Archive and retrieval of IGS browse data.



Release 6A Acceptance Testing Status

John Rubenacker

Raytheon

Agenda

- 6A Acceptance Testing Approach
- 6A Acceptance Testing Results

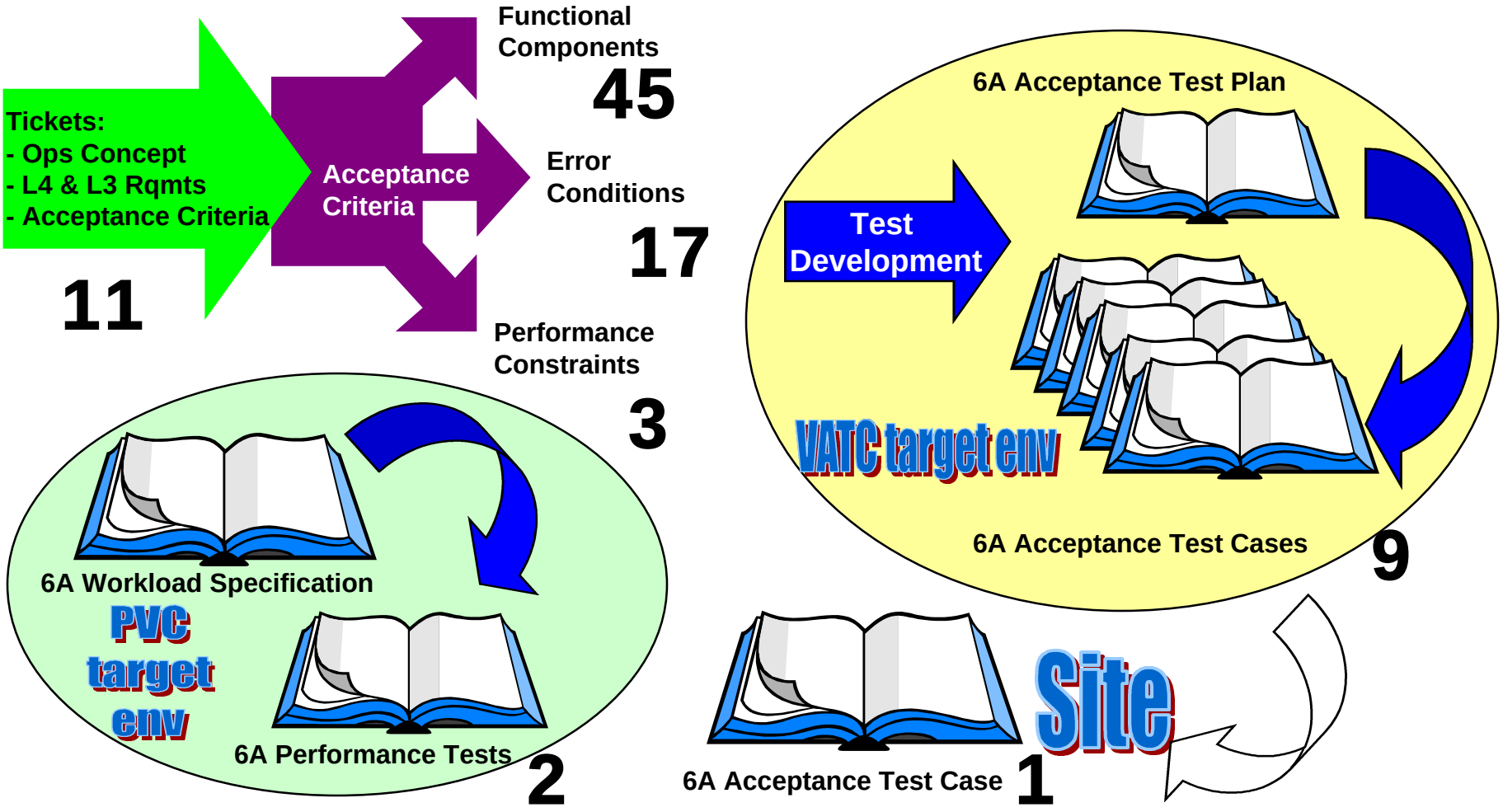
6A Acceptance Testing Approach

- **Tickets specifying Ops Concept, L3/L4 Requirements and Acceptance Criteria defined for new 6A function, then approved by ESDIS**
- **Acceptance Test Plan and Test Cases developed, assessed for completeness and coverage, then approved by ESDIS**
- **Tests Dry Run in factory target environment before Formal Conduct**
- **Tests formally conducted in factory target environment in presence of authorized government witnesses**
- **Acceptance Criteria Test Status maintained by ESDIS in Verification Data Base (VDB)**

6A Acceptance Testing Approach

- **Three 6A performance-related acceptance criteria were allocated to and verified in the PVC factory target environment during EDC & GSFC performance/load testing**
  - **2 criteria associated with EDC and GSFC workload specs**
  - **1 criterion associated with Granule Deletion**
- **One functional criterion has been allocated to the DAAC site for verification after 6A Transition**
  - **Criterion 1800 in Ticket RM-6A-07 (EDC processing DPR attached to a DAR)**

6A Acceptance Testing Approach



6A Acceptance Testing Results
Criteria Verification Status

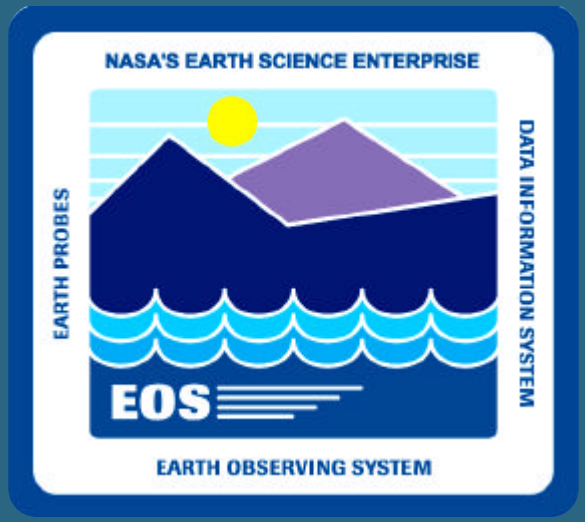
Test Case	Criteria Key										Total	V	NT	NV
6A10000 - VO Gateway Enhancement	1707	1708	1807	1808	1809	1905					6	5	1	
6A10050 - FTP Pull Subscriptions	1770	1771									2	2		
6A09080 - Attached DPR	1800+	1801	1802	1803	1804	1840*	1841*	1842*			8	7	1	
6A09020 - Reprocessing	1721	1722	1723	1724	1725	1726					6	6		
6A10040 - Archive Improvements	1721	1728	1729	1730	1731	1732	1734	1735*	1736*	1737*	10	10		
6A10020 - Granule Deletion	1706	1701	1836	1837	1838	1702*	1839*	1703*	1704*	1772*	13	13		
	1773*	1774	1775*											
6A08000 - Machine to Machine Gateway	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	15	15		
	1853	1854*	1855*	1856*	1857*									
6A10080 - Ingest Database Data Type Verif.	1712										1	1		
6A10090 - L7 Granule Deletion	1898										1	1		
Allocated to Performance Verif. (2 test cases)	1705**	1778**	1779**								3	3		
							Criteria Total				65	63	2	0

* Error Conditions have an asterisk next to the Criteria Key

** Performance Constraints have a double asterisk next to the Criteria Key

\+ Criterion to be verified at EDC has a plus sign next to the Criteria Key

65 Criteria - Target Environment: Verified (V) = 63 (97%) Not Tested (NT) = 2 (3%)



Performance Verification Lab

Skip Linehan

Raytheon

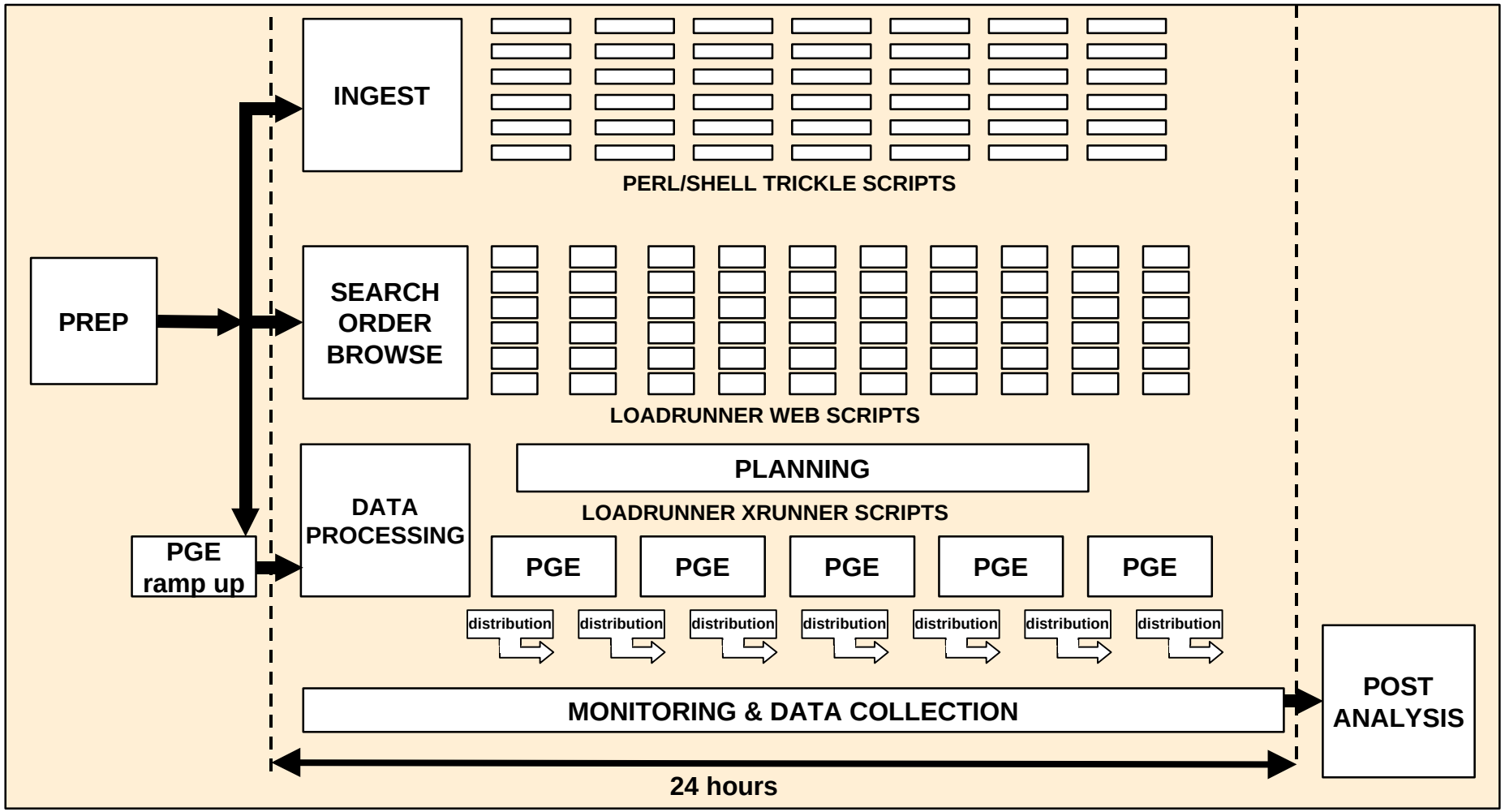
6A Performance Verification

Performance verification scope is full Terra and Aqua ingest, production and distribution and Terra reprocessing,

Performance verification is based on a workload specification for EDC and GSFC

- **EDC has highest ingest throughput**
- **GSFC has highest production and distribution throughput**
- **Release 6A verification constraints**
  - **Simulated external interfaces**
    - **MODAPS ingest, distrib (p0teg01 HIPPI)**
    - **MTM (p0tes02)**
    - **PDS load simulated with SCLI acquires (HIPPI to WKG)**
  - **Synthetic PGEs**
  - **1.5M granule inventory and 38 TB archive**

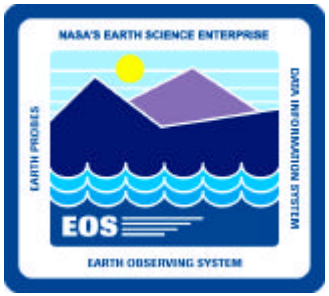
Performance Verification Test Flow Diagram



Test Conduct

- **All procedures were approved by ESDIS prior to formal testing.**
- **Tests were witnessed by ESDIS representatives and IVV.**
- **Formal Performance Testing of the EDC scenario**
  - **March 27-28, 2001**
- **Formal Performance Testing of the GSFC scenario**
  - **March 22-23, 2001**
  - **March 29-30, 2001**
  - **April 5-6, 2001**

PVC Goals



ROUGH STATIC CAPACITY COMPARISONS

Percentage of Capacity Provided by the PVC vs GDAAC						
Function	**CPU**	**IOPS**	**I/O Thruput**	**Disk Size**	**Memory**	**Tape Drive**
icg - Ingest	50%	100%	50%	64%	50%	N/A
spg - Science Processors	42%	24%	40%	44%	57%	N/A
pls - Planning DBMS	100%	N/A	N/A	N/A	300%	N/A
sps - PDPS Queuing Server	50%	N/A	N/A	N/A	100%	N/A
acs - SDSRV	100%	N/A	N/A	N/A	100%	N/A
acg - SDSRV DBMS, Pull Area, Browse	100%	53%	75%	53%	25%	N/A
drg - Archive Servers	90%	46%	60%	72%	50%	N/A
silo - STK Silos	N/A	N/A	N/A	N/A	N/A	131%

Percentage of Capacity Provided by the PVC vs EDAAC						
Function	**CPU**	**IOPS**	**I/O Thruput**	**Disk Size**	**Memory**	**Tape Drive**
icg - Ingest	50%	100%	50%	81%	50%	N/A
spg - Science Processors	168%	69%	145%	200%	267%	N/A
pls - Planning DBMS	100%	N/A	N/A	N/A	300%	N/A
sps - PDPS Queuing Server	100%	N/A	N/A	N/A	150%	N/A
acs - SDSRV	67%	N/A	N/A	N/A	50%	N/A
acg - SDSRV DBMS, Pull Area, Browse	100%	53%	75%	50%	25%	N/A
drg - Archive Servers	88%	50%	40%	61%	50%	N/A
silo - STK Silos	N/A	N/A	N/A	N/A	N/A	121%

GSFC SCENARIO DERATING

INGEST 100%

PRODUCTION 70%

DISTRIBUTION 79%

EDC SCENARIO DERATING

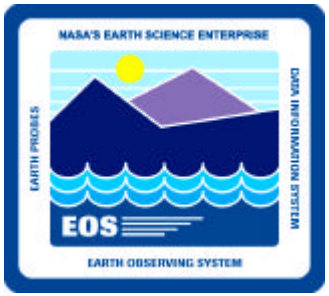
INGEST 75%

PRODUCTION 100%

DISTRIBUTION 90%

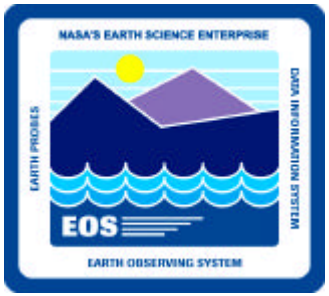
Note: These are rough derating estimates that do not account for dynamic system behavior that can result from overloading these capacities (such as additional archive tape accesses due to limited file residency time in AMASS cache).

6A Performance Verification Summary



	EDC SCENARIO		GSFC SCENARIO			
Area	PVC Goal (% of workload)	% Goal Achieved	PVC Goal (% of workload)	RUN 1 % Goal Achieved	RUN 2 % Goal Achieved	RUN 3 % Goal Achieved
Ingest	75%	150%	100%	95%	103%	105%
Production	100%	77%	70%	94%	98%	83%
Distribution	90%	178%	79%	103%	91%	84%
Search	100%	90%	100%	66%	89%	78%
Browse	100%	100%	100%	88%	100%	100%
Gran Delete	100%	38%	100%	0%	173%	170%

6A Performance Verification Significant Events During Tests



GSFC RUN #1 (3/22-23)

- Gran Del not working, NCR fixed and delivered for next run.

EDC RUN (3/27-28)

- Gran Del operator error, only one of three batches was run
- Errant rsh to all xterms caused all xterms to crash, which caused ODFRM operations to fail. Unable to get this working during remainder of test, resulting in low ODFRM results.

GSFC RUN #2 (3/29-30)

- ICG machine locked up at hour 2, was rebooted, resulted in 2 hours lost during test.
- Ran out of fnodes several times on DRP2, system stalled for ~1 hour. Required further tuning of AMASS and volume group allocations.
- PDPS notification queue performance problems required dynamically adjusting queue. NCR resolved for next run.

GSFC RUN #3 (4/5-6)

- Administrative problem with sybase caused sybase system files to be deleted during hour 4. Required analysis and reloading files from backup tapes. Three hours lost.
- AMASS lock manager died on drg01. Rebooted, lost 1 hour.

PVC Findings

Running a full 6A workload on a reduced configuration provided an opportunity to significantly stress system components

21 new NCRs written (4 Sev 1, 11 Sev 2, 6 Sev 3)

- **CSR required NCRs have been fixed**
- **All sev 2 planned to be fixed by PSR except 30259 AMASS problem and 30129 Ingest ReqMgr core (mitigated by partial fix to reduce frequency)**

Overall, Release 6A system stability is greatly improved relative to Release 5B

- **Cores were rare**
- **New 6A Storage Management components proved to be quite stable**

Sustained performance demonstrated ability to achieve target workloads at the DAACs.

PVC Findings, cont'd.

ITEMS FOR DAAC AWARENESS

- **AMASS FNODE issue:**
  - **AMASS can run out of FNODES when AMASS is flooded with write requests (especially after a warm start, or when bottlenecked with too many writes to one volume group).**
  - **This situation will cause blocking of process which is writing to AMASS (stmgt) which holds locks in stmgt database. This will eventually cause other stmgt activities to stop until locks are released.**
  - **Resolves when writes are worked off.**

    -anomaly seen when all writes are to one VG, FNODES don't release until writes finish

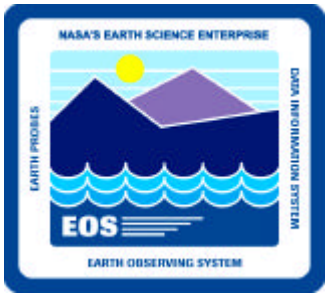
    -will issue TD for workaround, problem is logged with ADIC

- **New Tuning needed for new STMGT**
  - **Use PVC thread counts as a template**
- **VOGW has significant memory leak, we bounced ~6-8 hours**

EDC Scenario Detailed Results

EDC FORMAL March 27-28 2001	Data Type	Requirement		Goal*		Actual		% of Goal Achieved	
		Granules or DPRs	Vol (GB)	Granules or DPRs	Vol (GB)	Granules or DPRs	Vol (GB)	Granules or DPRs	Volume
INGEST									
A.3.2.(a) ASTER L1B	ASTL1B	372	47	279	35	372	47	133%	132%
A.3.2(b) ASTER L1A	ASTL1A	937	116	703	87	969	111	138%	127%
A.3.2(c) Larry ancillary Data (OZ-daily, SEA_ICE, GDAS-OZF)		11	<1	8	<1	10	<1	121%	100%
A.3.2(d) ASTER L0 expedited	AST0V1S	39	<3	29	<3	38	4.7	130%	100%
A.3.2(e) L70R (F1&F2) 336 scenes	L70R	84		63	0	91	173	144%	
A.3.2(g) IGS scene metadata	scenes	345	<1	259	<1	501	<1	194%	100%
A.3.2(h) MODIS high level	MODxx	7,745	386	5809	289	5,807	283	100%	98%
A.3.2(I) MODAPS Browse Products	BROWSE	1,920	<1	1440	<1	1440	<1	100%	100%
A.3.2(j) MODAPS QA Products	QA	960	<1	720	<1	752	<1	104%	100%
Total Ingest		**12,413**	**549**	**9310**	**411**	**9,980**	**618**	**107%**	**150%**
PRODUCTION	**PGE**								
A.3.3(a) ASTER routine DST	PGE02	372		372		372		100%	
A.3.3(b,c) on demand for AST_07,AST_09	ACVS	150		150		88		59%	
A.3.3(d) on demand for AST_09T	ACT	75		75		40		53%	
A.3.3(e,f) on demand for AST_05, AST_08	ETS	150		150		84		56%	
A.3.3(g) on demand for AST_09	BTS	75		75		51		68%	
Total Production		**822**		**822**		**635**		**77%**	
DISTRIBUTION									
A.3.5 Distribution	PDS	2,430	243	2,187	219	2,712	496	124%	227%
	push ASTL1B	372	47	335	42	826	103	247%	244%
	push MODIS	1,360	136	1,224	122	1,081	144	88%	118%
	pull AST9,7V	75	40	68	36	51	7.0	76%	19%
	pull AST09T	75	1.0	68	1	28	1	41%	115%
	pull AST05,08	75	0.9	68	1	29	1	43%	123%
	pull AST04	75	0.5	68	0	18	0	27%	0%
	pull ASTL1B	5	4.4	5	4	5	4.5	111%	113%
	pull L70RWRS	90	45.0	81	41	90	36.5	111%	90%
Total Distribution		**4,462**	**468**	**4,016**	**422**	**4,745**	**752**	**118%**	**178%**
DATA ACCESS/DELETION									
Search via EDG (45/hr)		1080				967		90%	
Browse via EDG (19/hr)		456				456		100%	
Delete Science granules		5517				1472		27%	
Delete Browse granules		960				332		35%	
Delete PH granules		1943				1451		75%	
Delete QA granules		480				165		34%	
Total Granules Deleted		8900				3420		38%	

GSFC Scenario
Detailed Results Run #1



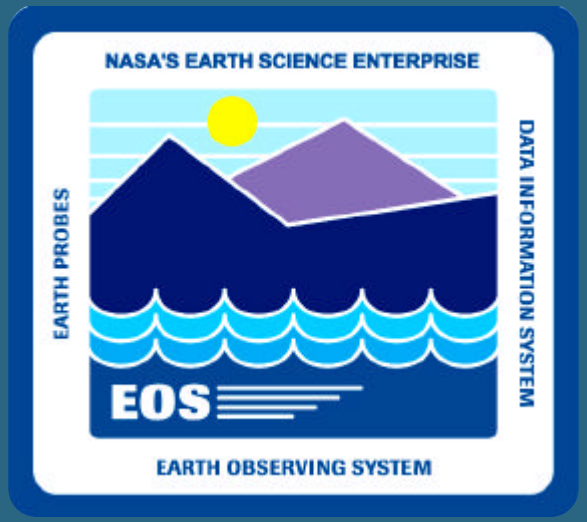
GSFC FORMAL March 22-23 2001	Data Type	Requirement Granules or DPRs	Requirement Vol (GB)	Goal* Granules or DPRs	Goal* Vol (GB)	Actual Granules or DPRs	Actual Vol (GB)	% of Goal Achieved Granules or DPRs	% of Goal Achieved Volume
INGEST									
A.2.2.(a) MODIS Terra & Aqua Level 0 Ingest	MOD000	15	98	15	98	15	92	100%	94%
	MODPML0	15	98	15	98	15	99	100%	101%
A.2.2(b) MODIS Terra & Aqua EDOS Ancillary Data	AM1ANC	15	<1	15	<1	15	<1	100%	100%
	PMCOGBAD	45	<1	45	<1	36	<1	80%	100%
	PM1EPHD	1	<1	1	<1	3	<1	300%	100%
A.2.2(c) MODIS Terra & Aqua Attitude Data	AM1ATTF	15	<1	15	<1	18	<1	120%	100%
	PM1EPHP	1	<1	1	<1	1	<1	100%	100%
A.2.2(d) MODIS Expedited Data	MOD000X	39	2	39	2	41	3.7	105%	197%
	MODPML0X	39	2	39	2	39	3.2	100%	169%
A.2.2(e) ASTER Expedited Data	AST0V1S	39	2	39	2	40	2.3	103%	105%
A.2.2(f) Ancillary Data from Larry	GDAS_0ZF	6	<1	6	<1	12	<1	200%	100%
	FNMOC_ML	2	<1	2	<1	2	<1	100%	100%
	SEA_ICE	2	<1	2	<1	2	<1	100%	100%
A.2.2(g) DAO Data	MISC	24	2	24	2	24	1.5	100%	77%
A.2.2(h) MODAPS Science Products	MISC	3,768	146	3,768	146	3,562	130	95%	89%
A.2.2(I) MODAPS Browse Products	BROWSE	1,032	<1	1,032	<1	909	<1	88%	100%
A.2.2(j) MODAPS QA Products	QA	480	<1	480	<1	454	<1	95%	100%
A.2.2(k) MODAPS PH Products	PH	3768	<1	3,768	<1	3,561	<1	95%	100%
A.2.2(l) AIRS Level 0 Data	MISC	245	15.6	245	15.6	140	15.4	57%	99%
A.2.2(m) AIRS Level 0 Expedited Data	MISC	117	2	117	2	118	0.578	101%	39%
Total Ingest		**9,668**	**366**	**9,668**	**366**	**9,007**	**347**	**93%**	**95%**
PRODUCTION									
A.2.3(a) DPREP Production for Terra & Aqua	DPREP	37		26		61		236%	
A.2.3(b) MODIS L1A Production for Terra & Aqua	PGE01	288		202		272		135%	
A.2.3(c) MODIS L1B Production for Terra & Aqua	PGE02	864		605		650		107%	
A.2.3(d) MODIS Cloud Mask Production for Terra & Aqua	PGE03	864		605		515		85%	
A.2.3(e) AIRS/AMSU/HSB Production	MISC	332		232		79		34%	
Total Production		**2,385**		**1,670**		**1,577**		**94%**	
DISTRIBUTION									
A.2.5 Distribution	MODAPS	5,040	761	3,982	601	4,927	593	124%	99%
	EDC	39	2.4	31	1.9	40	2.2	130%	115%
	GDS	39	2.4	31	1.9	0	0.0	0%	0%
	PDS	2,679	521	2,116	412	2,686	491	127%	119%
	MTM	98	16.9	77	13.3	88	15	114%	113%
	User Sub	720	255	569	201	515	182	91%	90%
	EDG (FtpPull)	1,344	252	1,062	199	1,104	189	104%	95%
Total Distribution		**9,959**	**1,810**	**7,868**	**1,430**	**9,360**	**1,472**	**119%**	**103%**
DATA ACCESS/DELETION									
Search via EDG (45/hr)		1080				708		66%	
Browse via EDG (19/hr)		456				401		88%	
Deleted Science granules		5476						0%	
Deleted Browse granules		516						0%	
Deleted PH granules		2388						0%	
Deleted QA granules		240						0%	
Total Granules Deleted		8620				0		0%	

GSFC Scenario
Detailed Results Run #2

GSFC FORMAL March 29-30 2001	Data Type	Requirement Granules or DPRs	Requirement Vol (GB)	Goal* Granules or DPRs	Goal* Vol (GB)	Actual Granules or DPRs	Actual Vol (GB)	% of Goal Achieved Granules or DPRs	% of Goal Achieved Volume
INGEST									
A.2.2.(a) MODIS Terra & Aqua Level 0 Ingest	MOD000	15	98	15	98	18	109	120%	112%
	MODPML0	15	98	15	98	15	92.7	100%	95%
A.2.2(b) MODIS Terra & Aqua EDOS Ancillary Data	AM1ANC	15	<1	15	<1	15	<1	100%	100%
	PMCOGBAD	45	<1	45	<1	46	<1	102%	100%
	PM1EPHD	1	<1	1	<1	3	<1	300%	100%
A.2.2(c) MODIS Terra & Aqua Attitude Data	AM1ATTF	15	<1	15	<1	15	<1	100%	100%
	PM1EPHP	1	<1	1	<1	1	<1	100%	100%
A.2.2(d) MODIS Expedited Data	MOD000X	39	2	39	2	38	3.5	97%	183%
	MODPML0X	39	2	39	2	40	3.3	103%	173%
A.2.2(e) ASTER Expedited Data	AST0V1S	39	2	39	2	40	2.3	103%	105%
A.2.2(f) Ancillary Data from Larry	GDAS_0ZF	6	<1	6	<1	12	<1	200%	100%
	FNMOC_ML	2	<1	2	<1	2	<1	100%	100%
	SEA_ICE	2	<1	2	<1	2	<1	100%	100%
A.2.2(g) DAO Data	MISC	24	2	24	2	24	1.6	100%	81%
A.2.2(h) MODAPS Science Products	MISC	3,768	146	3,768	146	3,972	150.9	105%	103%
A.2.2(I) MODAPS Browse Products	BROWSE	1,032	<1	1,032	<1	922	<1	89%	100%
A.2.2(j) MODAPS QA Products	QA	480	<1	480	<1	455	<1	95%	100%
A.2.2(k) MODAPS PH Products	PH	3768	<1	3,768	<1	3,972	<1	105%	100%
A.2.2(l) AIRS Level 0 Data	MISC	245	16	245	16	139	14.8	57%	95%
A.2.2(m) AIRS Level 0 Expedited Data	MISC	117	2	117	2	117	0.566	100%	38%
Total Ingest		**9,668**	**366**	**9,668**	**366**	**9,848**	**379**	**102%**	**103%**
PRODUCTION									
A.2.3(a) DPREP Production for Terra & Aqua	DPREP	37		26		60		232%	
A.2.3(b) MODIS L1A Production for Terra & Aqua	PGE01	288		202		261		129%	
A.2.3(c) MODIS L1B Production for Terra & Aqua	PGE02	864		605		770		127%	
A.2.3(d) MODIS Cloud Mask Production for Terra & Aqua	PGE03	864		605		421		70%	
A.2.3(e) AIRS/AMSU/HSB Production	MISC	332		232		119		51%	
Total Production		**2,385**		**1,670**		**1,631**		**98%**	
DISTRIBUTION									
A.2.5 Distribution	MODAPS	5,040	761	3,982	601	3,664	492	92%	82%
	EDC	39	2.4	31	1.9	40	2.0	130%	105%
	GDS	39	2.4	31	1.9			0%	0%
	PDS	2,679	521	2,116	412	2,654	485	125%	118%
	MTM	98	16.9	77	13.3	104	18	134%	135%
	User Sub	720	255	569	201	288	71	51%	35%
	EDG (FtpPull)	1,344	252	1,062	199	1,326	227	125%	114%
Total Distribution		**9,959**	**1,810**	**7,868**	**1,430**	**8,076**	**1,295**	**103%**	**91%**
DATA ACCESS/DELETION									
Search via EDG (45/hr)		1080				958		89%	
Browse via EDG (19/hr)		456				456		100%	
Deleted Science granules		5476				6246		114%	
Deleted Browse granules		516				1591		308%	
Deleted PH granules		2388				6234		261%	
Deleted QA granules		240				833		347%	
Total Granules Deleted		8620				14904		173%	

GSFC Scenario
Detailed Results Run #3

GSFC FORMAL APRIL 5-6 2001	Data Type	Requirement		Goal*		Actual		% of Goal Achieved	
		Granules or DPRs	Vol (GB)	Granules or DPRs	Vol (GB)	Granules or DPRs	Vol (GB)	Granules or DPRs	Volume
INGEST									
A.2.2.(a) MODIS Terra & Aqua Level 0 Ingest	MOD000	15	98	15	98	17	104	113%	107%
	MODPML0	15	98	15	98	17	105	113%	108%
A.2.2(b) MODIS Terra & Aqua EDOS Ancillary Data	AM1ANC	15	<1	15	<1	15	<1	100%	100%
	PMCOGBAD	45	<1	45	<1	46	<1	102%	100%
	PM1EPHD	1	<1	1	<1	3	<1	300%	100%
A.2.2(c) MODIS Terra & Aqua Attitude Data	AM1ATTF	15	<1	15	<1	13	<1	87%	100%
	PM1EPHP	1	<1	1	<1	1	<1	100%	100%
A.2.2(d) MODIS Expedited Data	MOD000X	39	2	39	2	40	3.6	103%	189%
	MODPML0X	39	2	39	2	39	3.2	100%	168%
A.2.2(e) ASTER Expedited Data	AST0V1S	39	2	39	2	40	2.3	103%	105%
A.2.2(f) Ancillary Data from Larry	GDAS_0ZF	6	<1	6	<1	12	<1	200%	100%
	FNMOC_ML	2	<1	2	<1	2	<1	100%	100%
	SEA_ICE	2	<1	2	<1	4	<1	200%	100%
A.2.2(g) DAO Data	MISC	24	2	24	2	25	1.7	104%	84%
A.2.2(h) MODAPS Science Products	MISC	3,768	146	3,768	146	3,802	149	101%	102%
A.2.2(I) MODAPS Browse Products	BROWSE	1,032	<1	1,032	<1	1009	<1	98%	100%
A.2.2(j) MODAPS QA Products	QA	480	<1	480	<1	498	<1	104%	100%
A.2.2(k) MODAPS PH Products	PH	3768	<1	3,768	<1	3,802	<1	101%	100%
A.2.2(l) AIRS Level 0 Data	MISC	245	15.6	245	15.6	140	15.9	57%	102%
A.2.2(m) AIRS Level 0 Expedited Data	MISC	117	1.5	117	1.5	120	0.6	103%	40%
Total Ingest		**9,668**	**366**	**9,668**	**366**	**9,645**	**385**	**100%**	**105%**
PRODUCTION									
A.2.3(a) DPREP Production for Terra & Aqua	DPREP	37		26		61		236%	
A.2.3(b) MODIS L1A Production for Terra & Aqua	PGE01	288		202		256		127%	
A.2.3(c) MODIS L1B Production for Terra & Aqua	PGE02	864		605		555		92%	
A.2.3(d) MODIS Cloud Mask Production for Terra & Aqua	PGE03	864		605		412		68%	
A.2.3(e) AIRS/AMSU/HSB Production	MISC	332		232		109		47%	
Total Production		**2,385**		**1,670**		**1,393**		**83%**	
DISTRIBUTION									
A.2.5 Distribution	MODAPS	5,040	761	3,982	601	2,909	380	73%	63%
	EDC	39	2.4	31	1.9	34	1.9	110%	99%
	GDS	39	2.4	31	1.9			0%	0%
	PDS	2,679	521	2,116	412	2,470	458	117%	111%
	MTM	98	16.9	77	13.3	99	17	128%	128%
	User Sub	720	255	569	201	247	126	43%	63%
	EDG (FtpPull)	1,344	252	1,062	199	1,287	220	121%	111%
Total Distribution		**9,959**	**1,810**	**7,868**	**1,430**	**7,046**	**1,203**	**90%**	**84%**
DATA ACCESS/DELETION									
Search via EDG (45/hr)		1080				845		78%	
Browse via EDG (19/hr)		456				456		100%	
Deleted Science granules		5476				6191		113%	
Deleted Browse granules		516				1514		293%	
Deleted PH granules		2388				6170		258%	
Deleted QA granules		240				755		315%	
Total Granules Deleted		8620				14630		170%	



Non-Conformance Report Status

John Cockey

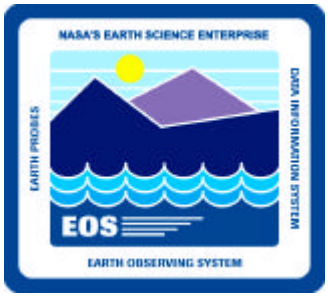
Raytheon

NCR Review Process For 6A CSR

NCRs in the RelB0_Informal Class Were Reviewed

- This class includes NCRs that exist in the 6A software baseline but <u>not</u> in the 5B software baseline
- These NCRs have been written by Development, Test and the PVC.
- On 3/9, 3/27 and 4/9 reviewed all Severity 1, 2, and 3 RelB0_Informal NCRs with ESDIS to verify severity and priority, resulting in 52 NCRs planned for work-off for 6A CSR.

6A CSR Critical NCRs -- Summary



Of the 52 NCRs critical to CSR, all but Two are Fixed and Verified.

- **Both are fixed and in the "Test" state**
- **NCR 29964 is delivered and will be verified during the 12 hour PVC regression test. This has run successfully previously.**
- **NCR 30356 is transition related (rgypatch) and will be verified during the 6A Transition Training.**

6A PSR NCRs -- Summary

Status of 70 NCRs needed for PSR

- **50 are Mitigated or Fixed and Verified**
- **20 are Fixed and need to be Verified**

Status of One NCR blocking criteria 1707 included above

- **29886**

6A Post-PSR NCRs -- Summary

Status of One NCR to be delivered Post-PSR

- **NCR 30129 - "EcInReqMgr core dumps in EDC test" - Mitigated by fix to reduce frequency of occurrence. Update to persist queue to be delivered post-PSR.**

Open NCRs

NCRs against old functionality, Severity 2

- **30129 - EcInReqMgr core dumps in EDC test**
  - **Impact - Ingest halts when this occurs. Workaround exists.**
  - **Workoff Plan - Ingest has task to develop persistence queue functionality to resolve long term issue. Estimate Merge in Aug. 2001.**

Open NCRs

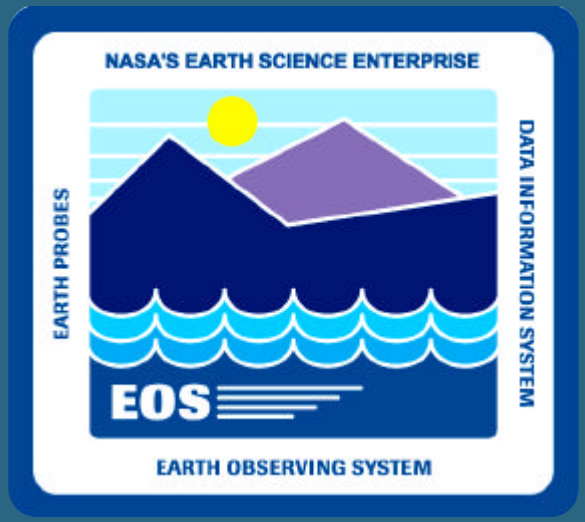
NCRs against old functionality, Severity 2:

- 28607 - "5B V0Gateway virtual size growing rapidly."
  - Impact - V0Gateway must be bounced periodically - about 3 times daily at EDC. When bounced, all active customer searches and browse requests must be resubmitted.
  - Mitigation - Improvements included in 6A.04 V0 Gateway:
    - 70 percent improvement in non-Landsat searches
    - 10 percent improvement in Landsat searches
    - 20 percent improvement in Product Requests and Browse Requests
  - Workoff Plan - Estimated merge of significant long term fix by the end of May 2001.

Summary

6A introduces Two Severity 2 NCRs:

- **These NCRs will be delivered Post PSR.**



Post-CSR Installation & Transition

Ravi Nirgudkar

Raytheon

Agenda

Major Transitions

- **Sybase ASE Transition**
- **5B to 6A Transition**

COTS SW Upgrade

Recommended Flow for Transition Events

Summary

Sybase ASE Transition

Sybase ASE transition

- Sybase ASE server is required to be upgraded from 11.5.1 to 11.9.3 (ACG only) to resolve deadlocking and performance issues within the STMGT database (NCR 29667)
- Sybase ASE PSR on April 14, 2001

Pre-requisite

- 5B.07 installed in all the modes
- TEs on 5B.07 required to support Sybase ASE 11.9.3

Sybase ASE Transition

Deployment Approach

- Install in-place and keep the data at the current location
- No additional disks will be required
- Minimal change to the DBA scripts and DAAC unique scripts
- Only one installation of Sybase ASE per pair of primary and secondary servers
- Cannot be tested in Test modes prior to the OPS mode
- Roll back can be performed in less than 12 hours

Sybase ASE Transition

Documentation

- Sybase ASE 11.9.3 (ACG) PSR and transition documentation to be provided at Sybase PSR

Transition Support

- ECS Landover will provide remote support during the transition

5B to 6A Transition

5B to 6A transition

- Transition will be from 5B.07 to 6A.04
- 6A.04 will include all aforementioned 6A functional and performance requirements
- 6A PSR is 05/02
- 6A SRA will be performed for each DAAC

Pre-requisite

- Sybase ASE 11.9.3 installed on ACG

5B to 6A Transition

Deployment Approach

- Train in VATC and in test modes,TS2 and TS1, at DAACs
  - Quiesce the system
  - Backup software/databases/configuration for rollback
  - Shutdown the system
  - Using ECS assist install the software on a clean system
  - Convert the system databases
  - Restart the system
  - Checkout installation
  - Re-enable Operational data inputs

5B to 6A Transition

Documentation

- Transition Plan 5B to 6A for the ECS Project, 223-TP-001-001
- Installation instructions

Transition Support

- ECS Landover will provide transition exercise to DAAC personnel in VATC
  - 5B to 6A Transition exercise
  - Review of 6A STMGT servers and impact to the DUEs
- ECS Landover will provide support to the DAAC during the transition at DAAC, as necessary

COTS SW Upgrade

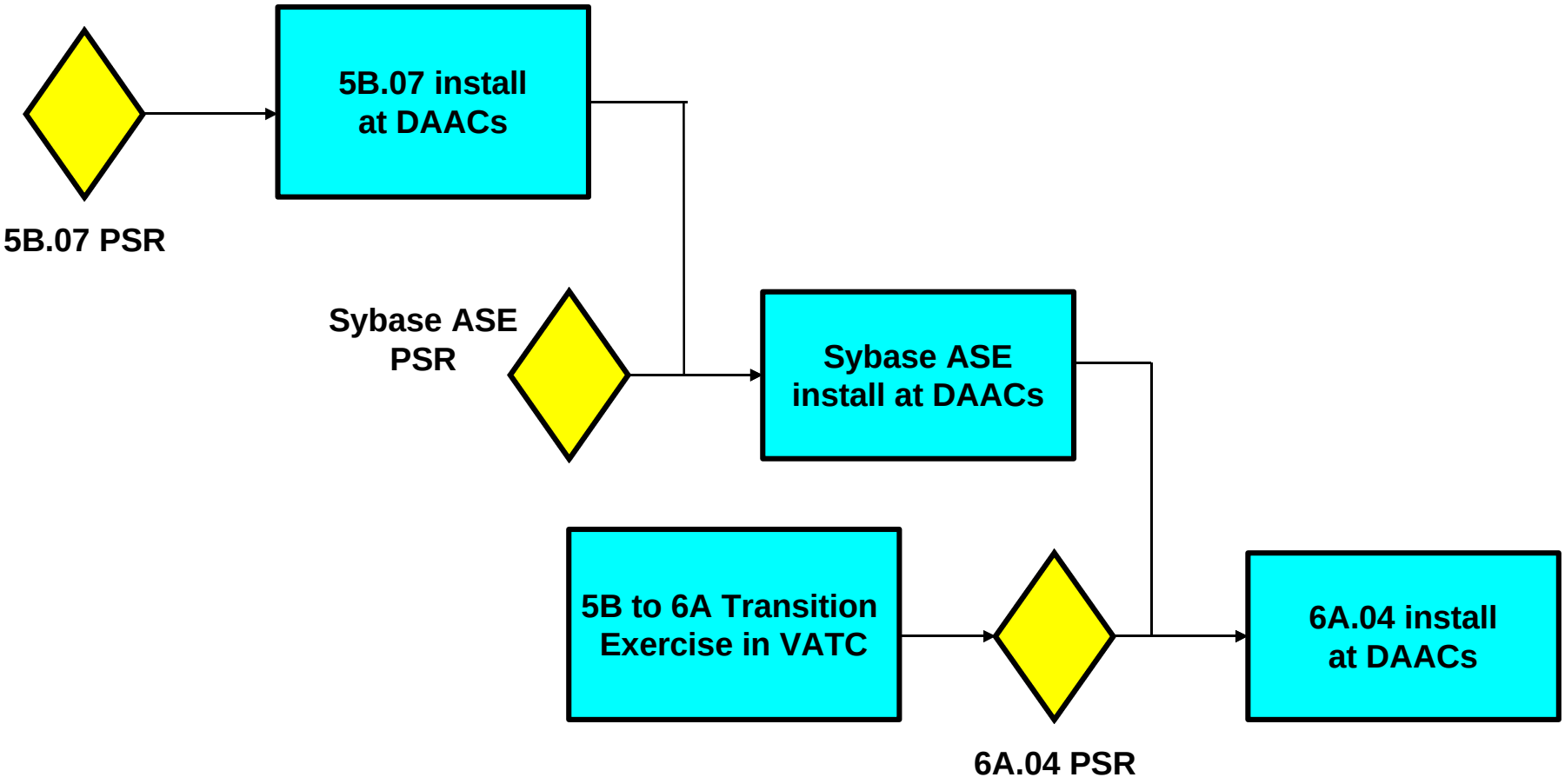
Following COTS SW products will be PSR during the 5B to 6A transition time-frame

- **To support 6A**
  - **Sybase ASE 11.9.3 (ACG only)**
- **To support Archive Migration**
  - **AMASS 5.0**
  - **ACSLS 5.3.2**
- **To support Bulk Metadata Generation Tool**
  - **Jconnect 5.2**
  - **JAXP 1.01**
  - **JRE 1.2.2**

COTS SW Upgrade

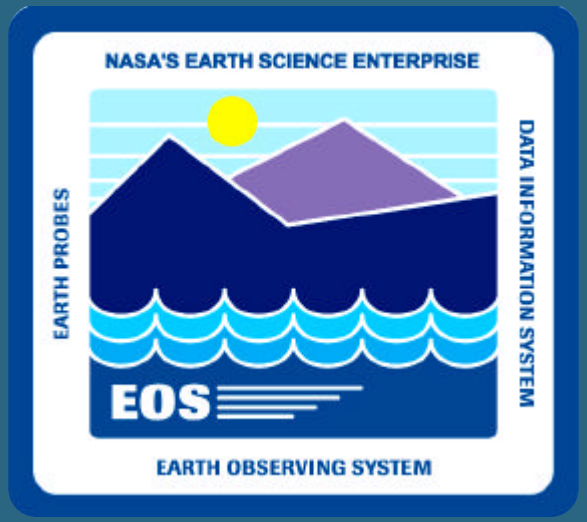
- To support Java DAR Tool
  - GLIS Mapper
- To support HP Migration (re-installed on SUN)
  - DBVision 3.1.8
  - DCE Cell Manager 1.6.2
  - Remedy 3.2.1
  - Tivoli 3.6.2
- Except for the Sybase ASE upgrade none of the above mentioned COTS SW products impacts 5B to 6A transition

Recommended Flow of Transition Events



Summary

- Based on the Sybase transitions performed, so far, we expect the Sybase transition to take less than 8 hours
- Based on the 6A transitions performed, so far, we expect the 6A transition to take less than 15 hours
- ECS Landover will provide a toolbox of COTS PSRs, install instructions, and procedures for transition tasks, and then support each DAAC on their individual transition
- Official POC for the transition at ECS Landover is the Deployment IPT
- On-site support from ECS Landover during the transition at DAACs will be available, as necessary
- Remote support will be available via M&O Help Desk



M&O
ECS Support to Site Readiness

Lonney Head

Raytheon

Operations Training

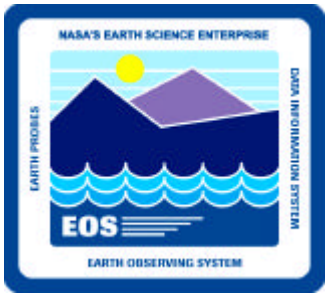
Conduct Training

- 6A Operations Delta Training (operations changes between 5B to 6A) currently being scheduled with DAACs
- 5B to 6A transition training has been scheduled with the DAACs

Documentation

- CDRL 625 and 611 documents were released 3/13/2001
- CDRL 625 updates are available via the SMC home page
  - http://m0mss01.ecs.nasa.gov/smc/training/
- CDRL 611 Interim Updates always available on
  - http://edhs1.gsfc.nasa.gov/waisdata/rel5/html/611update.html

Operations Training (cont.)



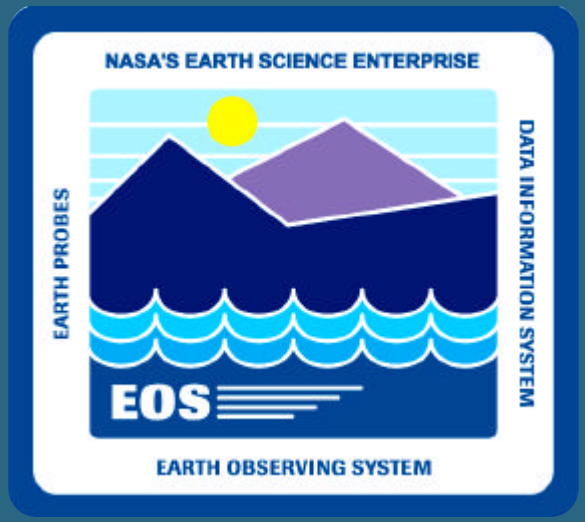
CDRL 625 and 611 updates for the 6A document release

- **Internals (Numerous Changes)**
- **System Administration**
  - Changes in System Monitoring
    - Whazzup *(not specific to 6A)*
    - ECSAssistant
    - Tivoli
- **Database Administration**
  - Sybase Replication Server
- **Configuration Management**
  - XRP Update
- **Resource Planning**
  - Tuning System Parameter (update for improved production throughput**)**
- **User services**
  - FtpPull Subscriptions
  - Machine-to-Machine Gateway
  - Seamless User Registration (5B Patch Capability)
  - On-Demand Request Attached to DAR
  - Data Search and Order Tool EDG Update
- **Production Planning and Processing**
  - Granule Deletion
  - Reprocessing
  - DPR Chaining Enhancements
  - Aqua Data Processing *(not specific to 6A)*
  - AutoSys Job Restructuring (includes Database Table changes)
  - Processing DPR Attached to a DAR (EDC only)
  - Tuning System Parameter (update for improved production throughput)

Operations Training (cont.)

CDRL 625 and 611 updates for the 6A document release (cont.)

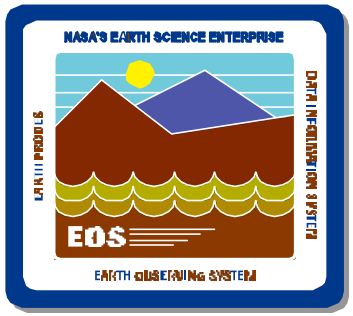
- **Ingest**
  - System allows greater volume of data to be ingested.
    - Tuning Parameter Update
    - Database Table Updates
  - Data Providers GDS for ASTER, ACRIM, AMSR, OSF
  - Storage Management Restructuring
- **Data Distribution**
  - Product Distribution System (PDS)
  - Storage Management Restructuring
- **SSI&T**
  - Granule Deletion
  - Aqua Data Integration and Test
- **Archive**
  - Parallel AMASS I/O
  - Logical Archive ID
  - Load Balancing
  - Cross-Archive Fault Recovery
  - Granule Deletion
- **System Troubleshooting**
  - Changes in System Monitoring
    - Whazzup *(not specific to 6A)*
    - ECSAssistant
    - Tivoli
  - Storage Management Restructuring
  - ASTER DAR Tool (update)
  - On-Demand Request Processing
- **Minor Changes**
  - Network Administration
    - HPOV Deletion



CDRL Documentation Summary

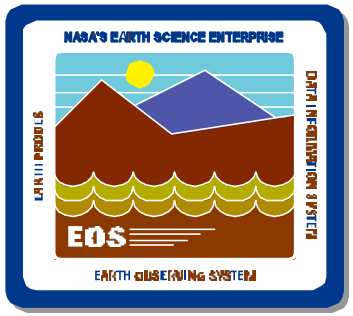
Joe Spyrison

System Design Documents



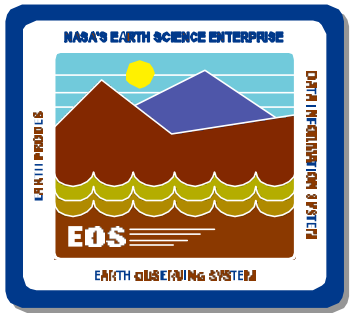
DID#	Document Title	Delivery Date
305/DV2 (F)#	Segment/Design Specifications	Delivered 3/08/01
311/DV1#	Database Design and Database Schema Specification	Delivered 3/09/01
313/DV3 (F)#	ECS Internal ICDs	Delivered 3/08/01
609/OP1#	Operations Tools Manual	Delivered 3/14/01

System Test Documents

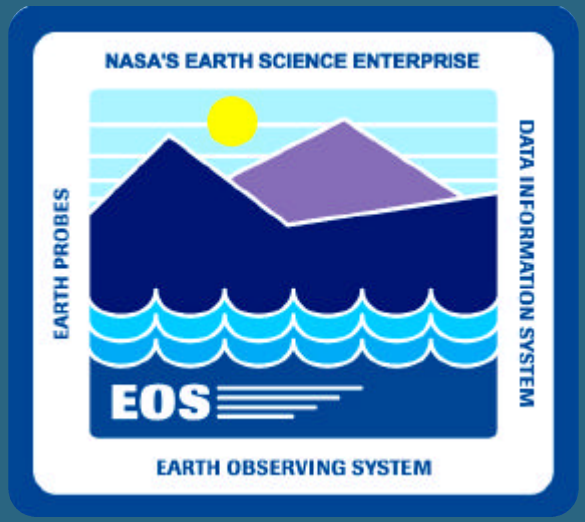


DID#	Document Title	Delivery Date
409/VE1#	ECS Science Acceptance Test Plan	http://dmserver.gsfc.nasa.gov/cm/ * Delivered 3/1/00
411/VE1#	ECS Science Acceptance Test Procedures	http://dmserver.gsfc.nasa.gov/cm/ * Posted to Web
412/VE2#	ECS Science Acceptance Test Report	http://dmserver.gsfc.nasa.gov/cm/ * Preliminary CSR+2 weeks Final SRA +2 weeks
535/PA1#	Acceptance Data Package	SRA + 30 Days

Ops Management/Support Documents



DID/TP#	Document Title	Delivery Date
506/PA3#	Configuration Audits of the Science Data Processing Segment, Release 6A	SRA + 30 Days
611/OP3#	Mission Operations Procedures	Delivered 3/13/01
625/OP3#	Training Material	http://dmserver.gsfc.nasa.gov/cm/ * Delivered 3/13/01
714/PP3#	CSR Presentation Package	CSR + 2 Weeks



Functional Configuration Audit

Joe Spyrison

Raytheon

FCA Objectives

Confirm

- ECS criteria verification status is correct, substantiated and traceable to VDB
- Approved Ticket criteria are mapped to approved test cases
- NCRs created or encountered during test execution are properly accounted for in DDTS
- Test completion status is correct and substantiated by complete test records

FCA Scope and Process

Scope- 6A test folders audited for Functional Components (FC) and Error Conditions (EC)

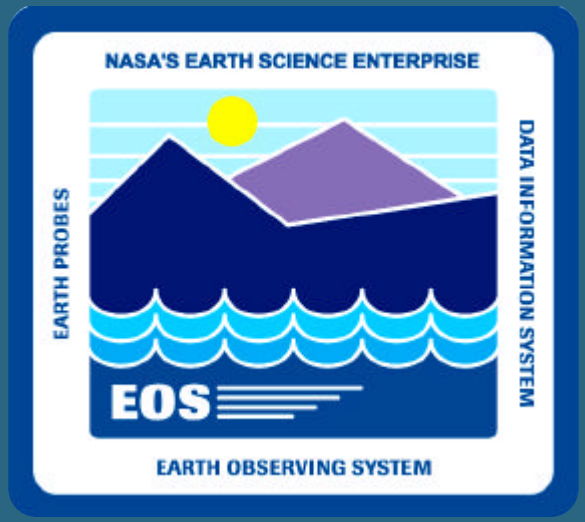
Process-

- **ECS QA audit team**
- **Reviewed formal test folders, original artifacts, reports, VDB**
- **Audit/witness test execution process for most 6A formal tests**
- **Any deficiencies would be recorded as QA DRs**
- **Traced from original site test records to VDB**

FCA Results and Conclusions

Results and Conclusions

- All criteria verification status audited is confirmed as correct. VDB criteria verification status is accurate
- All verification or NCR questions researched and resolved
- No criteria mapping or Ticket findings
- No other test folder documentation or test execution process deficiencies
- FCA objectives have been achieved



Physical Configuration Audit (PCA)

Steve Haupt

Raytheon

Agenda

- PCA Process Summary
- PVC PCA Results
- VATC PCA Results
- Conclusion

PCA Process Summary

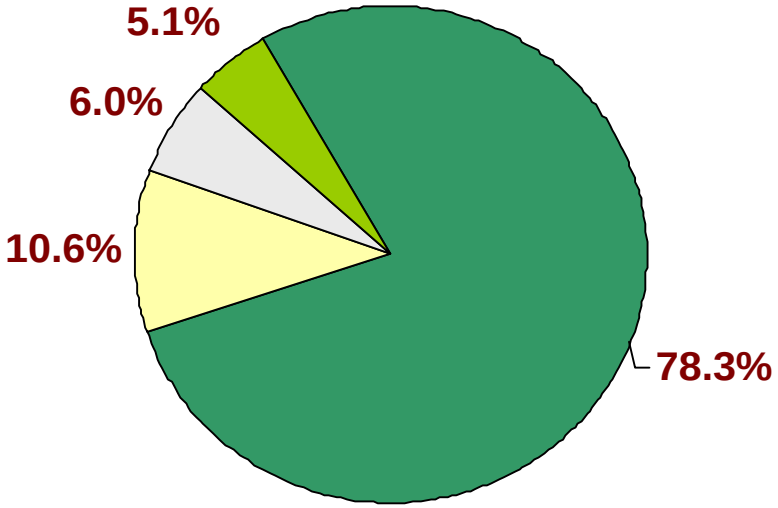
- Identify the Baseline references and target hosts
- Interrogate the target hosts and create discrepancy reports
- Post discrepancy reports on http://pete/baseline/ and http://cmdm.east.hitc.com/baseline/
- Conduct Audit (review the discrepancies)
- Forward medium severity findings to the appropriate area for further evaluation
- Provide summary of all audit findings at the CSR

PCA Process Summary (Cont.)

- **Create PCA NCRs and CCRs to address the findings**
- **Verify closure of all PCA NCRs and CCRs**

PVC PCA Results - COTS Software (Critical and Non Critical)

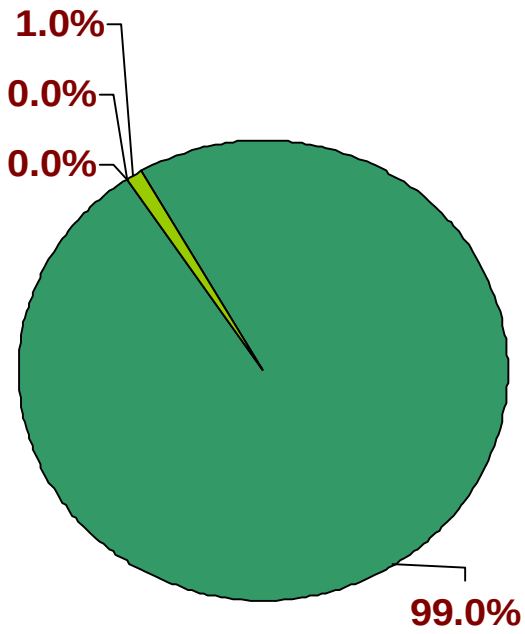
Investigation Completed on 3/19/01



- 78.3% Properly Installed
- 10.6% Approved but not installed
- 6.0% Not approved but installed
- 5.1% Installed w/incorrect version/path

PVC PCA Results - Critical COTS Software

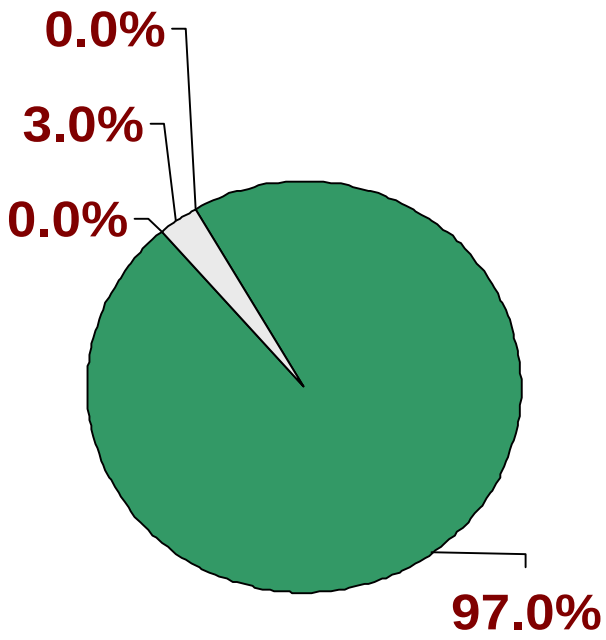
Investigation Completed on 3/20/01



- 99.0% Properly Installed
- 0.0% Approved but not installed
- 0.0% Not approved but installed
- 1.0% Installed w/incorrect version/path

PVC PCA Results -- Custom Code

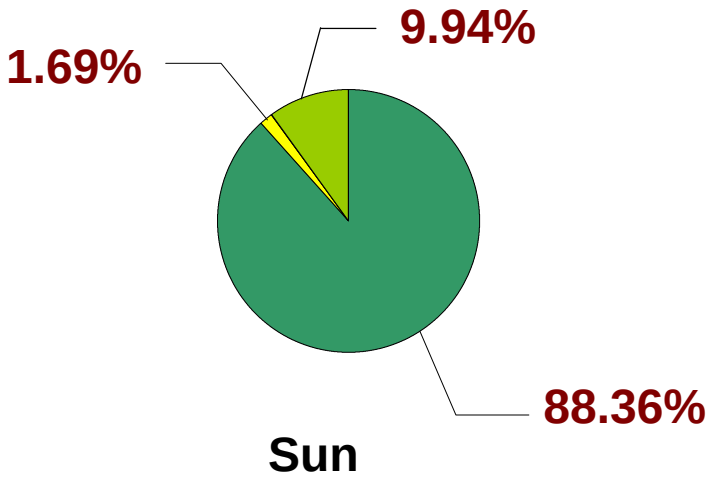
Investigation Completed on 3/20/01

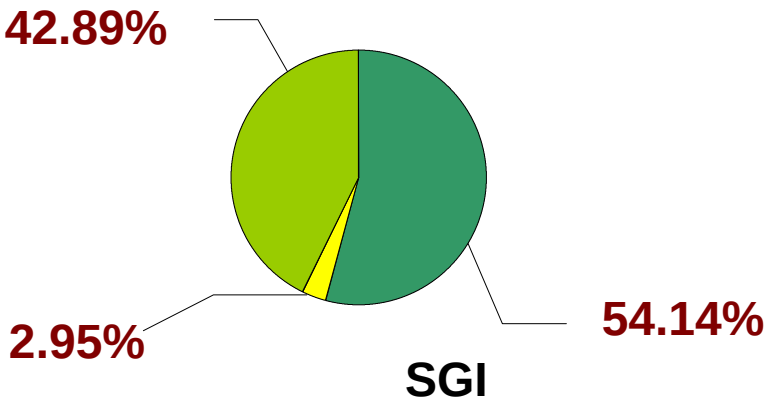


- 97.0% Properly Installed
- 0.0% Approved but not installed
- 3.0% Not approved but installed
- 0.0% Installed w/incorrect version/path

PVC PCA Results -- O/S Patches

Investigation Completed on 3/19/01



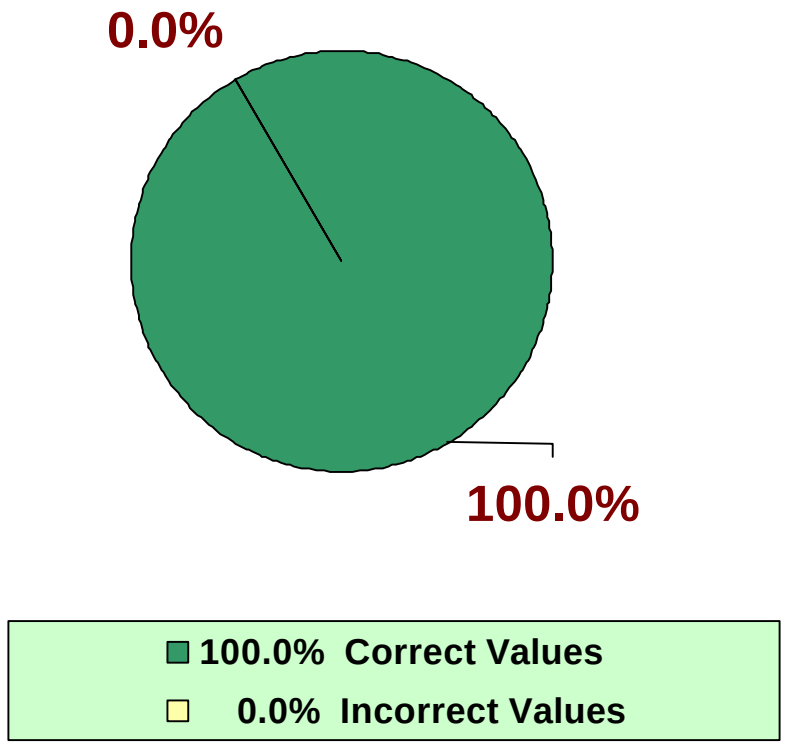


88.36% Properly Installed
1.69% Approved but not installed
9.94% Not approved but installed

54.14% Properly Installed
2.95% Approved but not installed
42.89% Not approved but installed

PVC PCA Results -- Configuration Parameters

Investigation Completed on 3/20/01



PVC PCA Work-off Plan

COTS SW:

- 10 findings require updates to baseline documentation and will be completed by 4/30/01.
- 2 findings will be reviewed by CM and PVC system administrator for correct disposition.

OS Patches:

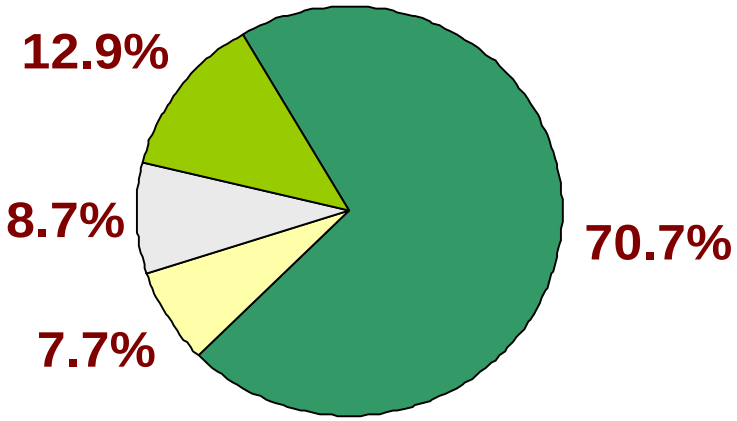
- 7 items have been assigned to system administrator for priority resolution. (3 - Sun's, 4 - SGI's)

Custom Code:

- Non-baseline executables should be removed.

VATC PCA Results - COTS Software (Critical and Non Critical)

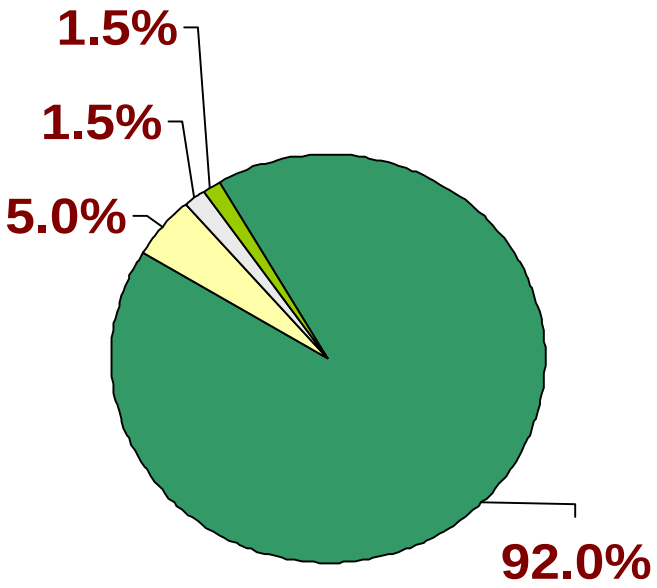
Investigation Completed on 3/12/01



- 70.7% Properly Installed
- 7.7% Approved but not installed
- 8.7% Not approved but installed
- 12.9% Installed w/incorrect version/path

VATC PCA Results - Critical COTS Software

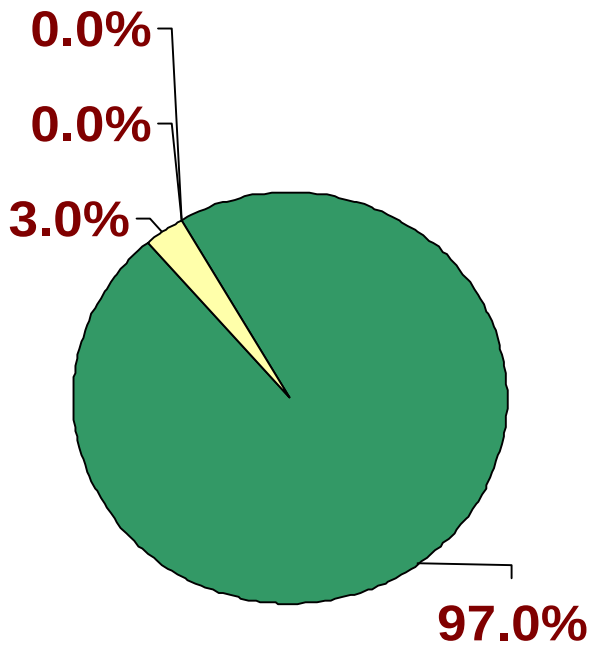
Investigation Completed on 3/12/01



- 92.0% Properly Installed
- 5.0% Approved but not installed
- 1.5% Not approved but installed
- 1.5% Installed w/incorrect version/path

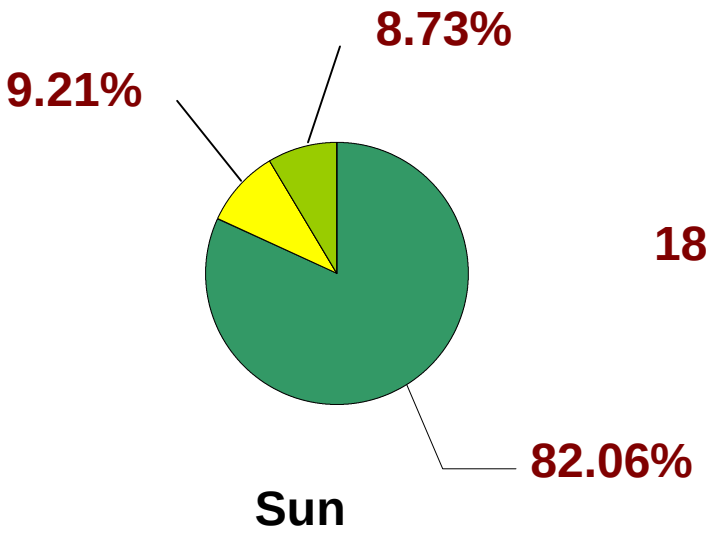
VATC PCA Results - Custom Code

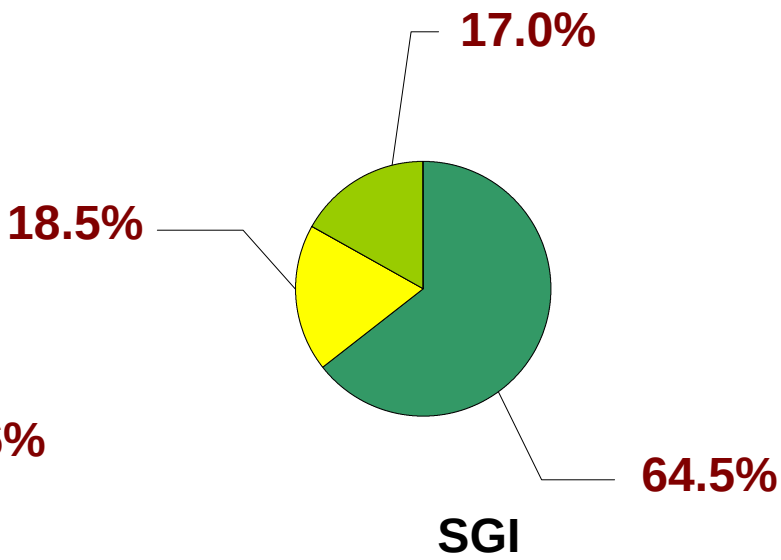
Investigation Completed on 4/08/01



VATC PCA Results - O/S Patches

Investigation Completed on 3/20/01



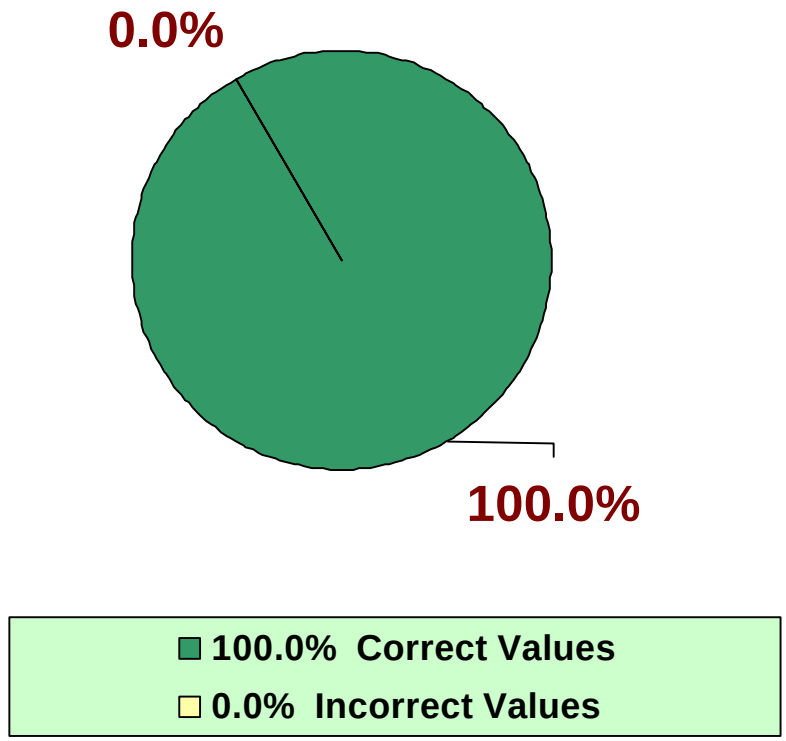


82.06%	Properly Installed
9.21%	Approved but not installed
8.73%	Not approved but installed

64.5%	Properly Installed
18.5%	Approved but not installed
17.0%	Not approved but installed

VATC PCA Results - Configuration Parameters

Investigation Completed on 3/20/01



VATC PCA Work-off Plan

COTS SW:

- 12 findings require updates to baseline documentation and will be completed by 4/30/01.
- 3 findings will be reviewed by CM and PVC system administrator for correct disposition.

OS Patches:

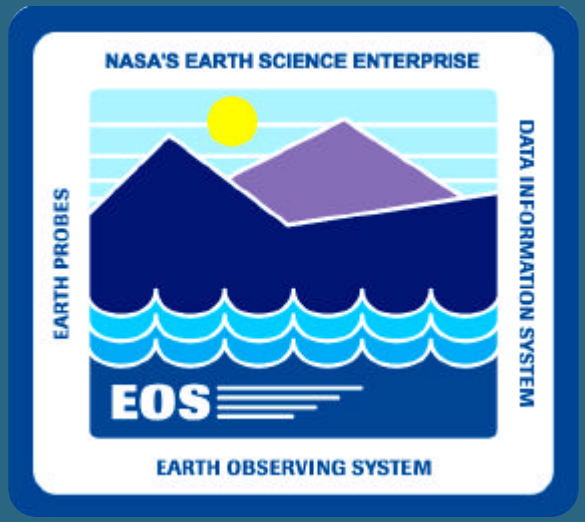
- 6 items have been assigned to system administrator for priority resolution. (1 - Sun's, 5 - SGI's)

Custom Code:

- Certain 6A.04P3 packages need to be installed.

PVC and VATC PCA Conclusion

- **Items needing resolution have been identified and will be addressed by the work-off plan**
- **The PCA demonstrates that the PVC and the VATC are sufficiently configured**
- **PCAs for the DAACs will be performed prior to SRA**



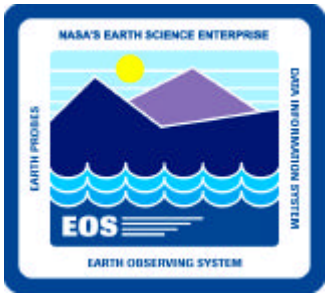
Liens Against 6A at CSR

Valecia Maclin

Liens Against 6A At CSR

- **Acceptance Test Liens**
  - **2 Criteria Not Tested**
- **NCRs**
  - **2 Severity 2 NCRs**
- **No Performance Shortfalls**
  - **Considerations for DAAC performance:**
    - **Tuning for new STMGT**
    - **AMASS FNODE workaround**
    - **V0 Gateway memory leak from 5B**
- **Conclusions**

Acceptance Test Liens - Criteria Not Tested



Criterion 1707: V0 Gateway Enhancement

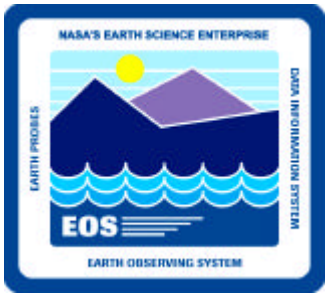
Using V0 EDG client (or a test driver simulating V0 protocols), demonstrate ability to perform a search followed by an order for data from the following ECS non-science collections:

1) **AP - Algorithm Package, 'AP';**
2) **DAP - Delivered Algorithm, 'DP';**
3) **PH - Production History, 'PH';**
4) **QA - Quality Assurance, 'QA';**
5) **SSAPC - Science Software Algorithm Package Component, 'AC', for each of the following component types: a) SWSource b) PGEExecutableFiles c) MCF d) TestPlan**
6) **PGEEXE - PGE Executables**
7) **FAIL_PGE - Tar file containing error messages for a failed PGE**

Acceptance Test Liens - Criteria Not Tested

- **Blocked by NCR 29886: EDG Client - Error in Search for Production History (Severity 2; Failed Verification)**
- **Impact: Minor. Cannot search for Production History for a collection.**
- **NCR 29889: EDG Client - No granules returned for DAP and AP (Severity 2; A state)**
- **Impact: Minor. Impact SSI&T only.**

Acceptance Test Liens - Criteria Not Tested



Criterion 1800: Attached DPR

- **Submit one DAR with attached standing on-demand processing requests for two different higher level ASTER products.**
- **Ingest several L1A followed by the corresponding standard L1B that match this DPR; ingest one L1A and L1B that do not match any of the submitted DAR; and ingest a non-standard L1B with a DAR id matching the submitted DAR.**
- **Verify the following:**

  1) The ODFRM interface can be used to enter the attached processing requests

  2) The user ID, ASTER DAR ID and ASTER DAR Expiration time were correctly passed in

Acceptance Test Liens - Criteria Not Tested

Criterion 1800 (Cont.)

3) The MSS GUI can be used to filter on the standing on-demand processing requests, and they can be viewed with their DAR ID and DAR Expiration Time.

4) The initial state of each order and request are 'Awaiting DAR Results'.

5) The user, distribution and other ordering information are correct.

6) As each L1B granule is ingested, the higher-level on-demand processing order & request are initiated for the matching standing order, specifying the corresponding L1B as the input.

7) The on-demand processing order information is correct and includes DAR ID and original standing order ID.

8) An order confirmation e-mail is sent to the correct e-mail address and has the correct contents.

Acceptance Test Liens - Criteria Not Tested

Criterion 1800 (Cont.)

9) The state of the standing order after the first on-demand order was generated, is 'Awaiting More DAR Results'.

10) The remaining processing of the higher-level on-demand orders proceeds to completion.

11) No higher-level on-demand processing orders are generated for the L1A and L1B that do not match any standing order, nor for the non-standard L1B.

- Multiple DAR aspect of criteria will be tested at EDC

Summary And Conclusions

Functionality

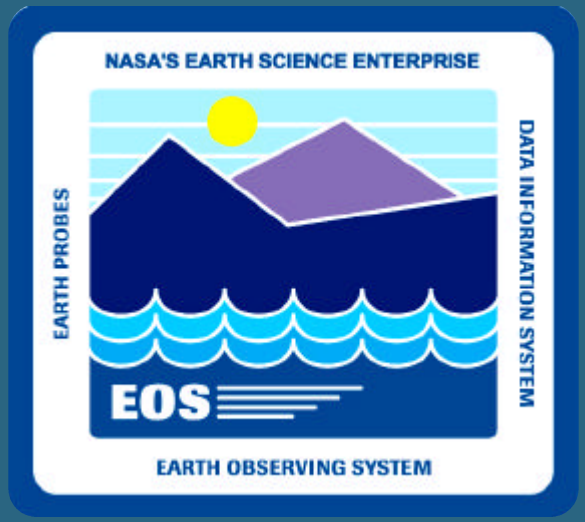
- All capabilities in 5B continue to work in 6A, except as noted in the NCR Status briefing
- 6A provides significant new functionality

Stability

- 6A is at least as stable as 5B.07 (plus test executables)

Performance

- PVC testing has not identified any performance problems not found in 5B.07
- PVC testing to date has confirmed that 6A meets its performance goals



Concluding Remarks

Valecia Maclin