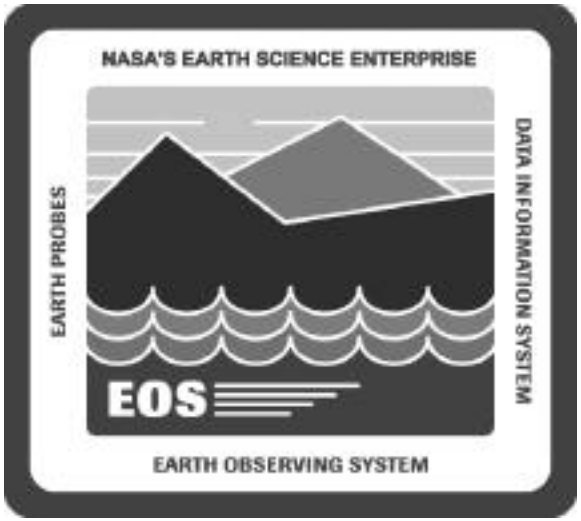
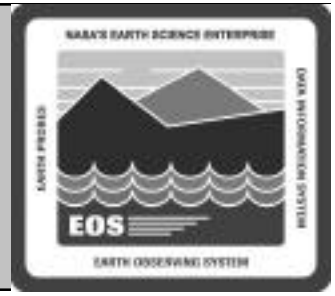


NCR Summary & Liens Against the System

Randy Miller

Raytheon Raytheon Systems Company

Briefing Overview



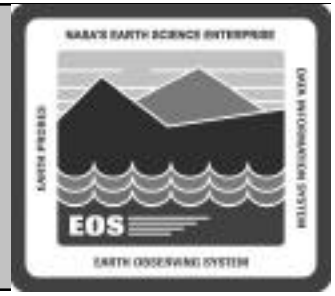
- **Review of IRRR Status**
- **Current Status**
  - **Description of Review Process**
  - **Liens Against The System**
  - **Work-Off Plans**

NCR Status At IRRR

- **Of the 37 High Impact NCRs identified at IRRR**
  - **18 are in the V, C, or D states**
  - **15 are in the T state**
  - **2 were downgraded to Low Impact**
  - **2 were downgraded to Medium Impact and are still being worked (20866 and 20873)**

- **Of the 79 Medium Impact NCRs identified at IRRR**
  - **26 are in the V, C, or D states**
  - **32 are in the T state**
  - **18 were downgraded to Low Impact**
  - **3 are still being worked (19691, 20408, and 20803)**

NCR Review Process For RRR



- **NCRs against the 4P code baseline were reviewed for operational impact (High, Medium, and Low) by an ESDIS/ECS team**
  - **For NCRs written before the IRRR (3/2/99), the IRRR list was re-assessed for impact**
  - **For NCRs written after IRRR, a weekly meeting has been held to review the impact of all NCRs written during the week**
- **NCRs assessed as having High or Medium impact were also evaluated for need date -- Pre-Launch or Post-Launch**
- **Progress in working off these NCRs is being tracked on a weekly basis**

High Impact Pre-Launch NCRs

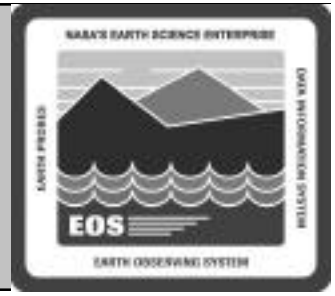
Original NCRs

	5-May	12-May	19-May	26-May	2-Jun	9-Jun	16-Jun
N/A/B/R	4	2	2	2	2	*0*	*0*
M	1	0	1	0	0	*0*	*0*
T	2	5	3	2	2	*1*	*0*
V/C/D	1	1	2	4	4	*6*	*7*
Downgraded	0	0	0	0	0	*1*	*1*
Total	8	8	8	8	8	*8*	*8*

Added NCRs

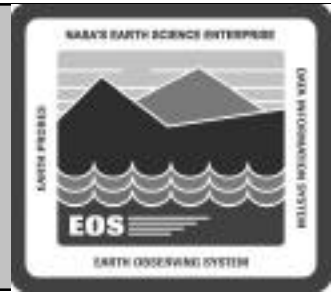
	5-May	12-May	19-May	26-May	2-Jun	9-Jun	16-Jun
N/A/B/R	0	0	0	1	1	*1*	*1*
M	0	0	0	1	2	*0*	*0*
T	0	0	0	0	2	*4*	*1*
V/C/D	0	0	0	0	1	*5*	*8*
Downgraded	0	0	0	0	0	*0*	*0*
Total	0	0	0	2	6	*10*	*10*

Unresolved High Impact NCRs



- **NCR 22907: "OPS: 4PX.28/31+: Copyexec process hung"**
  - **EcUtCopyExec Processes Become Locked In A "Waiting For I/O" State**
  - **Causes corruption of the AMASS database**
  - **Believed to be caused by improper mutexing in either Irix (SGI OS) or AMASS**
  - **Both vendors examining the problem; prognosis not known today**
  - **Mitigated by operational procedures at EDC, but a significant issue**

Medium Impact Pre-Launch NCRs



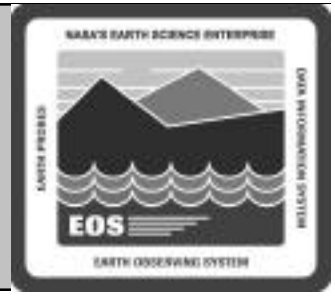
Original NCRs

	5-May	12-May	19-May	26-May	2-Jun	9-Jun	16-Jun
N/A/B/R	33	19	13	7	6	*4*	*3*
M	6	3	0	2	3	*2*	*3*
T	6	21	24	22	19	*11*	*3*
V/C/D	2	4	8	15	18	*29*	*37*
Downgraded	0	0	2	2	2	*3*	*3*
Total	47	47	47	48	48	*49*	*49*

Added NCRs

	5-May	12-May	19-May	26-May	2-Jun	9-Jun	16-Jun
N/A/B/R	0	0	11	11	12	*15*	*12*
M	0	0	0	1	3	*0*	*3*
T	0	0	8	12	7	*8*	*5*
V/C/D	0	0	4	8	15	*31*	*34*
Downgraded	0	0	0	0	0	*1*	*1*
Total	0	0	23	32	37	*55*	*55*

Medium Impact Post-Launch NCRs



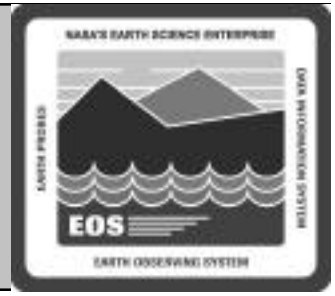
Original NCRs

	5-May	12-May	19-May	26-May	2-Jun	9-Jun	16-Jun
N/A/B/R	7	6	5	4	4	*2*	*2*
M	0	0	0	0	0	*1*	*1*
T	0	1	2	3	3	*2*	*0*
V/C/D	1	1	1	1	1	*2*	*4*
Downgraded	0	0	0	0	0	*1*	*1*
Total	8	8	8	8	8	*8*	*8*

Added NCRs

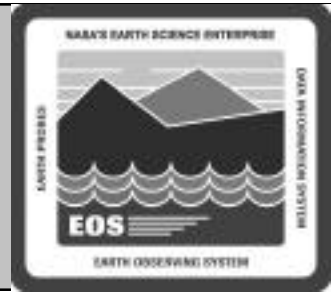
	5-May	12-May	19-May	26-May	2-Jun	9-Jun	16-Jun
N/A/B/R	0	0	1	0	2	*0*	*0*
M	0	0	0	0	0	*0*	*0*
T	0	0	1	2	1	*1*	*1*
V/C/D	0	0	2	2	3	*5*	*5*
Downgraded	0	0	0	0	0	*0*	*0*
Total	0	0	4	4	6	*6*	*6*

Long-Lead Medium Impact NCRs



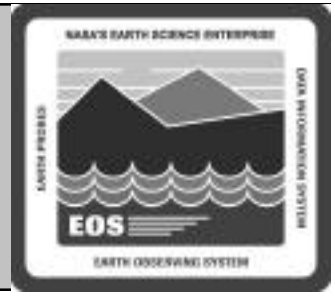
- **NCR 20873: "Client core dumps when server is warm started"**
  - **ECS custom software processes running on SGIs core dump when exceptions are thrown in certain OS libraries**
  - **Caused by bugs in Irix compiler libraries**
  - **SGI has agreed to provide/maintain a patch for the ECS version of the compiler (Version 7.2.1)**
  - **Patch must be tested in EDF and then distributed to sites**
  - **Mitigated by operational procedures (re-start servers), but reduces productivity and is a significant nuisance**

Summary



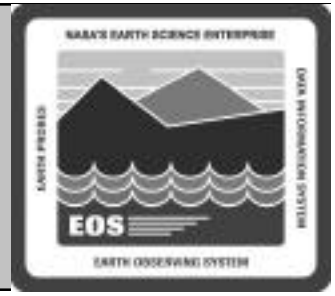
- **17 High Impact NCRs have been tracked during the period since IRRR**
  - **16 have been fixed to date (T/V/C/D)**
  - **1 remains unresolved (N/A/B/R/M)**
- **113 Medium Impact NCRs have been tracked during the period since IRRR**
  - **89 have been fixed to date (T/V/C/D)**
  - **24 remain unresolved (N/A/B/R/M)**

Work-Off Plans

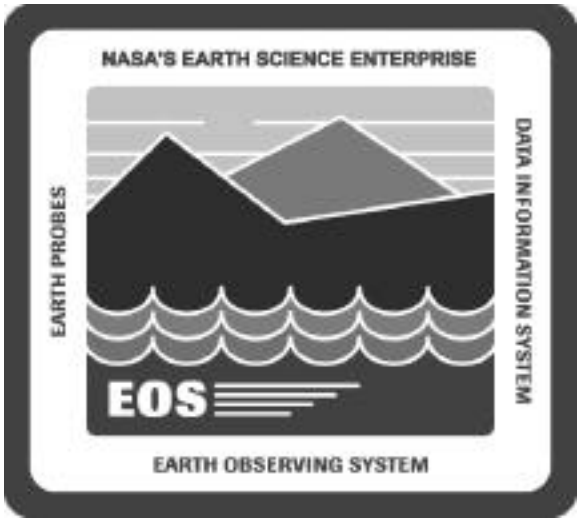


- **4PY Work-Off Plan**
  - **Periodic Roll-Up Patches (Keuka, Liverpool, Massena, …)**
    - **H/M NCRs**
    - **DAAC Top 80 NCRs**
    - **Other fixes as time permits**
  - **Emergency patches**
    - **Problem specific (may be site and subsystem specific as well)**
- **5A Work-Off Plan**
  - **CSR on 7/15/99**
    - **To include all 4PY fixes through a TBD cut-off date**
  - **Periodic Roll-Up Patches (Naming Scheme To Be Contested)**
    - **New capabilities**
    - **NCR fixes**

Conclusions



- **The NCRs written against the system accurately reflect the problems affecting operational readiness**
- **With the workarounds implemented for the NCRs, the system meets its immediate (Launch) operational requirements**
- **Near-term planned patches and COTS work will resolve nearly all High and Medium impact NCRs, and will allow the system to support early operational requirements**



Physical Configuration Audit (PCA)

-- report of ECS / ESDIS Team

Rich Gorsky

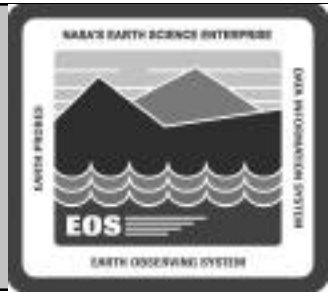
Raytheon Raytheon Systems Company

PCA Process

- Retrieve “As-Built” Data Remotely
  - Non-Interference Basis
  - Scheduled with DAAC in advance
- Compare with Appropriate Baseline (4PX, 4PY)
  - Analyzed by Team of Auditors from ESDIS, DAAC, ECS
- Generate NCRs (COTS SW, O/S Patches, Custom)
- Prioritize NCRs
- DAAC POCs Review NCRs
  - Use Current NCR Process (Config_Audit class)
  - Work Together with CM Leads at DAACs
- DAACs Validate NCRs

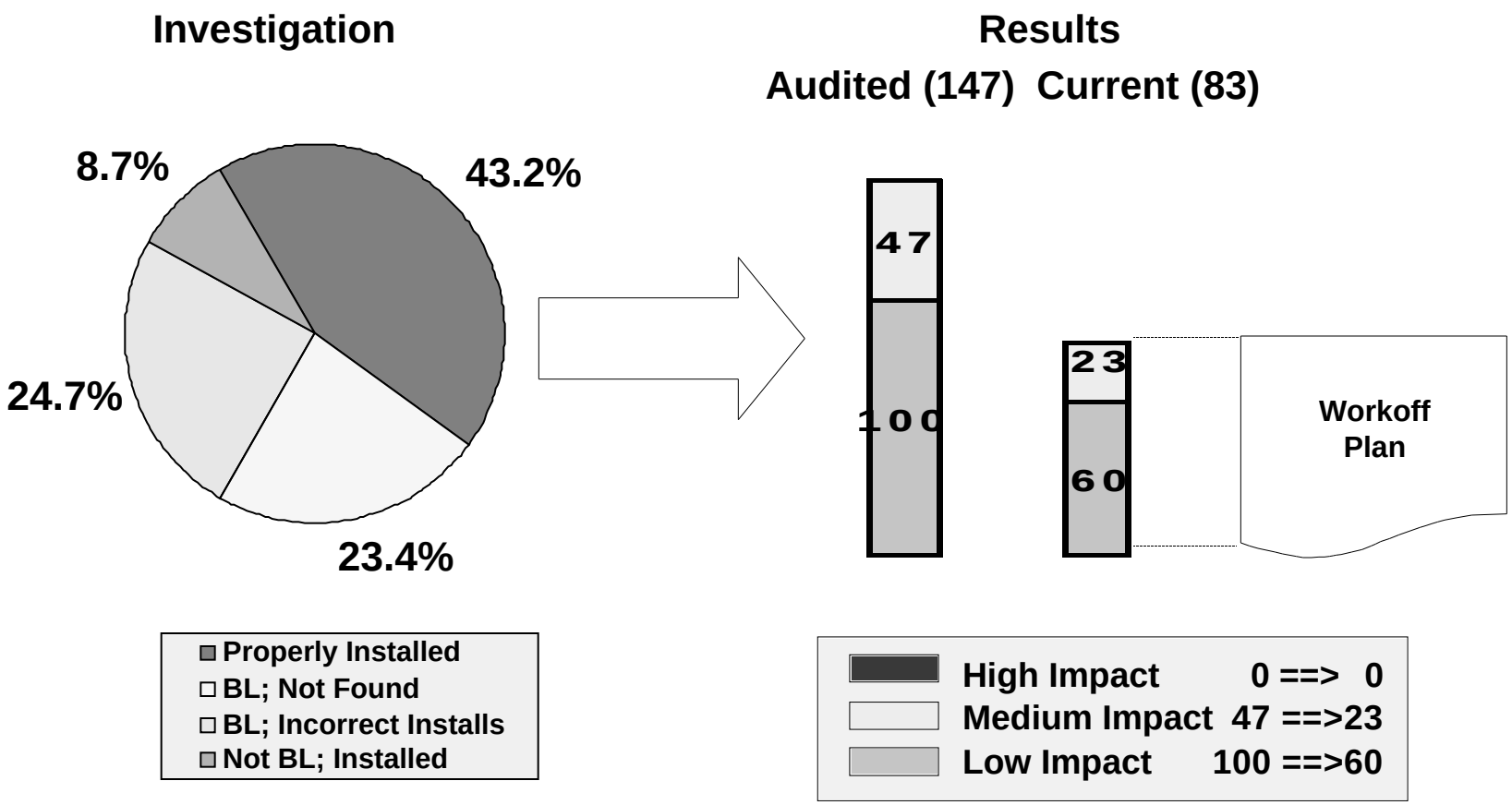
PCA Scope

- **Large amount of configuration data audited**
- **Baseline included:**
  - **COTS SW** **10 - 20 products per host**
  - **Operating Systems** **30 - 40 patches per host**
  - **Custom Code** **up to 17 executables per host**
- **Criteria: Was the host configured in accordance with the baseline?**
- **Analysis of Findings:**
  - **Properly Installed** **PI**
  - **Baseline Not Found** **BNF**
  - **Non-baseline Installed** **NBI**
  - **Other,**
    - **COTS SW** **Installations incorrect**
    - **OS Patches** **Anomalies identified**
    - **Custom** **Incorrect version ID, CkSums, or tar file inconsistencies**

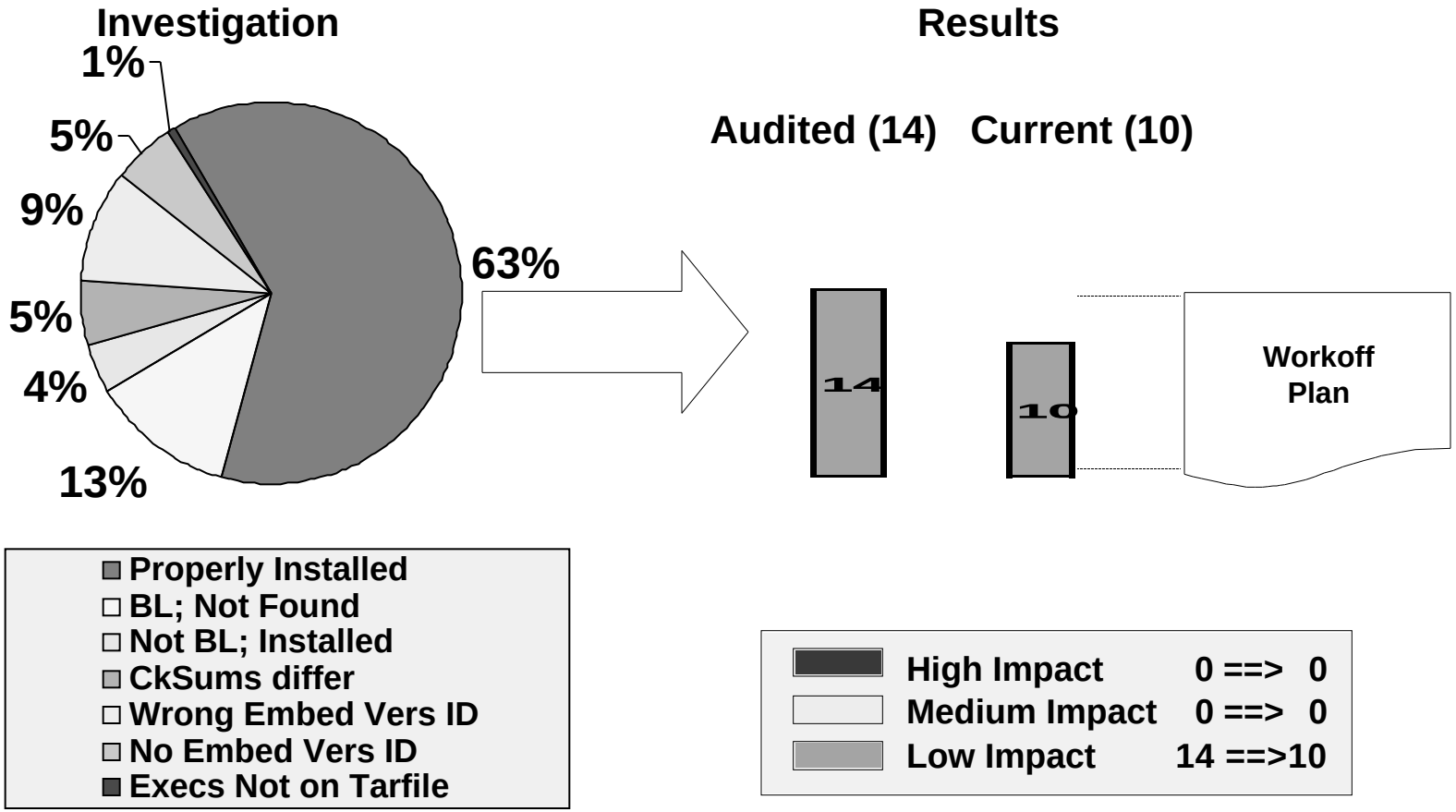


EDC

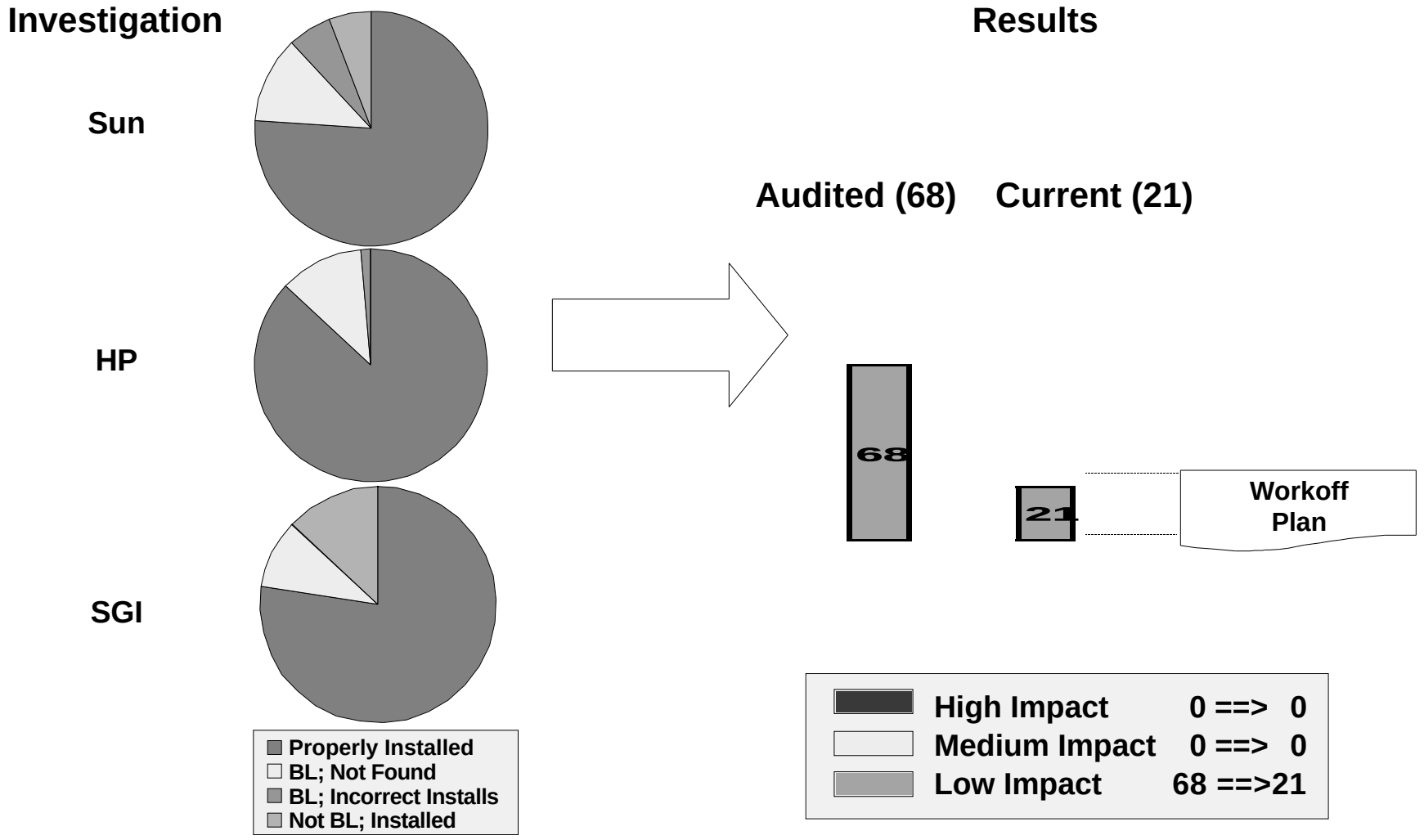
EDC PCA Results -- COTS SW



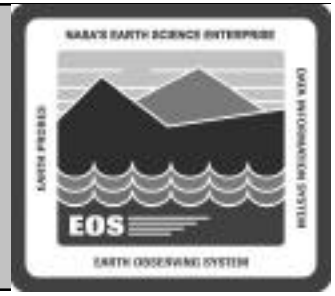
EDC PCA Results -- Custom Code



EDC PCA Results -- Patches

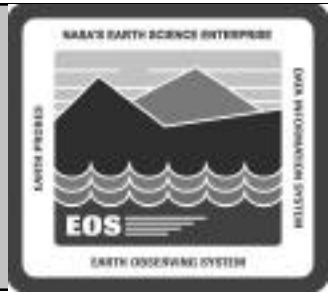


EDC Workoff Plan



Total of 175 EDC PCA NCRs Remaining

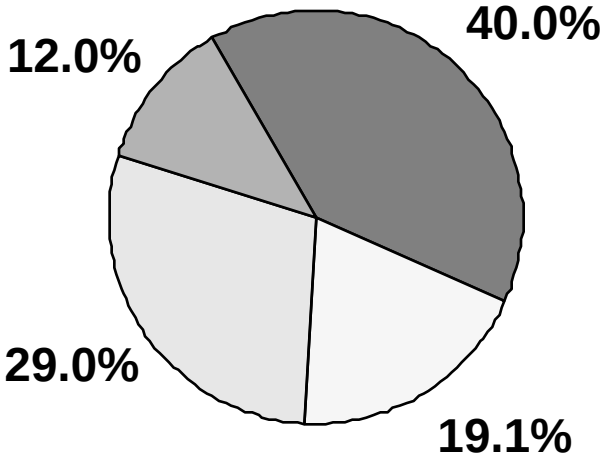
- **32 Can be closed after EDF Verification**
- **29 Further action needed by EDF (e.g., B/L Doc)**
- **27 Further analysis needed by EDF (more info needed)**
- **32 EDC implement prior to L7 Turnover (7/5/99)**
- **35 EDC implement prior to Drop 5 Shared (8/9/99)**
- **20 EDC implement prior to Terra + 55 days (9/13/99)**



GSFC

GSFC PCA Results -- COTS SW

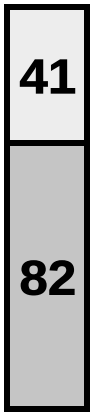
Investigation

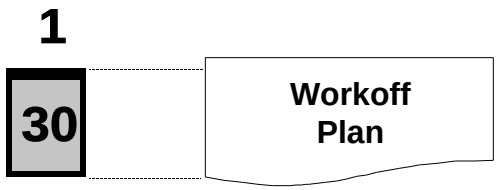


- Properly Installed
- BL; Not Found
- BL; Incorrect Installs
- Not BL; Installed

Results

Audited (123) Current (31)

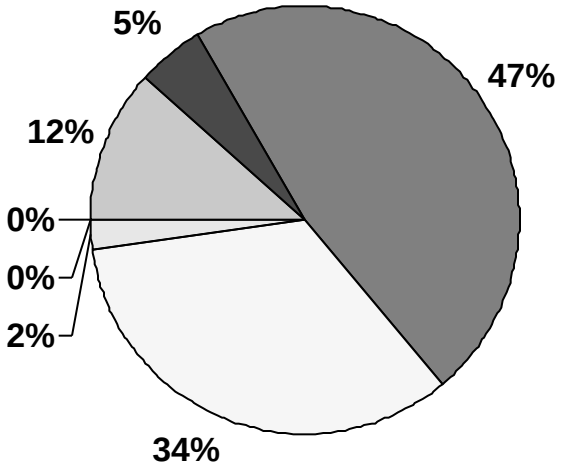




High Impact	0 ==>	0
Medium Impact	41 ==>	1
Low Impact	82 ==>	30

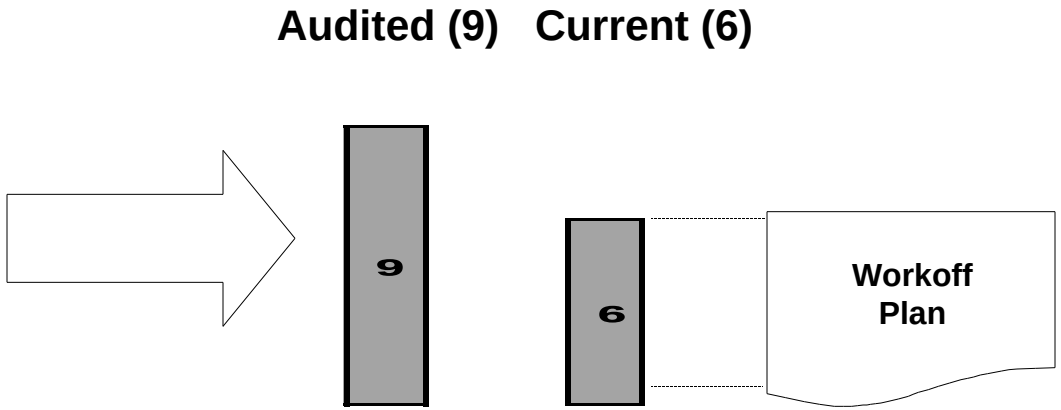
GSFC PCA Results -- Custom Code

Investigation



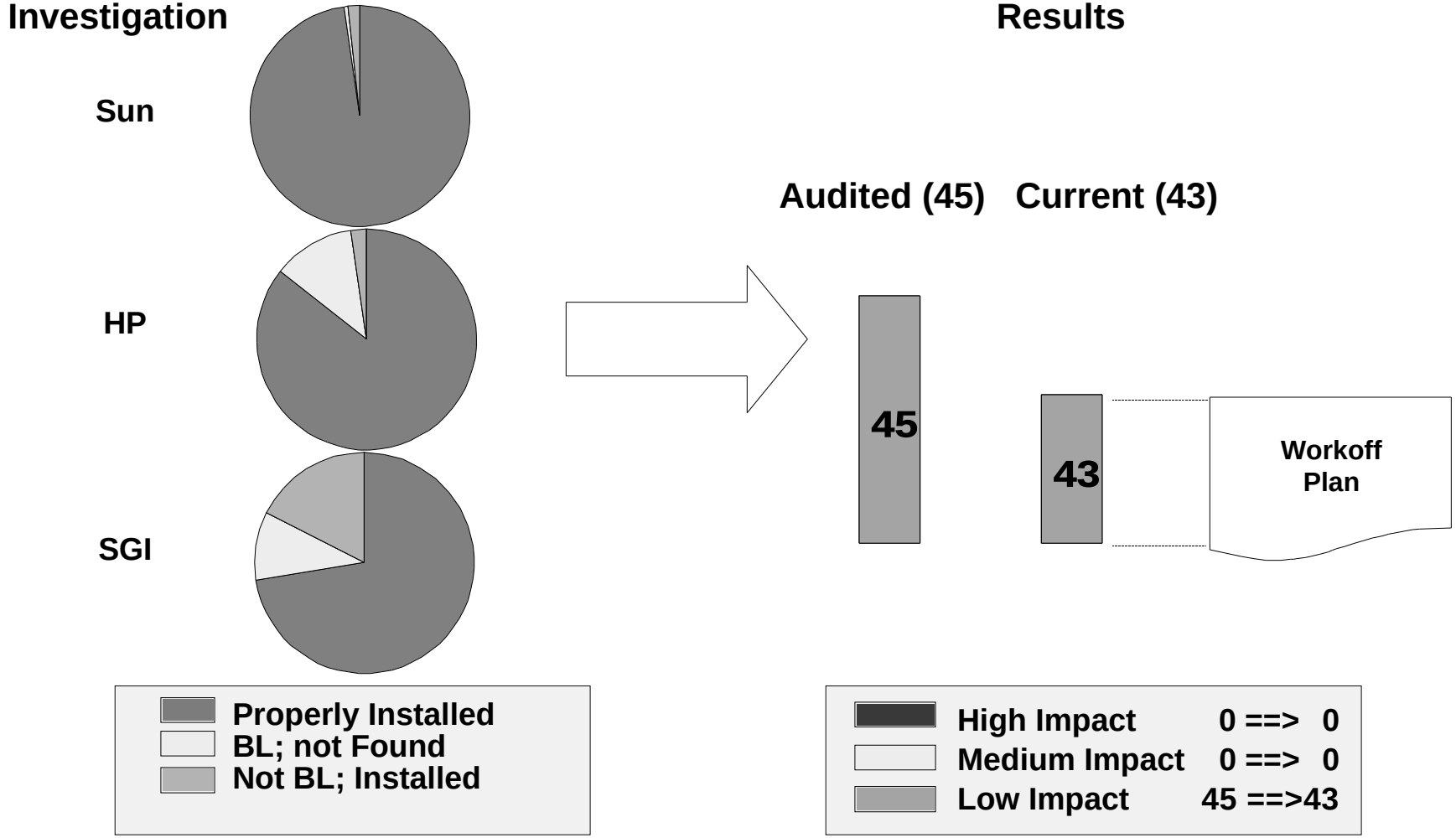
- Properly Installed
- BL; Not Found
- Not BL; Installed
- Cksums Differ
- Wrong Embed Vers ID
- No Embed Vers ID
- Execs not on Tarfile

Results

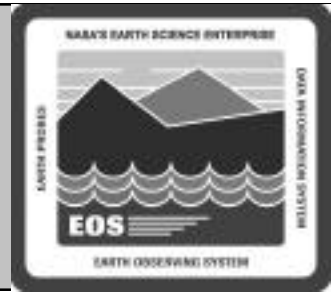


High Impact	0 ==>	0
Medium Impact	0 ==>	0
Low Impact	9 ==>	6

GSFC PCA Results -- Patches



GSFC Workoff Plan

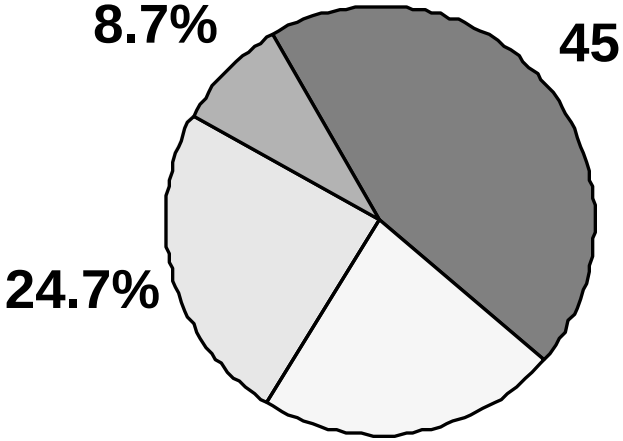


- **Baseline Changes Completed by 6/30/99**
- **Medium Impact NCRs Completed by 7/15/99**
- **Low Impact NCRs Completed by 7/15/99**

LaRC

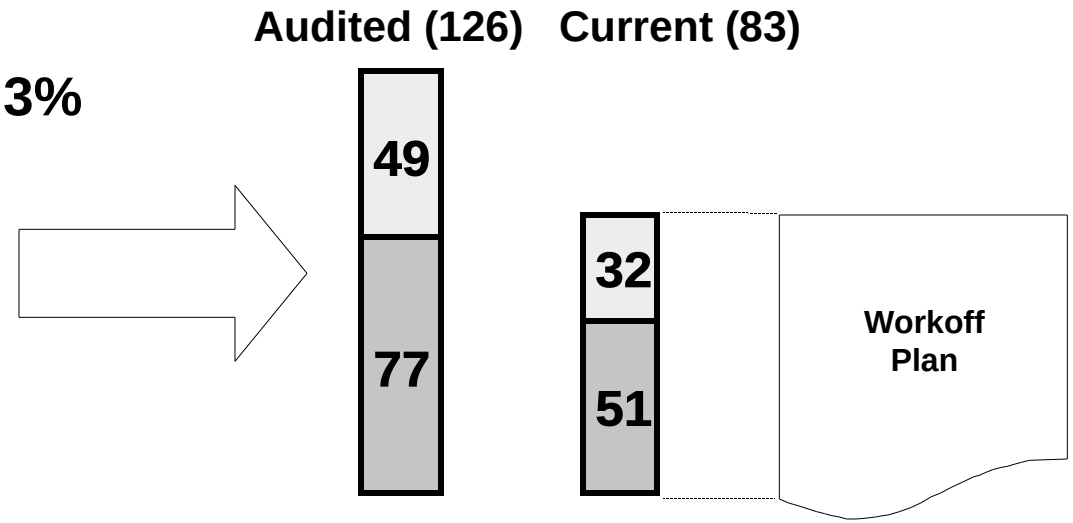
LaRC PCA Results -- COTS SW

Investigation



- Properly Installed
- BL; Not Found
- BL; Incorrect Installs
- Not BL; Installed

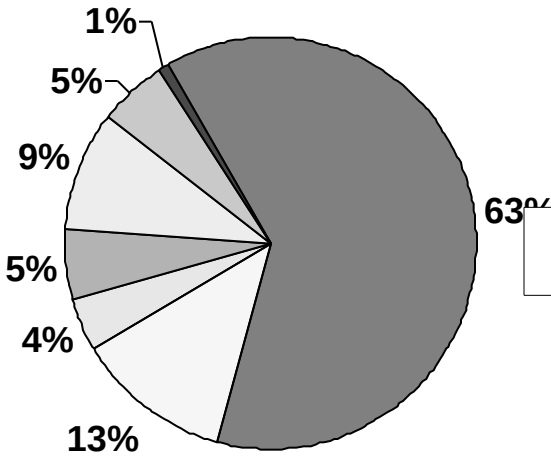
Results



High Impact	0 ==>	0
Medium Impact	49 ==>	32
Low Impact	77 ==>	51

LaRC PCA Results -- Custom Code

Investigation



- Properly Installed
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- CkSums Differ
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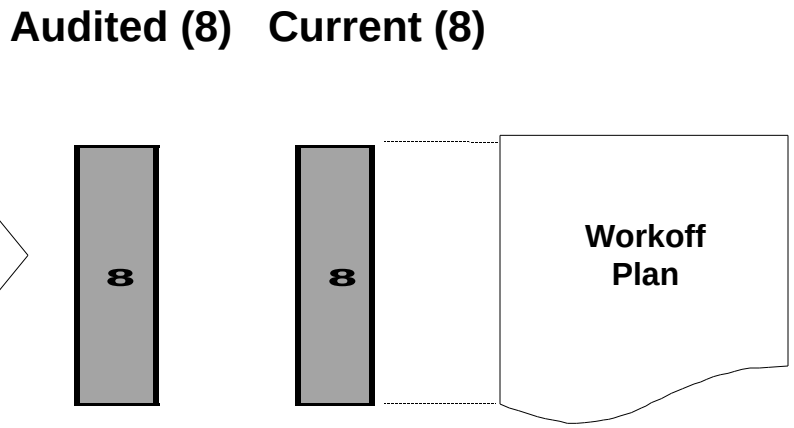
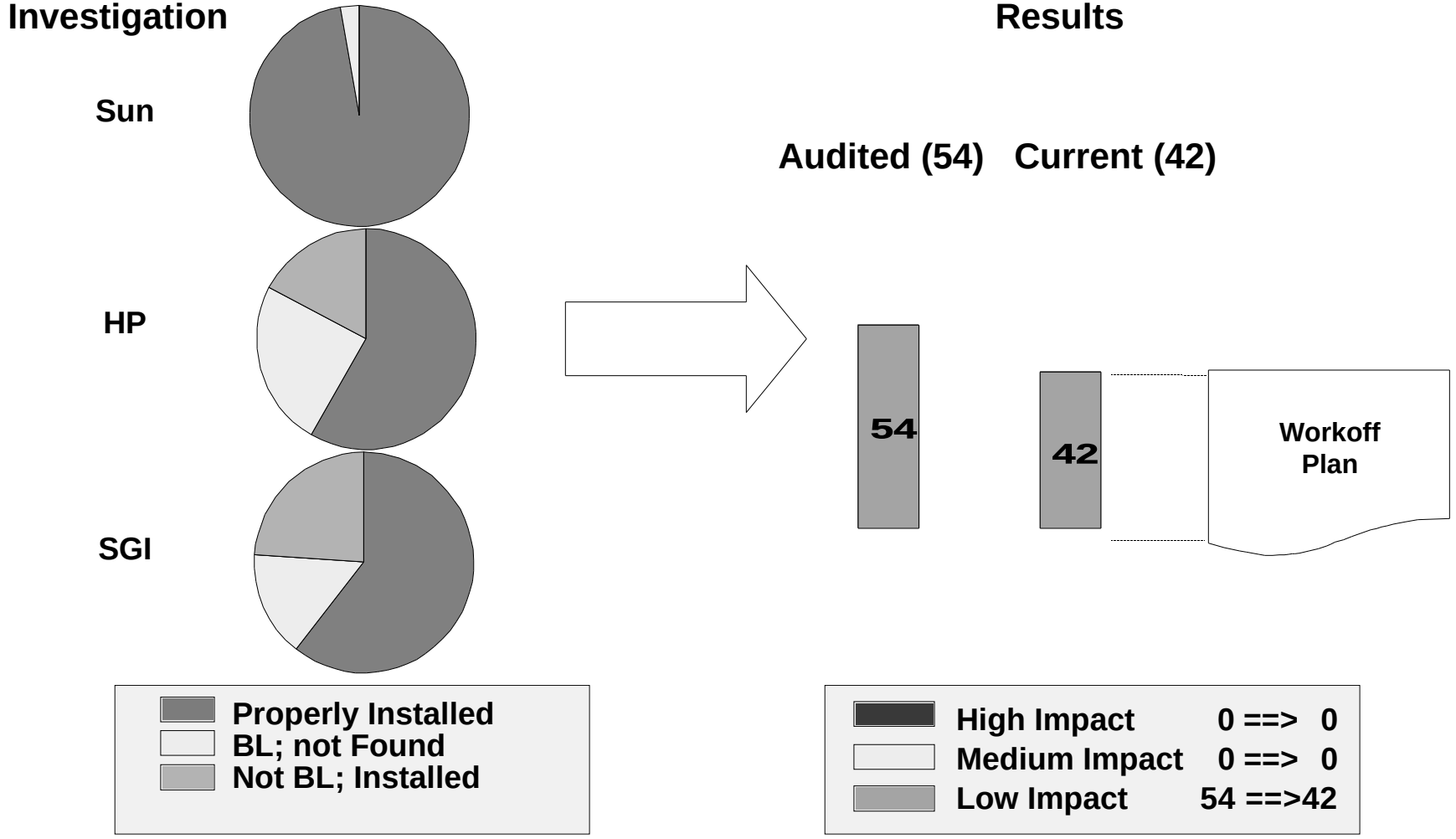
Results

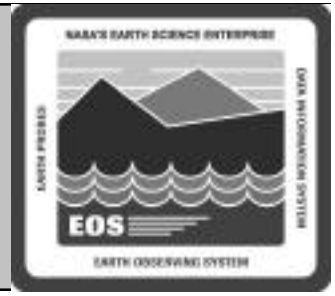


High Impact	0 ==>	0
Medium Impact	0 ==>	0
Low Impact	8 ==>	8

LaRC PCA Results -- Patches

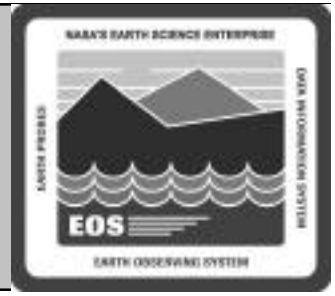


LaRC Workoff Plan



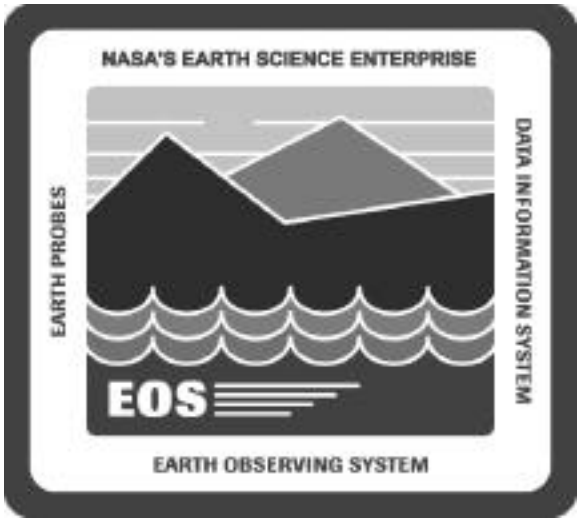
- **Baseline Changes Completed by 6/30/99**
- **Medium Impact NCRs Completed by 6/30/99**

PCA Summary



PCA audits completed for all DAACs:

- **Configuration analyzed against Product Baseline**
- **Discrepancies recorded; NCRs written**
- **NCRs resolved**
- **Work off open actions**



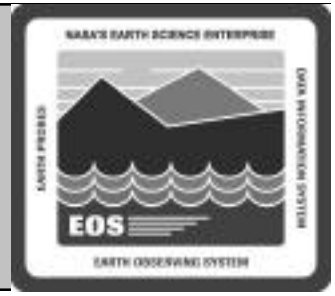
Functional Configuration Audit (FCA)

-- report of ECS / ESDIS Team

Joe Spyrison

Raytheon Raytheon Systems Company

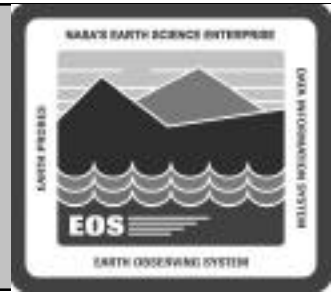
FCA Objectives



Confirm

- **ECS verification status is correct, traceable, and substantiated**
- **Feature criteria is properly mapped**
- **NCRs created during test execution are properly accounted for in DDTS**
- **Test completion status is correct and substantiated by test records**

FCA Scope



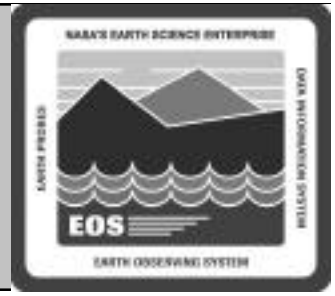
For IRRR

- 93 Drop 4PX Site and VATC test folders audited for Functional Components (FC) and Error Conditions (EC)

For RRR

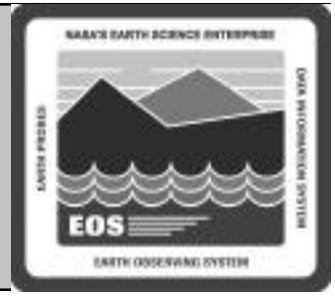
- 24 Additional Drop 4P FC and EC tests in VATC
- Resolution of IRRR findings
- ETE Performance Criteria (PC) results from EDC, GSFC, and LaRC
- ECS Verification Reports (EVR)
- Verification Data Base (VDB) reconciliation and accuracy

FCA Process



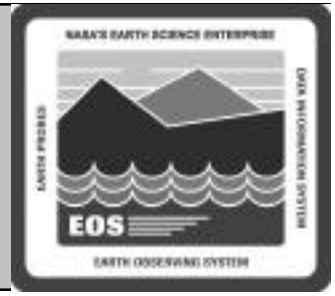
- **Joint ECS and ESDIS audit team**
- **Reviewed test folders, original artifacts, and reports; and recorded significant findings**
- **Traced from original site test records to VDB**
- **Analyzed and summarized findings into categories:**
  - **Verification status**
  - **Criteria mapping and ticket findings**
  - **Other observations**
- **ECS QA now performing internal mini FCA audits weekly**

FCA Results
Verification Status of FC and EC



- **For IRRR**
  - **93.6% of FCs and ECs confirmed as correct, from 93 test folders**
- **Additional For RRR**
  - **98% of FCs and ECs confirmed as correct, in 24 additional Drop 4P test folders**
- **All verification findings but 7 researched and resolved**

FCA Results
Verification Status ETE PC

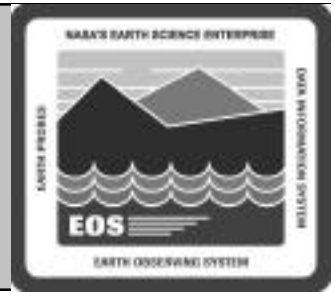


- **Reviewed ETE test folders, NCRs**
- **Confirmed PC status properly posted to VDB**

- **LaRC ETE Rerun TBD**

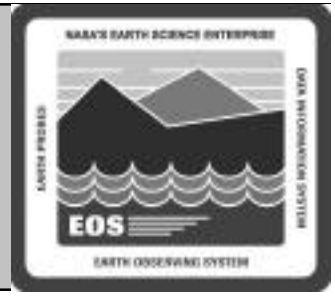
- **Observations from EDC, GSFC, LaRC ETE Initial:**
  - **ETE test records less formal and complete than FC/EC verification records**
  - **Test records identified some apparent problems with no traceability to NCRs submitted**
  - **PC assigned Verified status with severity 2 NCRs open**

FCA Results
Verification Status EVR



- **ECS Verification Reports**
- **Joint ESDIS ECS process**
- **Witnessed and signed EVR forms**
- **Traceable to VDB**
- **Confirmed as properly posted in VDB**
- **Description of verification activity by witness is improving with Guidelines but inconsistent**

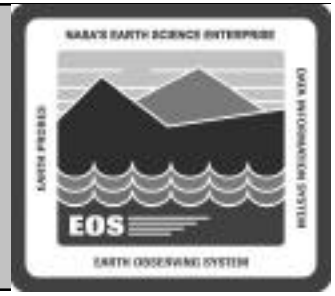
FCA Results
Criteria Mapping and Ticket Findings



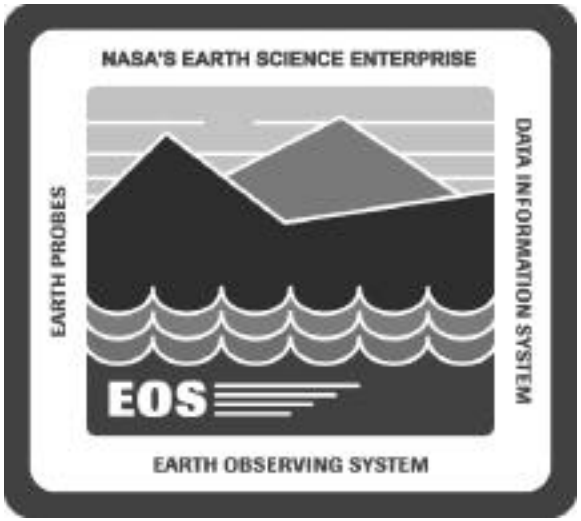
For IRRR and RRR Ticket related findings resolved:

- **ECS Baselined Tickets reconciled with the VDB**
- **VDB Baselined under CCB control**
- **Removed test step to criteria mapping from the Baseline**

FCA Conclusions



- FCA Objectives achieved
- ECS Test
  - Quality of test records greatly improved
  - Improved procedures in place and in process
  - Accuracy and consistency will result from using VDB
- VDB
  - Extensive reconciliation by ECS Systems Eng
  - FCA sampling of VDB
- FCA Drop 5A audits underway



CDRL Documentation Summary

Steve Marley

Raytheon Raytheon Systems Company

System Design Documents

DID #	Document Title	Delivery Date
305/DV3 (P)	Segment/ Design Specifications	Delivered 2/12/99
311/DV1	Database Design and Database Schema Specification	Delivered 3/1/99
313/DV3	ECS Internal ICDs	Delivered 2/24/99
609/OP1	Operational Tools Manuals	Delivered 2/26/99

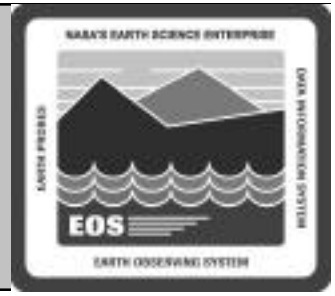
System Test Documents

DID #	Document Title	Delivery Date
319/DV1	Release Integration & Test Plan	Updated After Each Drop
322/DV2	Release Integration & Test Procedures	Updated After Each Drop
324/DV3	Release Integration & Test Reports	Updated Daily
409/VE1	ECS Overall System Acceptance Test Plan	Delivered 5/18/99
411/VE1	ECS Overall System Acceptance Test Procedures	http://dmserver.gsfc.nasa.gov/cm/accept.htm
412/VE2	ECS Overall System Acceptance Test Report	**RRR + 1 Month**
512/PA1	Maintainability Demonstration Test Plans	Delivered 9/1/98
535/PA1	Acceptance Data Package	**RRR + 1 Month**

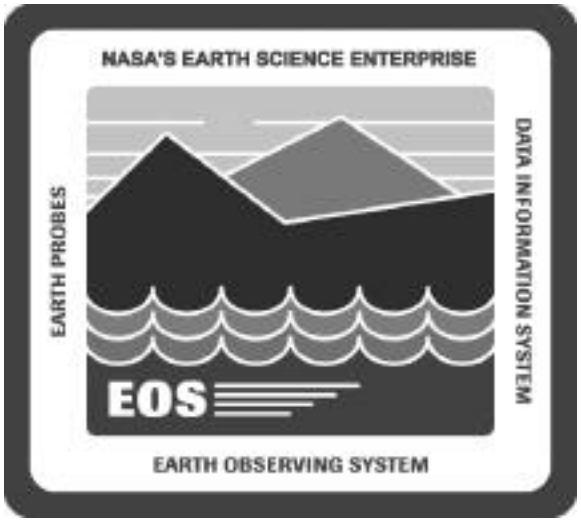
Ops Management/Support Documents

DID #	Document Title	Delivery Date
102/MG1	ECS CM Plan-VOL 2 (M&O)	Delivered 12/22/98
302/DV1(P)	ECS Facilities Plan	1) Delivered 12/15/98 2) As - Built data updated as - required
326/DV3	Monthly Tabulation of Nonconformances	Delivered monthly
333/DV1	PGS Toolkit Users Guide for the ECS Project	Delivered 12/98
506/PA3	Audit Reports	**RRR + 1 month**
525/PA3	Training & Certification records	On-going—Available for review upon request(DAACs responsibility)
603/OP1	Operational Readiness Plan	Delivered 1/15/98
611/OP3	Mission Operations Procedures	Delivered 2/26/99 - Continually Updated
618/OP3	Replacement Part List & Spare Parts List	Delivered 3/31/98 - Updated as Required
625/OP3	Training Material	Delivered 2/26/99 - Updated Each Drop
704/PP3	RRR Presentation Package	**RRR + 2 Weeks**
708/PP3	ORR Presentation Package	**Each ORR + 2 Weeks**
----------	Operations Workarounds -	`http://m0mss01.ecs.nasa.gov/smc/FAQ.html`

Site Configuration Documents



DID #	Document Title	Delivery Date
914-TDA-xxx	Release Version Description Document	http://pete.hitc.com/baseline/
920-TDs-x02	Hardware –Software Map (By Site, By Release)	http://pete.hitc.com/baseline/
910-TDA-003	COTS Software Version Baseline	http://pete.hitc.com/baseline/
911-TDA-004	Release B SGI Irix Patch List	http://pete.hitc.com/baseline/
911-TDA-007	Release B SUN Solaris Patch List	http://pete.hitc.com/baseline/
911-TDA-001	Release B HP-UX 700 Series Patch List	http://pete.hitc.com/baseline/
911-TDA-002	Release B HP-UX 800 Series Patch List	http://pete.hitc.com/baseline/

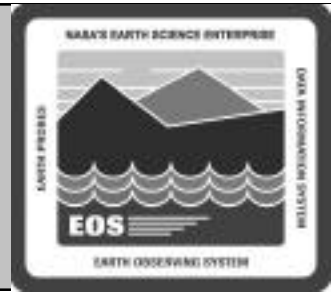


ECS Support of Site Readiness

Ken Prickett

Raytheon Raytheon Systems Company

Briefing Overview



Site Readiness

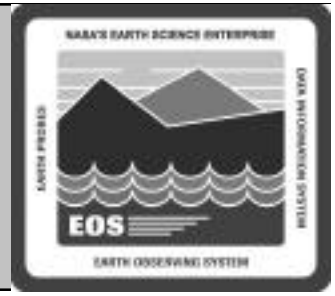
- **Personnel Readiness**
  - **Training Program Status**
- **HW Readiness**
  - **Logistics Support/Consumables Status**

DAAC Operations Support Processes

Maintain the Ops System Configuration

Information Transfer

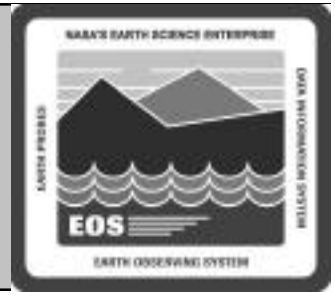
Personnel Readiness - ECS System Training Program (Jan. 5, 1998 - June 9, 1999)



Training Completed

TRAINING TOPIC	LDAAC
Internals	22
Installation Training	3
DCE	8
Network	3
LC Scenario AT	4
SSIT	6
System Administration	21
Network Administration	11
Problem Management	11
Archive	12
Database Administration	11
Configuration Management	10
Ingest	11
Data Distribution	8
User Services	11
Resource Planning	19
Production Planning	20
Total Students	219

Personnel Readiness - ECS System Training Program



	Courses	Days
LaRC	35	135

Vendor	Course
IQ Software	Fundamentals
AutoSys	AutoSys Fundamentals
Tivoli	Framework, User Administration, Security Management
Research System	Interactive Design Language (IDL)
XRP II	BLM, ILM, System Administration
Transarc	DCE

Hardware Readiness - Logistics Support

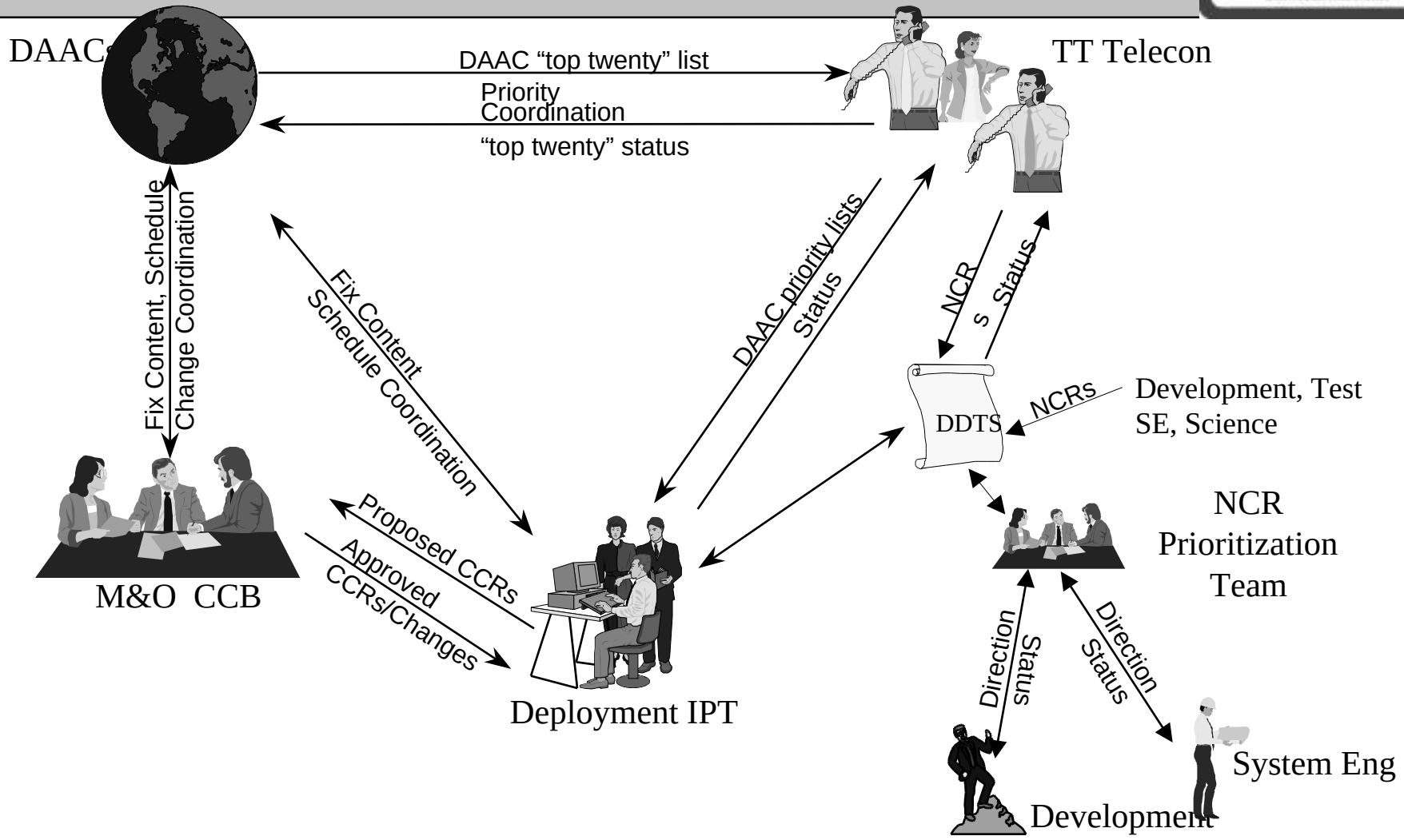
Delivered Media and Consumables

	GSFC	EDC	LaRC
8MM Tapes	10,000	10,000	5,000
D3 Tapes (ASTER)	Not Used	220	Not Used
Backup Tapes (DLT)	420	420	420
D3 Cleaning Tapes	20	20	10
8MM Cleaning Tapes	40	40	40

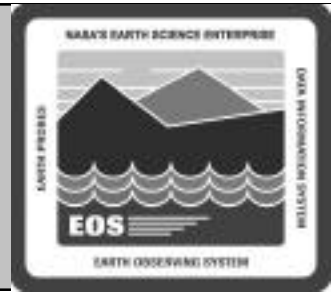
Property/CM Database

- ILM (XRP) Datasets Installed
- Personnel trained on usage

Operations Support Processes



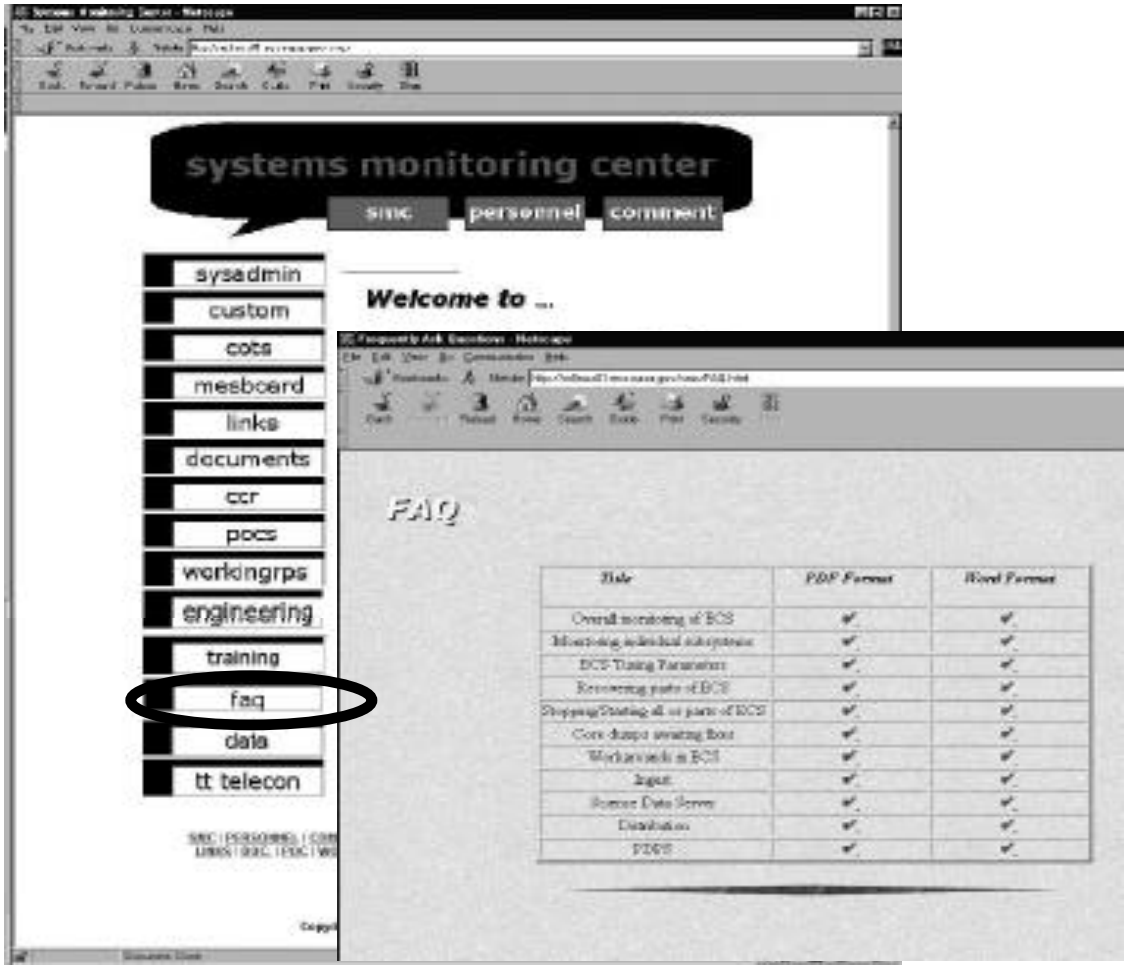
Maintain the OPS System Configuration

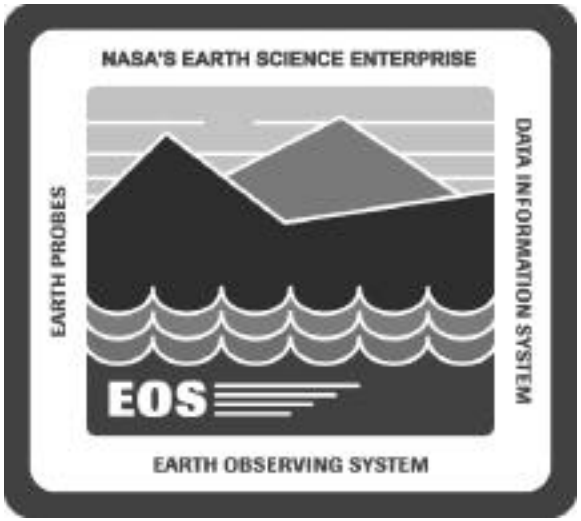


- **Extended Landover formal ECS CM Approach has been applied:**
  - **Use the BLM/XRP database to provide an integrated electronic site Baseline**
  - **Use existing CCR/CCB process to propose, evaluate, and approve site configuration changes**
  - **Extended configuration tracking by using ECO/DCN approach so Landover can track implementation of approved changes**
  - **Take advantage of improved installation instruction process**
    - **Installation Instructions Walkthru Telecon**
  - **Baseline Verification**
    - **Script automatically audits and identifies discrepancies**

Information Transfer

- **Frequently Asked Questions (FAQ)**
  - **112 Various Topics**
  - **9 Workarounds**
- **Lunch and Learn**
  - **4 PDPS Topics**
  - **11 Distribution Topics**
  - **5 System Management Topics**
  - **8 EOS Data Gateway Topics**
  - **17 Ingest Topics**
  - **17 Communication Topics**
  - **7 Data Management Topics**
- **Telecons**
  - **PDPS**
  - **DCE**
  - **Database Administration**
  - **System Administration**



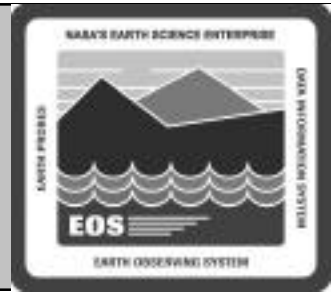


ECS SDPS RRR
Concluding Remarks

Ron Klotz

Raytheon Raytheon Systems Company

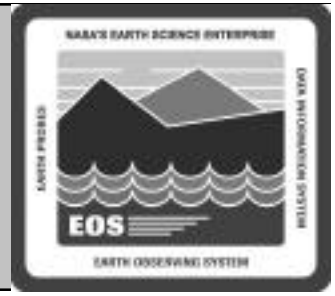
Concluding Remarks



Formal verification

- A complete assessment of feature component verification status has been provided and indicates functionality exists to support the AM-1 launch and early operations at EDC, GSFC and LaRC
- The FCA is complete and the results captured in a single Verification Data Base (VDB)
- NCR verification will continue to close out formal verification liens

Concluding Remarks (Cont.)



End-to-End testing

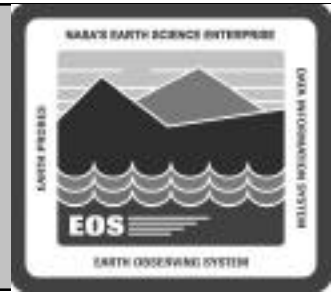
- Demonstrated science system performance to support launch and early operations
- Liens identified will continue to be worked off and, as required, patched to the appropriate baseline(s)
- Performance improvements will continue to be worked to support full operations

Concluding Remarks (Cont.)

Additional Evidence of Completion

- The PCA is complete at all sites with no critical NCRs remaining open and site workoff plans in place
- Prioritization Board is in place and working to ensure a current and complete plan is in place for workoff of liens in balance with emerging new requirements
- System documentation has been completed and delivered and will be maintained and updated to include government review comments and subsequent releases

Summary



The Government and Contractor Team have worked hard to bring the science system to this point

Raytheon believes the science system is ready to support the Landsat-7 and AM-1 missions and that the plans and processes are in place to effectively manage continued improvement and enhancements