

506-CD-600-001

EOSDIS Core System Project

Configuration Audit Reports for the Science Data Processing Segment, Release 6A for the ECS Project

January 2002

Raytheon Company
Upper Marlboro, Maryland

Configuration Audit Reports for the Science Data Processing Segment, Release 6A for the ECS Project

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Preface

This document is a formal contract deliverable with an approval code 3. This document is delivered to NASA for information only, but is subject to approval as meeting contractual requirements.

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Abstract

This report is a documented account of the results of configuration audits conducted on the Science Data Processing Segment, Release 6A during the period from April 9, 2001 through December 21, 2001, as reported at Pseudo Site Readiness Assessment (SRA).

The report includes:

- Planning process
- Conduct of configuration audits
- Results of the Physical Configuration Audits (PCA) and the Functional Configuration Audit (FCA); and
- Lessons learned from these audits

Keywords: Acceptance Test, Certification, Configuration audits, FCA, Functional Configuration Audit, PCA, Physical Configuration Audit, SRA, Site Readiness Assessment, Status Accounting

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Abbreviations and Acronyms

1. Introduction

1.1 Identification

This Audit Report Document, specified as Contract Data Requirements List (CDRL) Item 081 Data Item Description (DID) 506/PA3, is a required deliverable under the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS) Contract (NAS 5-60000).

1.2 Purpose and Scope

This document describes the Audit Report results from the accomplishment of:

- Physical Configuration Audits (PCA) of the DAACs of the Science Data Processing Segment (SDPS), Release 6A, in preparation for SRA.
- Functional Configuration Audit (FCA) of the Science Data Processing Segment (SDPS), Release 6A.

Collectively these audits will be referred to as the Release 6A configuration audits.

The audit period described in this document is from April 9, 2001 through December 21, 2001 against the commercial off-the-shelf (COTS) hardware and operating system (OS), custom code, and configuration parameters, installed at the DAACs.

1.3 Objectives

Objectives of the configuration audits performed are as follows:

- To ensure that the approved release configuration conforms to the ECS Product Baseline for that site.
- To verify that the Science Data Processing Segment, Release 6A, as installed and formally tested, complies with the ECS Acceptance criteria contained in the ECS Product Baseline Tickets.
- To certify that software configurations audited were configured in accordance with the Product Baseline.

1.4 Status and Schedule

This is a final report documenting the results of the Configuration Audits for the Site Readiness Assessment (SRA). The report is submitted in accordance with the requirement that it be released no later than 30 days after Site Readiness Assessment (SRA). A pseudo SRA was conducted for all the DAACs on 12/20/01.

1.5 Organization

This report is organized as follows:

Section 1: Identifies the source requirement for this report, defines the scope, establishes the purpose, and provides the schedule for delivery.

Section 2: Lists parent, applicable, and reference documents for this report.

Section 3: Sets forth plans for the audits and the schedule as contained in the Audit Plan.

Section 4: Describes how the audits were conducted; to include revised schedules followed. Appendices are provided to provide backup information.

Section 5: Provides results of the audits.

Section 6: Summarizes lessons learned from the audits.

2. Related Documentation

2.1 Parent Document

423-41-01, Goddard Space Flight Center, ECS Core System Statement of Work

2.2 Applicable Documents

ECS Product Baseline technical documentation, to include:

2.2.1 General Baselines (Applicable to all Sites)

6A – COTS S/W Version Baseline Report	910-TDA-003, Revs 73,74,75
6A – Site-Host Map	910-TDA-005, Revs 32,33,34
6A – Critical COTS Software	910-TDA-023, Revs 13,14,15
6A – Hardware Baselines	920-TD series

2.2.2 O/S and COTS Patch Lists Baselines (Applicable to all Hosts)

SGI IRIX 6.5 O/S Patches	911-TDA-005, Rev 01
Sun Solaris 2.5.1 O/S Patches	911-TDA-007, Rev 05
Clearcase COTS Patches	911-TDA-008, Rev 01

2.2.3 Site Specific Baselines

Hardware-Software Map, 6A, EDC	920-TDE-002, Rev 31
O/S and COTS Patches, 6A, EDC	920-TDE-014, Rev 07
Hardware-Software Map, 6A, GSFC	920-TDG-002, Rev 32
O/S and COTS Patches, 6A, GSFC	920-TDG-014, Rev 06
Hardware-Software Map, 6A, LaRC	920-TDL-002, Rev 31
O/S and COTS Patches, 6A, LaRC	920-TDL-014, Rev 09
Hardware-Software Map 6A, NSIDC	920-TDN-002, Rev 30
O/S and COTS Patches, 6A, NSIDC	920-TDN-014, Rev 08

2.2.4 Kernel Parameters Baselines

Sun Platforms UNIX Kernel Parameters, EDC	920-TDE-015, Rev 01
SGI Platforms UNIX Kernel Parameters, EDC	920-TDE-016, Rev 04
Sun Platforms UNIX Kernel Parameters, GSFC	920-TDG-015, Rev 01

SGI Platforms UNIX Kernel Parameters, **GSFC** 920-TDG-016, Rev 04
Sun Platforms UNIX Kernel Parameters, **LaRC** 920-TDL-015, Rev 00
SGI Platforms UNIX Kernel Parameters, **LaRC** 920-TDL-016, Rev 03
Sun Platforms UNIX Kernel Parameters, **NSIDC** 920-TDN-015, Rev 00
SGI Platforms UNIX Kernel Parameters, **NSIDC** 920-TDN-016, Rev 03

2.2.5 Drop 6A Test Tickets

Tickets as they appear in the ECSVDB are available for download from the ECS Verification Website.

External URL: <http://ecsv.gsfc.nasa.gov/>

Internal URL: http://dmserver.gsfc.nasa.gov/relb_it/relbit.htm

2.2.6 Custom Code

Refer to the URL listed below for the Custom Code software. Software patches up to and including the 40th patch were used as references for the audits.

http://cmdm.east.hitc.com/baseline/CUSTOM_SOFTWARE/CCDeliveryTracking.html

2.2.7 Test Documentation

All ECS System Test Report for Release 6A, 412-CD-110-001
FCA Acceptance Test and System Verification Procedures
FCA Acceptance Test Results in Electronic Criteria Logs and Verification Data Base (VDB)
FCA NCR Status from DDTS, the NCR database

2.3 Reference Documents

Design specification(s) (e.g., DID 305, Segment/Design Specifications)

Nonconformance reports

Results of release verification testing (e.g., tailored listings from test database)

2.4 Information Documents

MIL STD 973 Configuration Management, dated 17 April 1992

3. Audit Process

Configuration audits for SDPS, Release 6A, were conducted during the period April 9, 2001 (initiation of NSIDC COTS hardware PCA) through December 21, 2001. The audit process will be complete upon closure of all non-conformance reports (NCRs) and (CCRs) by CM, QA, M&O, and ESDIS team members.

Configuration audits were conducted in three distinct phases:

COTS Hardware Physical Configuration Audits. These audits were conducted at NSIDC, EDC, LaRC, and GSFC from 9 April to 9 May 2001.

COTS Software, OS Patches, Custom Code and Kernel Parameters Physical Configuration Audits. These audits were conducted against EDC, GSFC, LaRC, and NSIDC beginning on August 20, 2001.

Functional Configuration Audits. These were conducted on Release 6A at the Landover site. The FCA process began on February 17, 2001 with the kickoff meeting at Landover.

3.1 COTS Software, OS Patches, Custom Code and Kernel Parameters Physical Configuration Audits

3.1.1 General

While the audits of the commercial off-the-shelf (COTS) software, operating system (OS) patch, custom code, and kernel parameters were conducted concurrently, the respective audit concept, technical data package, milestones, and membership varied between audits to a considerable degree.

3.1.2 Audit Approach

The PCA was divided into four parts (COTS software and shareware, OS patches, custom code, and kernel parameters). The CMO led the PCA, supported by QA, while QA managed the FCA, supported by CMO. The flowchart in Figure 3-1 depicts the overall PCA process. During the course of this audit, the audit procedures changed and appropriate baseline documents were identified and reviewed by the audit team. The audit procedure changed from an event driven batch audit, to real time auditing, in that discrepancies were produced on a real time basis. CCRs were executed and immediate feedback provided.

Four “sets” of audits were required for each of the sites in which Release 6A was to be installed. The audits were conducted at Raytheon Landover site utilizing UNIX command scripts to query each system configuration. The interrogation scripts were developed by the ECS Raytheon CMO and are currently maintained with the ClearCase CM tool.

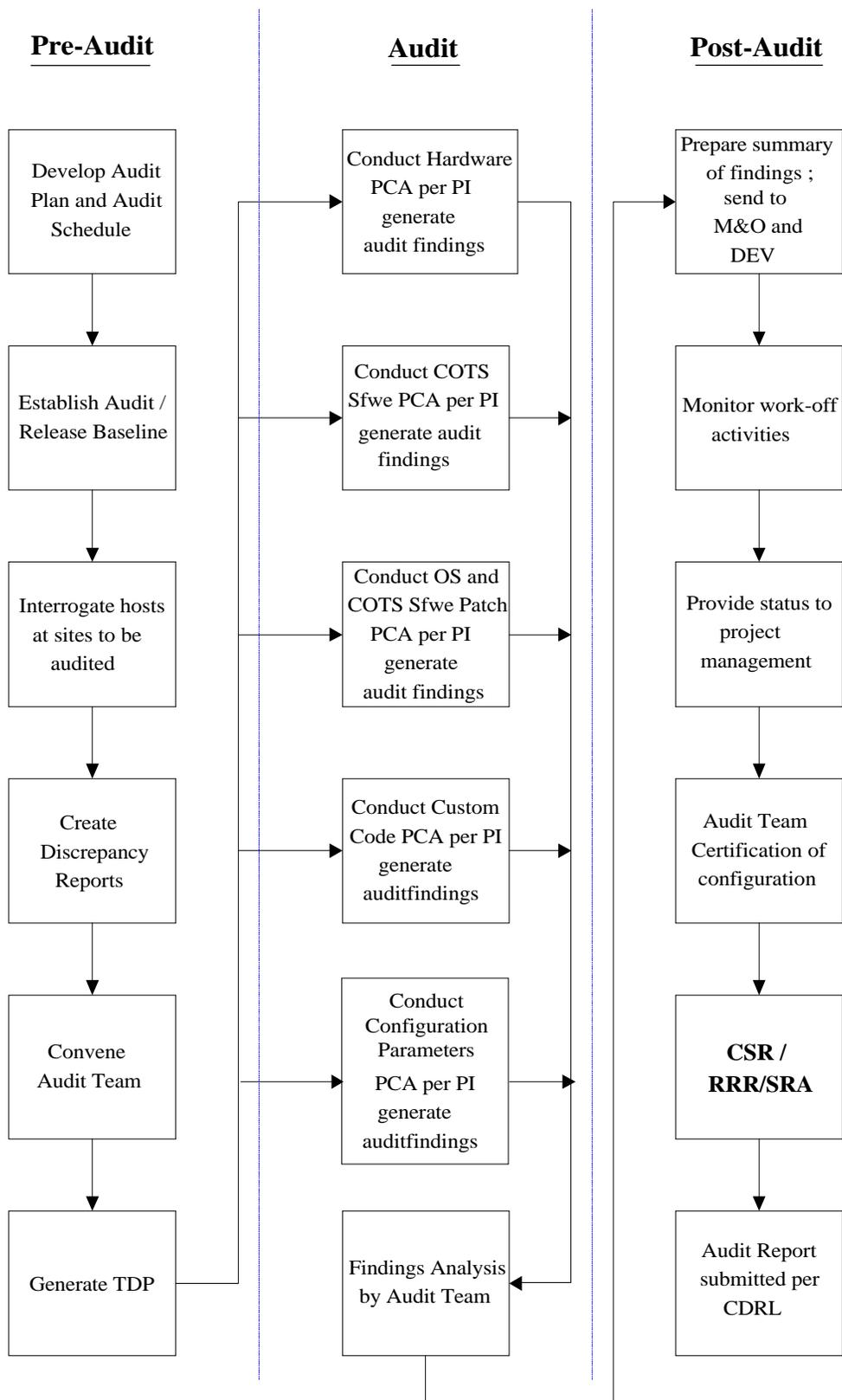


Figure 3-1. PCA Process Flowchart

3.1.3 Team Objectives

During each audit, audit discrepancy reports were reviewed to ensure that the configurations that were audited were in accordance with the technical documentation of the Release 6A Product Baseline. Documentation of audit findings were incorporated into the appropriate NCR or CCR formats.

3.2 COTS Software Configuration Audits

3.2.1 Activity

Interrogations of DAAC hosts were performed on a non-interference basis. Once complete, discrepancy reports and summary reports were machine generated for each site.

3.2.2 Technical Data Package

See Section 2.2 for the COTS S/W applicable documents.

3.2.3 Milestones

Activity	EDC DAAC	GSFC DAAC	NSIDC DAAC	LaRC DAAC
Interrogation	10/10/01	08/20/01	12/06/01	11/16/01
SRA Presentation	12/20/01	12/20/01	12/20/01	12/20/01

3.2.4 Team Members

Membership included representatives from the Raytheon CMO and QA organizations.

3.3 OS Patch Physical Configuration Audits

3.3.1 Activity

Interrogations of DAAC hosts were performed on a non-interference basis. Once complete, discrepancy reports and summary reports were machine generated for each site.

3.3.2 Technical Data Package

See Section 2.2 for the O/S Patch applicable documents

3.3.3 Milestones

Activity	EDC DAAC	GSFC DAAC	NSIDC DAAC	LaRC DAAC
Interrogation	10/12/01	08/25/01	12/10/01	11/18/01
SRA Presentation	12/20/01	12/20/01	12/20/01	12/20/01

3.3.4 Team Members

Membership included representatives from the Raytheon CMO and QA organizations.

3.4 Custom Code Configuration Audits

3.4.1 Activity

The auditor interrogated host configurations and results were stored on server “pete.hitc.com”. The "as-built" were compared to the Custom Code Reference URL: of Section 2.2.6, and difference reports were generated.

3.4.2 Technical Data Package

See Section 2.2.6.

3.4.3 Milestones

Activity	EDC DAAC	GSFC DAAC	NSIDC DAAC	LaRC DAAC
Interrogation	10/15/01	08/25/01	12/11/01	11/23/01
SRA Presentation	12/20/01	12/20/01	12/20/01	12/20/01

3.4.4 Team Members

Membership included representatives from the Raytheon ECS CMO and QA organizations.

3.5 Kernel Parameters Audits

3.5.1 Activity

Baseline technical documentation was referenced to compare the “as-built” kernel parameters, and any differences were noted.

3.5.2 Technical Data Package

See Section 2.2, for the Kernel Parameter applicable documents.

3.5.3 Milestones

Activity	EDC DAAC	GSFC DAAC	NSIDC DAAC	LaRC DAAC
Interrogation	10/27/01	08/28/01	12/13/01	11/23/01
SRA Presentation	12/20/01	12/20/01	12/20/01	12/20/01

3.5.4 Team Members

Membership included representatives from the Raytheon ECS CMO and QA organizations.

3.6 Functional Configuration Audits

3.6.1 Objectives

The objective of the FCA is to confirm that the ECS verification status is correct, traceable, and substantiated by original test records and artifacts. During this audit, criteria is properly mapped from test procedures to baseline Tickets and ultimately to the Verification Database (VDB).

NCRs that are created during test execution are properly accounted for in the NCR database.

Test completion status, as recorded on the Test Execution form, is verified to be correct and substantiated by test records and artifacts.

3.6.2 Scope

CSR related activities performed:

- 9 Release 6A test folders from VATC formal testing were audited.
- No Performance Tests, End-to-End (ETE) tests or ECS Verification Reports (EVRs) were audited.
- The VDB was reconciled with test records and criteria verification status.

3.6.3 Process

ECS Quality Assurance engineers reviewed test folders, original artifacts, and reports and recorded FCA findings. These were traced from original VATC test records through interim reports to the VDB.

3.6.4 Activity

Specific activity included assuring that test cases were mapped to Tickets, auditing test results to confirm Criteria verification status, reviewing open NCRs to confirm status, and verifying that NCR bookkeeping was current and complete.

3.6.5 Technical Data Package

The Technical Data Package is available on SVAT and VDB web sites.

3.6.6 Milestones

Initiation of Activity	1/05/01
Audit Team Activity	1/05/01 – 4/09/01
CSR Presentation	4/17/01

3.6.7 Team Members

During the conduct of the FCAs, team membership changed, based upon availability. FCA membership included engineers from Raytheon Landover Quality Assurance.

3.7 Audit Procedures

The FCA was conducted in accordance with PI CM-1-009, Physical Configuration Audits, and PI CM-1-036, Functional Configuration Audits.

3.8 Presentation of Results

Audit results were presented in the CSR and SRA Reviews.

3.8.1 Consent to Ship Review

On 17 April, 2001, Raytheon Landover provided a final summary review of the Science System Release 6A status at CSR.

3.8.2 Pseudo Site Readiness Review

On December 20, 2001, Raytheon Landover provided their final summaries of the Science System Release 6A status and lessons learned at pseudo SRA.

3.9 COTS Hardware Physical Configuration Audits

A HW physical configuration audit (PCA) was conducted at

NSIDC 9-11 April 2001.

EDC 24-25 April 2001.

LaRC 30 April- 2 May 2001.

GSFC 7-9 May 2001.

This examination of ECS production hardware compared the as-built HW configuration with the CCB controlled HW Design Diagram (physical specification), Network Diagram, Cable Management Plan, and Floor Plan. Differences were noted as redlines on the document and provided to HW engineering and M&O/ILS for analysis and corrective action.

4. Conduct of Audits

4.1 COTS Software Configuration Audits

4.1.1 Technical Data Package

COTS Software Audit Technical Data is an assembly of specific versions of Technical Documents that are always available on URLs: <http://pete/baseline/> and <http://cmdm.east.hitc.com/baseline/>. The tables in Section 2 show the “Tech Doc” numbers and the versions used during the software configuration audit. Most of these documents are currently in the “Previous” folders, rather than the “Current” folders.

4.1.2 Procedures

Audits were conducted by interrogating each host to generate audit-finding results. Once complete, line-by-line inspection of the discrepancy report produced was performed to produce the discrepancy analysis.

4.1.3 Findings

Audit findings were recorded as follows:

- Approved but not installed;
- Not approved but installed; and
- Installed w/incorrect version/path.

4.2 OS Patch Physical Configuration Audit

OS Patch Discrepancy reports were generated and organized by SGI and Sun Platforms. (ClearCase and DCE patches were assessed concurrently with OS patches, procedures were similar.)

4.2.1 Technical Data Package

Refer to Section 2 for the specific document versions used for audit references and the Tech Doc number for each document.

4.2.2 Procedures

An analysis of the sun_map.html and sgi_map.html files for each site was performed. These files are available for each site under URL: <http://pete/baseline/INTERROGATION>, then select the DAAC, then select the PATCHES sub-directory.

4.2.3 Findings

Audit findings were recorded as follows:

- Approved but not installed; and
- Not approved but installed

4.3 Custom Code Configuration Audits

4.3.1 Technical Data Package

The reference used for the Custom Code audits was derived from the data stored on URL:

http://pete/baseline/CUSTOM_SOFTWARE/CCDeliveryTracking.html

The data on this web page shows all of the Custom Code patches, Tes, and Drops for 6A.04. For the 6A.04 audit, all incremental patches, up to and including the 40th patch, TE_6A.04_STMG01, were used.

4.3.2 Procedures

Custom Code reference generation was performed using scripts and the URL above.

The host configurations were interrogated for Custom Code, and the results were stored on server pete.hitc.com, on the INTERROGATION subdirectory.

The "as-builts" were then compared to the Custom Code Reference and Discrepancy Reports were generated and analyzed.

4.3.3 Findings

Findings were recorded as follows:

- Approved but not installed;
- Not approved but installed; and
- Installed w/incorrect version/path

4.4 Kernel Parameters Audits

4.4.1 Technical Data Package

The UNIX Kernel Parameter references were initialized by reading the hosts' parameter values. These read values, after analysis, were used as Rev00 for the 920-TDx-015, -016, and -017. For the specific versions used for the 6A audit, please refer to Section 2.

4.4.2 Procedures

The audit of the Kernel Parameters was performed manually, comparing the baseline reports to the interrogation reports (same format). Findings were noted.

The host configurations were interrogated for the parameters and the "as-built" parameters were then compared to the baseline. For the Sun hosts, there were no baseline or host changes, since initialization. There were baseline changes for the SGIs and all of the hosts' "as-built" agreed with those changes.

4.4.3 Findings

Findings were recorded as follows:

- Correct Values; and
- Incorrect Values

4.5 Conduct of Functional Configuration Audits

4.5.1 Test Folders

FCA checklists were completed by auditors and placed in 6A test folders. Folders contained the complete test results and all applicable baseline documents.

4.5.2 Procedures

Teams performed a preliminary check of the test folders to assure that all required information was present. Once complete, they proceeded with a line-by-line inspection of the folder contents and completion of the checklist.

4.5.3 Findings

There were no deficiencies or observations identified about criteria verification status. Deficiencies were recorded as non-compliance with test record procedures and these were tracked in the QA deficiency database, until corrected and closed.

4.6 COTS Hardware Physical Configuration Audits

A HW physical configuration audit (PCA) was conducted at

NSIDC 9-11 April 2001, EDC 24-25 April 2001, LaRC 30 April- 2 May 2001.

GSFC 7-9 May 2001.

This examination of ECS production hardware compared the as-built HW configuration with the CCB controlled HW Design Diagram (physical specification), Network Diagram, Cable Management Plan, and Floor Plan. Differences were noted as redlines on the document and provided to HW engineering and M&O/ILS for analysis and corrective action.

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5. Audit Results

5.1 COTS Software Configuration Audits

5.1.1 Findings

Specific software configuration audit findings are provided in the two tables below. The first table depicts the original set of findings for the Release 5B audits conducted approximately one year earlier. The second table is for the Release 6A audits, the subject of this report. This was done so that the improved numbers could be viewed. Improvements are apparent in the Release 6A Findings table.

Findings, 5B	EDC	GSFC	LaRC	NSIDC
Properly Installed	51.7%	59.9%	54.8%	61.6%
Baseline not found	11.6%	25.0%	16.1%	8.7%
Incorrectly installed	10.0%	5.2%	19.0%	20.7%
Not Baseline, Installed	26.7%	9.9%	10.1%	9.0%

Findings, 6A	EDC	GSFC	LaRC	NSIDC
Properly Installed	68.7%	64.5%	62.5%	66.2%
Baseline not found	6.5%	7.3%	6.9%	5.7%
Incorrectly installed	8.2%	12.3%	11.8%	13.7%
Not Baseline, Installed	16.6%	15.9%	18.8%	14.4%

5.1.2 Findings Summary

To determine which findings were the most critical, the Raytheon ECS Development organization reviewed preliminary results and stated that 58 COTS products were required for the release to operate properly. Findings against these products were considered to be of medium severity; the remaining findings were considered of low severity.

The Critical COTS products required for the system to operate correctly is listed in a new Raytheon Technical Document, 910-TDA-023.

5.2 OS Patches Physical Configuration Audits

5.2.1 Findings (Sun/HP/SGI)

The following specific findings were recorded:

Finding	EDC		
	Sun Hosts	SGI Hosts	HP Host
Properly Installed	98.3%	86.8%	64.5%
Baseline not found	5.9%	10.0%	5.4%
Not Baseline, Installed	2.7%	3.2%	30.1%

Finding	GSFC		
	Sun Hosts	SGI Hosts	
Properly Installed	91.2%	79.6%	
Baseline not found	1.6%	10.5%	
Not Baseline, Installed	7.2%	9.9%	

Finding	LaRC		
	Sun Hosts	SGI Hosts	
Properly Installed	97.4%	78.2%	
Baseline not found	0.5%	11.1%	
Not Baseline, Installed	2.1%	10.7%	

Finding	NSIDC		
	Sun Hosts	SGI Hosts	
Properly Installed	97.4%	73.5%	
Baseline not found	1.6%	23.4%	
Not Baseline, Installed	1.0%	3.1%	

5.2.2 Findings Summary

The Raytheon ECS Development organization reviewed preliminary audits results and discrepancies in the audited products were considered to be of low severity.

5.3 Custom Code Configuration Audits

5.3.1 Findings

The following specific findings were recorded:

Finding	EDC	GSFC	LaRC	NSIDC
Correct	96.7%	95.6%	83.5%	97.8%
BNF	1.6%	3.4%	13.1%	1.1%
NBI	0.0%	0.0%	0.0%	0.0%
WVC	1.7%	1.0%	3.4%	1.1%

5.3.2 Findings Summary

The Raytheon ECS Development organization reviewed preliminary audit results and discrepancies to the audited products were considered to be of low severity. Findings were documented in 4 NCRs, one per DAAC. These NCRs were all severity 3.

Finding	EDC	GSFC	LaRC	NSIDC
Missing Files	4	7	15	5

5.4 Kernel Parameters Audits

5.4.1 Findings

The following specific findings were recorded:

Finding	EDC	GSFC	LaRC	NSIDC
Wrong Values	0	0	0	0

5.4.2 Findings Summary

The Raytheon ECS Development organization reviewed audit results and discrepancies to the audited products; there were no discrepancies.

Finding	EDC	GSFC	LaRC	NSIDC
Differences	0	0	0	0

5.5 Workoff Plan

After dissemination of findings audit team representatives grouped as many findings as were possible. Below you will find the workoff plans proposed at SRA, and comments as to their status.

5.5.1 EDC

COTS SW:

- 28 findings will result in updates to baseline documentation.
- 113 findings will be reviewed by the CM and EDC organizations to prioritize and complete outstanding items.

OS Patches:

- 91 Items must be assigned to a System Administrator for priority resolution. (12 - Sun's, 10 - SGI's, 65 - HP's)

Custom Code and Kernel Parameters:

- Certain packages were not installed for Custom Code. This will be analyzed and it is likely that this DAAC made a small change to the local sitemap.

5.5.2 GSFC

COTS SW:

- 25 findings will result in updates to baseline documentation.
- 85 findings will be reviewed by the CM organization, with GSFC, to prioritize and complete outstanding items.

OS Patches:

- 31 Items must be assigned to a System Administrator for priority resolution. (23 - Sun's, 8 - SGI's)

Custom Code and Kernel Parameters:

- 11 Old Custom Code versions can be removed.

5.5.3 LaRC

COTS SW:

- 23 findings will result in updates to baseline documentation.
- 101 findings will be reviewed by the CM organization, with LaRC, to prioritize and complete outstanding items.

OS Patches:

- 19 Items must be assigned to a System Administrator for priority resolution. (14 - Sun's, 5 - SGI's)

Custom Code and Kernel Parameters:

- LaRC had a late start installing 6A.04 and it is likely that the 6A.04 audit was done concurrently with their 6A.04 installation.

5.5.4 NSIDC

COTS SW:

- 27 findings will result in updates to baseline documentation.
- 41 findings will be reviewed by the CM organization, with NSIDC, to prioritize and complete outstanding items.

OS Patches:

- 25 Items must be assigned to a System Administrator for priority resolution. (15 - Sun's, 10 - SGI's)

Custom Code and Kernel Parameters:

- Write NCR to document the 3 findings.

5.6 Functional Configuration Audit Results

5.6.1 Verification Status of FC and EC for CSR

100% of FCs and ECs were confirmed as correct in VDB. These were drawn from the 9 acceptance test folders that had been audited.

5.6.2 FCA Conclusions

FCA objectives were achieved.

During Release 6A Acceptance Testing the quality of test records continued to improve. The VDB contains accurate criteria verification status.

5.7 COTS Hardware Physical Configuration Audit Results

59 NCRs have been opened, assigned and are in the process of being verified for closure.

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6. Lessons Learned

6.1 Areas for Improvement

- 85% of all the COTS S/W discrepancies are attributable to the 920-TDx-002 Technical Documents still containing error. Documentation updates need to be performed accurately, and the data must be accurately incorporated into related CCRs, at the time of CCR submittal for review and approval.
- Custom Code Configuration Parameters need to be audited. A reference needs to be provided by the Development organization to the CMO organization. The UNIX Kernel parameters are currently baselined, however, and there were no discrepancies found for the 6A audit.
- There is still a small backlog of old NCRs to be worked for NSIDC.
- Currently, only the PVC is being audited in real time. Ensure that all sites are audited in real time.
- On the 6A.04 Custom Code Tracking web pages, the cells currently labeled “suspense” need to show the dates when the patch or TE was installed, on a mode-by-mode basis.

6.2 Process Improvement Actions

- Go real time with the auditing process.
- Complete the new PCA Audit Work Instruction.

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Abbreviations and Acronyms

CCB	Change Control Board
CCR	Configuration Change Request
CDRL	Contract Data Requirements List
CI	Configuration Item
CM	Configuration Management
CMO	Configuration Management Office
COTS	Commercial Off-The-Shelf
CSCI	Computer Software Configuration Item
CSR	Consent to Ship Review
DAAC	Distributed Active Archive Center
DDTS	Distributed Defect Tracking System
DID	Data Item Description
DMO	Data Management Organization
ECS	EOSDIS Core System
EDF	ECS Development Facility
EOSDIS	Earth Observing System Data and Information System
FCA	Functional Configuration Audit
GSFC	Goddard Space Flight Center
HP	Hewlett Packard
HWCI	Hardware Configuration Item
M&O	Maintenance and Operations
MIL STD	Military Standard
NASA	National Aeronautics and Space Administration
NCR	Non-Conformance Report
NLT	Not Later Than
OS	Operating System
PCA	Physical Configuration Audit

PI	Project Instruction
QO	Quality Office
RAID	Redundant Array of Independent Disks
RRR	Release Readiness Review
SDPS	Science Data Processing Segment (ECS)
SIG	Silicon Graphics, Inc.
SOW	Statement of Work
SRA	Site Readiness Assessment
VCATS	Vendor Cost And Tracking System
VDD	Version Description Document
WBS	Work Breakdown Structure