

NCR Summary & Liens Against the System

Randy Miller

Raytheon Raytheon Systems Company

Briefing Overview



- Description of Review Process
- Liens Against The System
- Work-Off Plans

NCR Review Process For RRR



- Review group included GDAAC (Mike Swanhart and Stephen Berrick), ESDIS (Dan Marinelli), ECS SE (Joe Guzek, Carolyn Whitaker, and Sanjeev Sharma), ECS M&O (Pam Johnson, Ken Cockerill, and Barry Cohen), and ECS Development (Randy Miller)
- Reviewed all N/A/R Severity 1/2/3 NCRs through 2/21/99
 - Did not complete review of approximately 200 Severity 3 NCRs
- Reviewed all NCRs fixed in 4PY and 4PY.Alpha
- NCRs reviewed for functional area (bin) and impact (H/M/L)

NCR Review Process For RRR (Cont.)



Functional Areas (Bins):

- **Delivery and Installation Defects**
- **Defects in Function**
 - **Ingest and Archive**
 - **Distribution**
 - **User Access**
 - **Processing**
 - **System Management**
- **Defects in Operation**
 - **Security**
 - **Performance**
 - **Maintainability**
 - **Operability**

NCR Review Process For RRR (Cont.)



Operational Impact:

- **High**
 - Significantly risks loss of data, OR
 - Precludes use of important functionality, OR
 - Significantly reduces system availability or throughput, OR
 - Significantly increases operator burden on a frequent basis
- **Medium**
 - Moderately reduces system availability or throughput, OR
 - Moderately increases operator burden on a recurring basis
- **Low**
 - Negatively impacts system availability or throughput, OR
 - Measurably increases operator burden on an occasional basis

Results



| Category | EDC | | GSFC | |
|------------------------------|-----------|-----------|-----------|-----------|
| | High | Medium | High | Medium |
| Installation and Delivery | 2 | 2 | 2 | 2 |
| Functional/Ingest & Archive | 5 | 9 | 8 | 9 |
| Functional/Distribution | 6 | 8 | 4 | 8 |
| Functional/User Access | 1 | 5 | 0 | 5 |
| Functional/Processing | 8 | 8 | 10 | 22 |
| Functional/System Management | 0 | 8 | 0 | 8 |
| Operational/Security | 0 | 2 | 0 | 2 |
| Operational/Performance | 3 | 4 | 3 | 2 |
| Operational/Maintainability | 0 | 2 | 0 | 2 |
| Operational/Operability | 5 | 15 | 5 | 15 |
| Total | 30 | 63 | 32 | 75 |

Summary



- **Approximately 1100 NCRs reviewed**
- **36 High Impact NCRs**
 - **Some are site specific**
 - 26 Affect both sites
 - 4 Affect EDC only
 - 6 Affect GSFC only
- **77 Medium Impact NCRs**
- **Some are already fixed in code baselines not yet delivered**
 - **4PX.26: 6 High/6 Medium**
 - **4PY.Beta: 8 High/20 Medium**
 - **5A: 1 High/3 Medium**

EDC Work-Off Plan



4PX.26

- To be delivered 3/15
- To include 20310, 20402, 20628, 20663, 20893, and 20894 plus other Medium and Low impact NCRs

4PX.27

- To be delivered 4/15
- To include Java DAR Tool
- To include 16820, 20523, 20584, 20732, 20742, 20831, 20847, 20873, and 20895 plus other Medium and Low impact NCRs

EDC Work-Off Plan (Cont.)



4PY

- To be installed 5/15
- To include 18062, 18404, 19216, 19726, 20012, 20388, 20491, 20516, 20866

System/COTS fixes independent of the custom code

- Soon: 19305, 20087, 20355, 20629
- 5B: 20731 (Autosys High Availability Mode)
- To be determined: 17677 (HPOV enhancements)

Challenge:

- Coordinate with the EDAAC to deliver as many 4PX.27 High Impact NCRs before 4/15 as possible

GSFC Work-Off Plan



4PY

- To be installed 3/3
- To include 18062, 18404, 19216, 19726, 20012, 20491, 20516, 20866

4PY.01

- To be delivered ~3/26
- To include 20310, 20388, 20402, 20628, and 20894 plus other Medium and Low impact NCRs

4PY.02

- To be delivered ~4/16
- To include 16820, 17423, 20450, 20523, 20584, 20732, 20826, 20831, 20847, 20873, and 20895 plus other Medium and Low impact NCRs

GSFC Work-Off Plan (Cont.)



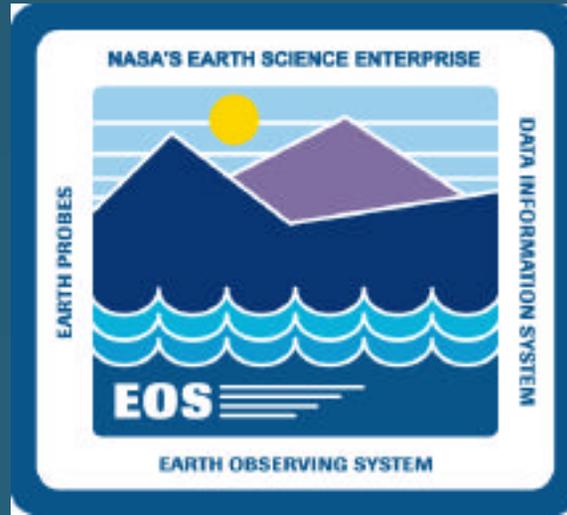
4PY.03

- To be delivered: To be determined to include DPREP fixes System/COTS fixes independent of the custom code
- Soon: 19305, 20087, 20355, 20629
- 5B: 20731 (Autosys High Availability Mode)
- To be determined: 17677 (HPOV enhancements)

Conclusions



- The NCRs written against the system accurately reflect the problems affecting operational readiness
- With the workarounds implemented for the NCRs, the system can meet its immediate (March) operational requirements
- Near-term planned patches and COTS work will resolve nearly all high impact NCRs, and will allow the system to support launch and early operational requirements



Configuration Audit Status

-- report of ECS / ESDIS Team

Felicia Harris
&
Linda Arneson-Foran

Raytheon Raytheon Systems Company

Briefing Overview



- **Introduction**
 - Objectives
- **Physical Configuration Audit (PCA)**
 - PCA Process
 - Status
- **Functional Configuration Audit (FCA)**
 - Process
 - Status

Objectives



Physical Configuration Audit (PCA):

Audit the physical configuration of the hardware and software at each site against the ECS Product Baseline for that site:

- Hardware / Networks
- COTS Software
- Custom Code (executables)

Functional Configuration Audit (FCA):

Confirm that the Feature Criteria Verification status reported by ECS Test in electronic site logs is accurate, consistent and substantiated by the contents of the test folders audited.

Audits conducted by ECS / ESDIS audit teams

Team Membership



| | ECS | DAAC | ESDIS |
|------------|----------------------------|-------------|---------------------------------|
| PCA | SED DEV QO | EDC | QA |
| FCA | SED QO Test | | QA IV&V Test |

Physical Configuration Audit



Felicia Harris

PCA Process



- **Acquire established Baseline**
- **Interrogate Sites; Generate difference reports (x host)**
- **Verify data against baseline**

| | ----- | ----- |
|---|-------|-------|
| - Baseline product installed properly | X | X |
| - Baseline product not installed on Host | X | X |
| - Product installed not in Product Baseline | X | X |
| - Baseline product installed in wrong path | X | |
| - Wrong version of Baseline product installed | X | |
| - Baseline product installed (multiple installations) | X | |
| - Baseline product installed not from tar files | | X |
| - Script anomalies to be investigated | X | |

- **Create NCRs for discrepant conditions**
- **Develop Workoff Plan**
- **Coordinate “sign-off” by team members**

PCA Schedule - Team Activities



| | February | | | | March | | | | | April | | | |
|---------------------|------------|-------------------|-------|-------|--------------------|------|-------|-------|--------|----------|-------|----------|--------------------------|
| | 1-5 | 8-12 | 15-19 | 22-26 | 1-5 | 8-12 | 15-19 | 22-26 | 29 - 2 | 5-9 | 12-16 | 19-23 | 26-30 |
| Kickoff Meetings | | 12 ▼ | | | | | | | | | | | |
| EDC Audit | Quick Look | | | | Work-off | | | | | | | | |
| Update Baseline | | | | | | | | ▼ | | | | | |
| GSFC Audit | | | | | | | | | | Work-off | | | |
| LaRC Audit | | | | | | | | | | | | Work-off | |
| Certification | | | | | | | | | | | | | 29 ▼ |
| Audit Presentations | | 9 ▼ Quick Look | | | 2 ▼ Interim RRR | | | | | | | | 30 ▼ Final RRR |
| Team Report | | | | | | | | | | | | | (30 days post-Final RRR) |

PCA Status



- **Completed Work**
 - Started PCA audit process for EDC
 - Used baseline as of 2/5/99 Drop 4px.24
 - Performed site interrogation between 2/12-26/99
 - Analyzed configuration against each product baseline
 - Generated difference report
- **Planned Work**
 - Analyze deviations
 - Write NCRs
 - Work off by final RRR

Functional Configuration Audit



Linda Arneson-Foran

Scope of FCA



- Audit scope focused on ECS Version 2.0, Drop 4PX
- FCA Team audited 93 test folders:

| | |
|-------------------------|----|
| GSFC AT | 25 |
| EDC AT | 21 |
| LaRC (Common Tests) | 12 |
| VATC (Error Conditions) | 35 |
- FCA did not :
 - address ETE testing
 - audit electronic verification log against the Verification Database

FCA Process

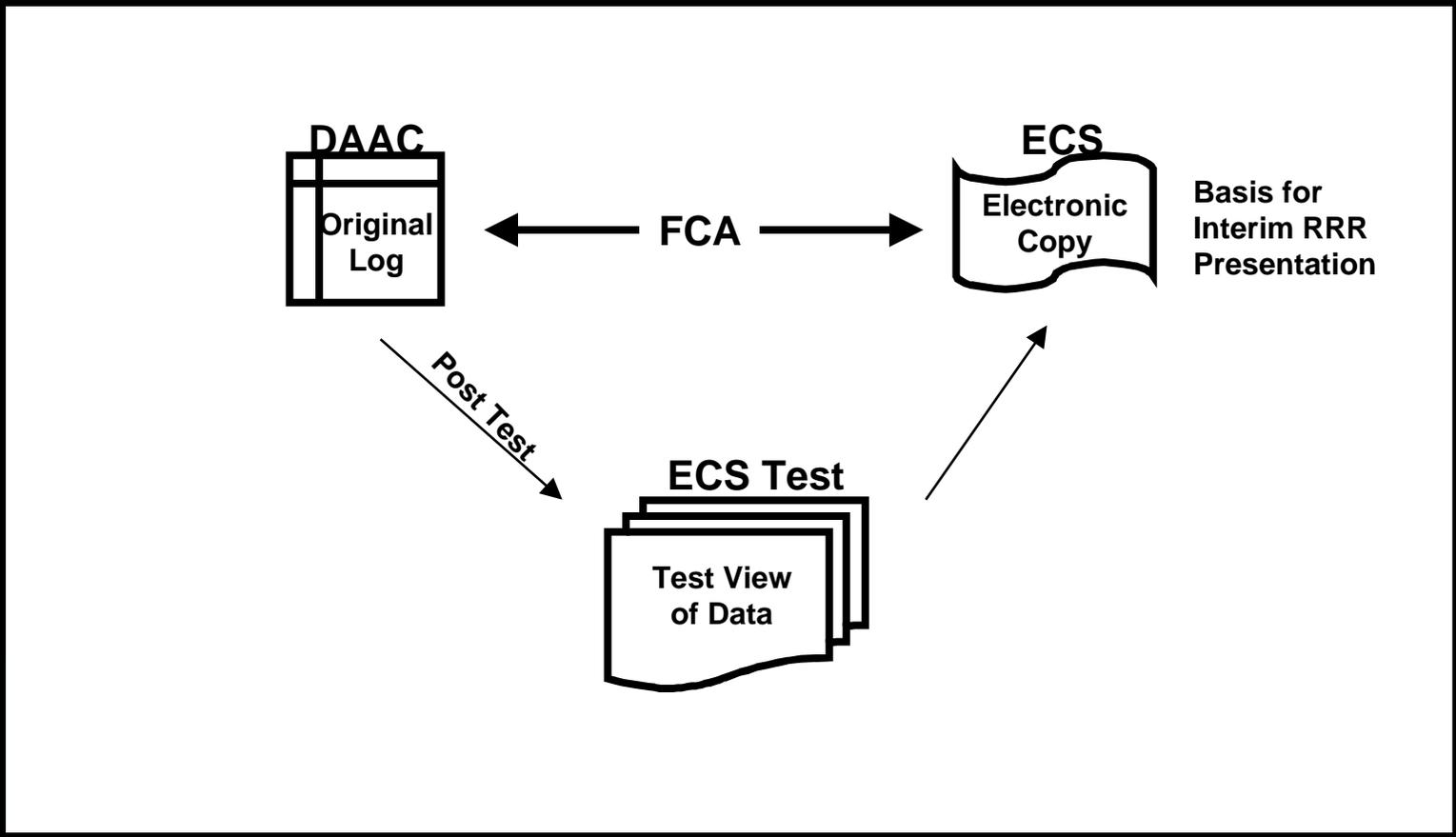


- Reviewed test folders and recorded significant findings
- Analyzed and summarized findings into categories:
 - Verification status
 - Criteria mapping and ticket status
 - Other observations
- Verification status findings delivered to ECS Test Management on 2/24/99

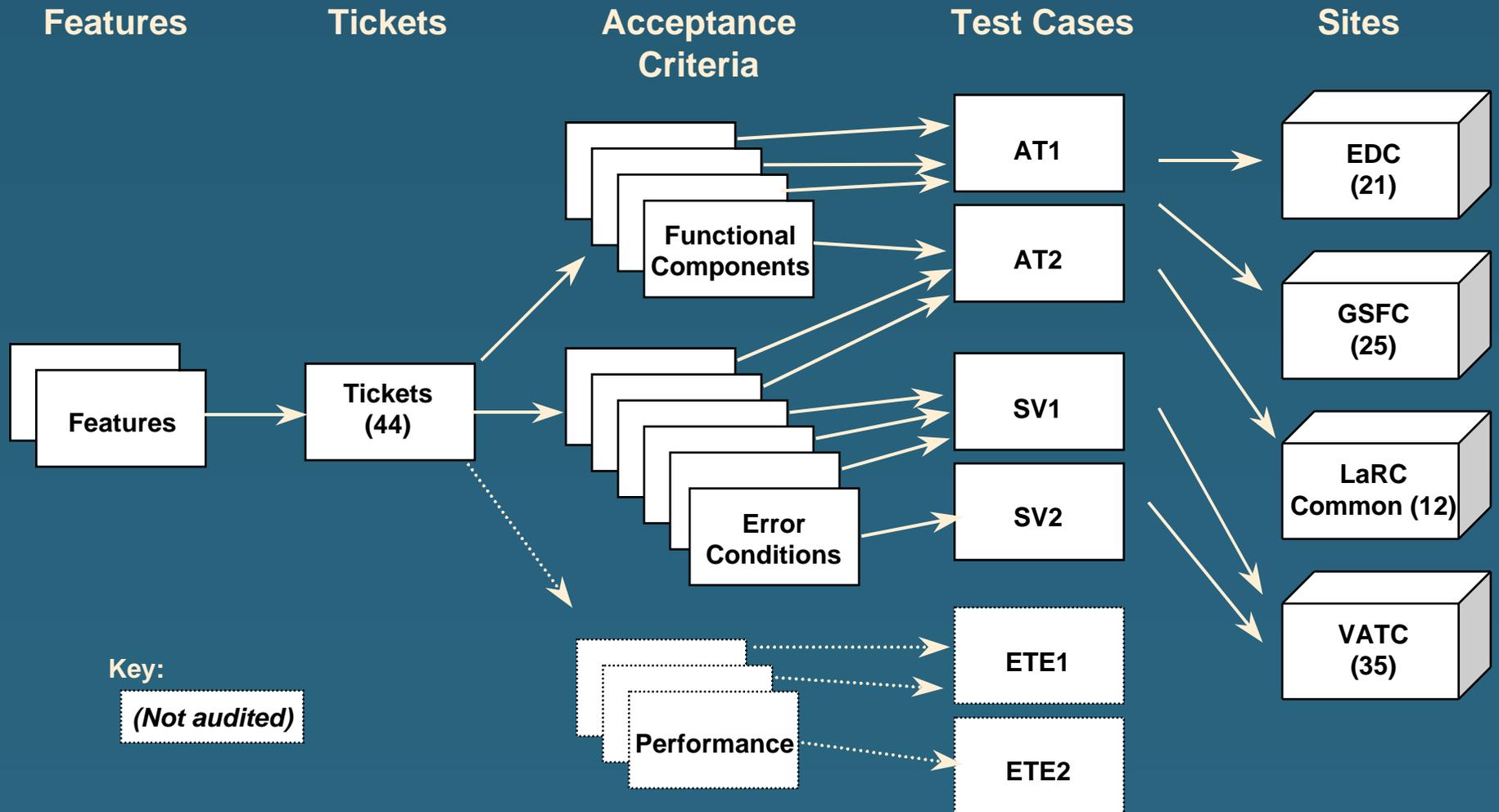
Joint ECS / ESDIS Team



Flow of Test Data



FCA Features/Tickets/Test Mapping



FCA Results, Verification Status



Criteria Status (between site logs and electronic logs)

| Verification Status | <u>Correct</u> | <u>Overstated</u> | <u>Understated</u> |
|---|-----------------------|---------------------|--------------------|
| Test Instances of Functional Components | 321 (91.2%) | 25 (7.1%) | 6 (1.7%) |
| Test Instances of Error Conditions | 309 (96.3%) | 9 (2.8%) | 3 (0.9%) |
| Total | 630 (93.6%) | 34 (5.1%) | 9 (1.3%) |

Examples:

Overstated "NT" ==> "V"

Understated "V" ==> "VW"

FCA Results (Cont'd), Criteria Mapping and Ticket Status

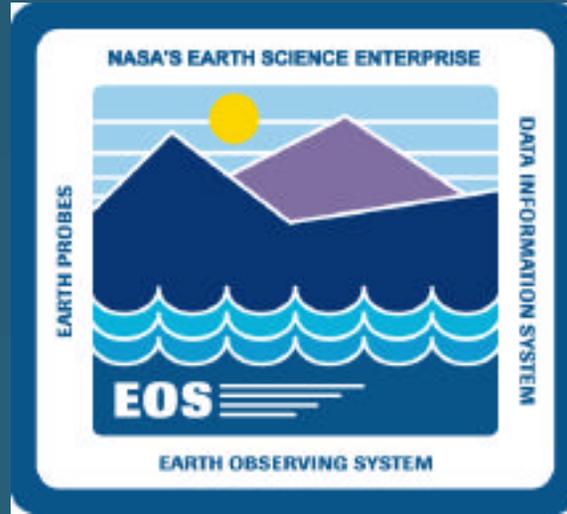


- Audited 44 Tickets with 673 Functional Components to Error Conditions mappings against 93 Test Cases
- Found total of 65 discrepancies:
 - 22 (3%) directly affect verification status validity
 - 43 other discrepancies / omissions
 - Orphaned Functional Components (29)
 - inconsistent mappings (14)

FCA Results (Cont'd), Other Findings



- **Twenty-eight (28) site-specific Error Conditions were tested in VATC**
- **Changes made to original site logs without explanation or identification of author**
- **No witness signatures on original site log for 25 of 93 total tests (13 of 55 Acceptance Tests)**

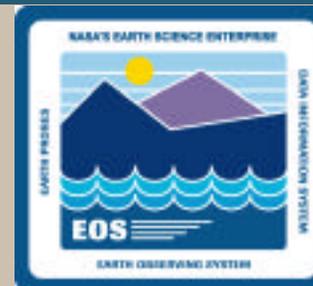


CDRL Documentation Summary

Steve Marley

Raytheon Raytheon Systems Company

System Design Documents



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

System Test Documents

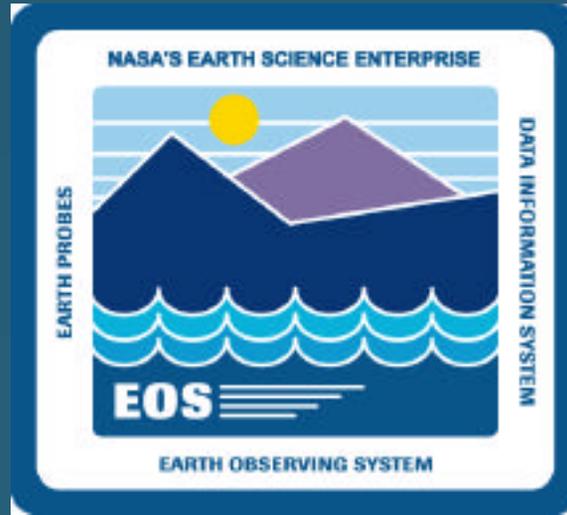


| DID # | Document Title | Delivery Date |
|----------|---|----------------------------|
| 319/DV1# | Release Integration & Test Plan | Updated After Each Drop |
| 322/DV2# | Release Integration & Test Procedures | Updated After Each Drop |
| 324/DV3# | Release Integration & Test Reports | Updated Daily |
| 409/VE1# | ECS Overall System Acceptance Test Plan | Maintained on WEB |
| 411/VE1# | ECS Overall System Acceptance Test Procedures | Maintained on WEB |
| 412/VE2# | ECS Overall System Acceptance Test Report | Final RRR + 1 Month |
| 512/PA1# | Maintainability Demonstration Test Plans | Delivered 9/1/98 |
| 535/PA1# | Acceptance Data Package | Final 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 |
| 332/DV3 | Contractor's Release Experience Report | Post Launch, Data collection + 3 Months |
| 506/PA3 | Audit Reports | Final 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 | Final RRR + 2 Weeks |
| 708/PP3 | ORR Presentation Package | Each ORR + 2 Weeks |
| | Operations Workarounds | Final RRR |



ECS Support of Site Readiness

Ken Prickett

Raytheon Raytheon Systems Company

Briefing Overview



Site Readiness

- **Personnel Readiness**
 - Training Program Status
 - Test
 - Documentation
- **HW Readiness**
 - Spares
 - COTS HW & SW Maintenance Status
 - Logistics Support/Consumables Status

DAAC Operations Support Readiness

- **Documentation**



Personnel Readiness - ECS System Training Program (Jan. 5, 1998 - Feb 26, 1999)

Training Completed

| <u>TRAINING TOPIC</u> | <u>EDAAC</u> | <u>GDAAC</u> | <u>TOTAL</u> |
|--------------------------|--------------|--------------|--------------|
| Internals | 52 | 72 | 124 |
| Installation Training | 3 | 3 | 6 |
| DCE | 20 | 15 | 35 |
| Network | 3 | | 3 |
| LC Scenario AT | 6 | 8 | 14 |
| SSIT | 6 | 6 | 12 |
| System Administration | 9 | 9 | 18 |
| Network Administration | 9 | | 9 |
| Archive | 20 | 6 | 26 |
| Database Administration | 3 | | 3 |
| Configuration Management | 4 | | 4 |
| Ingest | 16 | 7 | 23 |
| Data Distribution | 18 | 7 | 25 |
| User Services | 18 | | 18 |
| Resource Planning | 12 | 6 | 18 |
| Production Planning | 19 | 10 | 29 |
| Total Students | 218 | 149 | 367 |

Personnel Readiness - ECS System Training Program (Jan. 5, 1998 - Feb 26,1999)



| | <u>Courses</u> | <u>Days</u> |
|------|----------------|-------------|
| EDC | 55 | 172 |
| GSFC | 64 | 183 |

| <u>Vendor</u> | <u>Course</u> |
|--------------------|--|
| HP Openview | Network |
| Tivoli | Framework, User Administration, Security Management |
| SGI | System Administration, Network Administration |
| Sybase | Fast Track To Replication, Performance and Tuning |
| Network Associates | Network Analysis, Troubleshooting |
| Remedy | For Users, Administration |
| Sun | Solaris 2.x System Administration |
| EMASS | Introduction to AMASS, AMASS System Maintenance, AMASS Software Administration |
| XRP II | BLM, ILM, System Administration |
| Storage Tek | Intro to ACSLS |
| Transarc | DCE |

Personnel Readiness - ECS Test Program (5 Jan 98 - 26 Feb 99)



| TEST | Support Eng | | Operations | |
|------|-------------|------|------------|------|
| | EDC | GSFC | EDC | GSFC |
| SVAT | 19 | 26 | 13 | 15 |
| ETE | 17 | 26 | 6 | 15 |
| EGS | 71 | 5 | 37 | 5 |

Personnel Readiness- Documentation



CDRL 611 Mission Operations Procedures

- Delivered 12/97- Will be Updated as Required
 - Latest update 2/26/99
 - Posted on SMC

CDRL 625 Training Material

- Delivered 12/97- Will be Updated as Required
 - Latest update 2/26/99
 - Posted on SMC

HW Readiness - Spares



- **Initial set of spares was derived from:**
 - Analysis of RMA requirements
 - HW failure modes
 - Equipment/component redundancy
 - Type of maintenance support
 - Cost constraints
- **CDRL 618 Replacement Part List & Spare Parts List**
 - Delivered 3/31/98- Will be Updated as Required

Hardware Readiness - Software Maintenance Contracts



- Total COTS Software and Freeware Products - 138
- COTS software maintenance - contracted for support through 12/99
 - Post 12/99 support will be renewed based on project requirements

Hardware Readiness - Hardware Maintenance Contracts



Hardware Maintenance contracts are negotiated with each vendor and are based on response time, and daily coverage.

Vendor

SGI

Sun, EMASS

STK

HP, Exabyte

Cisco, Fore, NETAPPS

Cabletron, Synoptics

Other Products

Contracted Maintenance Terms

4-hr on-site response, 16x7

4-hr on-site response, 24x7

2-hr on-site response, 24x7

4-hr on-site response, 9x5 (excluding holidays)

Advance replacement vendor depot support

Return to vendor depot for repair/replacement or time and material

Hardware Readiness - Logistics Support



Media Deliverables (6 Months Supply):

- 8MM Tapes
 - GSFC and EDC = 10,000 tapes/site
- D3 Tapes
 - EDC (ASTER) = 200

Consumables:

- Backup Tapes (DLT)
- D3 Cleaning Tapes
 - GSFC and EDC = 20 tapes/site
- 8MM Cleaning Tapes
 - GSFC and EDC = 40 tapes/site

Property/CM Database:

- ILM/BLM Installed
- Personnel trained on usage

DAAC Operations Support Infrastructure



| Support to DAAC Operations | | | |
|--|---|---|--|
| Maintenance Management | Integrated Logistics Support | Sustaining Engineering | System Monitoring Center |
| TT Telecon M&O CCB Configuration Management Schedule Management | COTS Maintenance Contracts RMA Analyses License Management Property Management Support | Development System Engineering Help Desk Patch IPT Operational Procedures Training | COTS SW staging Custom SW staging Configuration tracking System TT management System Admin. support |

DAAC Operations Support Infrastructure - Documentation

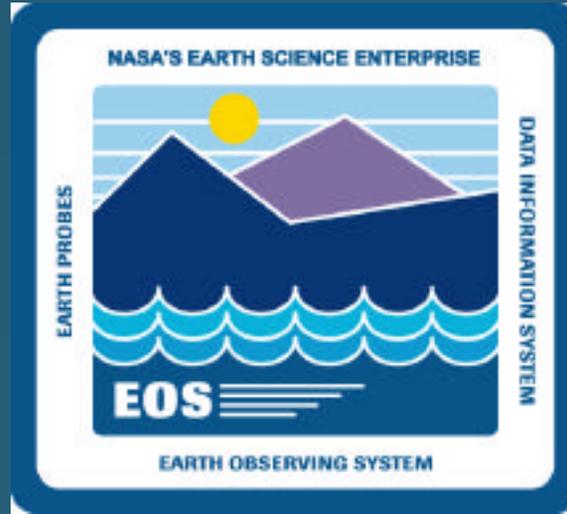


CDRL 102 M&O CM Plan

- Draft Delivered 12/21/98
- Final Delivered 30 days after comments are received

CDRL 708 ORR Presentation Package

- Delivered 2 weeks after ORR



Interim ECS SDPS RRR Concluding Remarks

Ron Klotz

Raytheon Raytheon Systems Company

Concluding Remarks



Formal verification

- **Formal verification is incomplete but assessment indicates adequate functionality exists to support the launches and early operations**
- **NCR verification will continue to close out liens**
- **NCR verification with respect to Functional Components & Error Conditions will continue and receive emphasis**

Concluding Remarks (Cont.)



End-to-End testing

- Demonstrated science system adequacy to support launch and early operations
- Liens identified will 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.)



Final RRR planned activities

- Execute the LaRC ETE test against the 4PY baseline
- Complete the EDC and GSFC ETE performance analysis
- Complete the PCA/FCA activities with workoff plans and NCRs, as appropriate, in place
- Execute the workoff plan for patches and early delivery of functionality enhancements