

501-PR-001-005

Quality Assurance Plan for the ECS SDPS Project

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Appendix A. Quality Assurance Procedures

1. Introduction

This document describes the EOSDIS Core System (ECS) Science and Data Processing Segment (SDPS) Quality Assurance (QA) activities. This plan does not require review and approval by the customer. The plan will be used by the ECS SDPS QA organization and other functional departments within the ECS SDPS program as a reference to the Quality Assurance activities to be performed on the program. The purpose of this revision is to update the activities of the ECS SDPS Quality Assurance organization around the current activities of the ECS SDPS Program.

1.1 Scope and Document Organization

The scope of this document covers Quality Assurance activities for the ECS SDPS program. It is important to note that the quality assurance activities described are performed on the ECS Science and Data Processing Segment organization activities. It does not address activities for the other segments of the ECS program.

This document will outline the activities of the ECS SDPS Quality Assurance staff at a summary level. The Quality Assurance staff activities are directed by project instructions to conduct consistent and objective quality assurance actions. All project instructions are maintained on a local server and are accessible by each member of the Quality Assurance staff.

The document is organized into the following four sections:

Section 1, Introduction. Provides the scope, document organization, and change control procedure for this document.

Section 2, Related Documentation. Cites other documents that provided input into this plan.

Section 3, Quality Assurance Organization. Describes the goals and objectives, independent reporting, roles and responsibilities, facilities and tools, resource allocation, and training of the quality assurance organization.

Section 4, Quality Assurance Activities. Describes the activities of the quality assurance organization which includes planning, conducting evaluations, developing evaluation criteria, issuing deficiency reports, status reporting, metrics reporting, other ECS SDPS activities, and a documented schedule.

1.2 Change Control

Once reviewed and approved by ECS project management, this document will be placed on the ECS Data Handling System (EDHS) web site. The EDHS web site as well as this document are managed and controlled by the Data Management Organization (DMO). Changes to this document must be submitted in writing to the ECS SDPS Quality Assurance Manager for approval. The ECS SDPS Quality Assurance Manager will follow DMO procedures for making changes to the document.

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2. Related Documentation

2.1 Parent Documents

The following documents are the parents from which this document's scope and content derive:

101-CD-001	Project Management Plan for the EOSDIS Core System
102-CD-003	Configuration Management Plan for the Science Data Processing Segment of the ECS Project
104-CD-001	Data Management Plan for the ECS Project
308-CD-001	SDPS Software Development Plan for the ECS Project
501-CD-001	Performance Assurance Implementation Plan
420-05-03	Performance Assurance Requirements
LFP 19-0-4	Software Quality Assurance Program Planning

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3. Quality Assurance Organization

3.1 Overview

This section describes the ECS SDPS quality assurance organization. The section includes the goals, objectives, and independent reporting structure, as well as the roles and responsibilities to accomplish quality assurance tasks within the ECS SDPS project. Additionally, the section includes the tools and resources required by the Quality Assurance staff members allocated to the program.

3.2 Goals and Objectives

The Quality Assurance organization has defined goals and measurable objectives. Measurements or metrics will be collected on a monthly basis and used by the team to make effective decisions to meet the goals of the organization. There will be an objective for each goal as well as a defined measure or metric to evaluate the objective. The metrics for each month will reside on a local server accessible to all Quality Assurance staff.

The goals, objectives, and defined measurement or metric for the Quality Assurance organization are listed in Table 3-1.

Table 3-1. Quality Assurance Goals, Objectives, and Measurement

Goal	Objective	Metrics
Provide ECS SDPS leadership with insight to the adherence to standards, processes and procedures.	Conduct quality assurance evaluations against the project processes and work products based on objective criteria.	<ul style="list-style-type: none">Number of compliant, partially compliant, and non-compliant evaluations conducted per month.
Ensure ECS SDPS leadership is aware of unresolved deficiencies identified as a result of quality assurance evaluations.	Report unresolved deficiencies identified as a result of quality assurance evaluations.	<ul style="list-style-type: none">Number of deficiencies escalated to the next leadership level.Average number of days deficiencies remain open.
Provide adequate quality assurance staff to evaluate ECS SDPS program activities.	Conduct quality assurance evaluations according to the ECS SDPS Quality Assurance schedule.	<ul style="list-style-type: none">Ratio of quality assurance evaluations conducted out of the total number of quality assurance evaluations scheduled.

3.3 Independent Reporting

The Information Technology Systems (ITS) Quality Assurance (QA) department has the responsibility for implementing the ECS QA program and as such, QA Engineers will be assigned to support the ECS SDPS project. The ECS QA program will serve the project by providing an independent and objective evaluation of process execution and work product quality. In addition, the QA department will be the focal point for system quality coordination with the Goddard Space Flight Center (GSFC) Systems Assurance Manager. Separation of the QA responsibilities from ECS functional organizations provides a level of independence that promotes quality processes and products.

The QA department is matrixed into the Intelligence and Information Systems (IIS) division of Raytheon. Within this structure, the Quality Assurance Manager has a dual reporting role to the ITS General Manager and the IIS Product Assurance Manager, thereby assuring attention and authority through all levels of Raytheon.

3.4 Quality Assurance Roles and Responsibilities

To ensure the appropriate completion of Quality Assurance activities, the following roles and responsibilities are defined:

- Quality Assurance Manager
- Quality Assurance Lead Engineer
- Quality Assurance Engineer
- ECS SDPS Functional Area Manager(s)
- ECS SDPS Project Team Member(s)

3.4.1 Quality Assurance Manager

The Quality Assurance organization will provide a Quality Assurance Manager to:

- Ensure the ECS SDPS QA team is staffed appropriately
- Manage the ECS SDPS Quality Assurance budget
- Conduct performance evaluations of Quality Assurance staff
- Provide office space and appropriate tools to conduct quality assurance activities
- Ensure Quality Assurance Engineers receive the appropriate training
- Support ISO and CMM activities

3.4.2 Quality Assurance Lead Engineer

The Quality Assurance organization will provide a Quality Assurance Lead Engineer to:

- Allocate resources to functional areas to prepare and conduct quality assurance evaluations
- Prepare monthly ECS SDPS Quality Assurance status reports for customer reporting requirements
- Coordinate Quality Assurance activities with the GSFC Quality Assurance Office and ECS SDPS Project Management
- Conduct Quality Assurance presentations on request at ECS SDPS Project Management Reviews.

3.4.3 Quality Assurance Engineer

The Quality Assurance organization will provide Quality Assurance Engineers to:

- Ensure the appropriate standards, processes, and procedures are selected, implemented, and adhered to by performing evaluations against consistent criteria for ECS SDPS processes and work products.
- Promote process improvement by disseminating evaluation results and supporting corrective action to resolve identified discrepancy issues.

3.4.4 ECS SDPS Functional Area Manager

The ECS SDPS functional area managers will be responsible for performing the following:

- Approve and support the SDPS activities
- Receive and act on discrepancy reports and escalated items
- Inform Quality Assurance Engineers of changes made to standards or procedures
- Participate in SDPS evaluations, if required
- Provide the Quality Assurance Engineer access to the same tools as project personnel.

3.4.5 ECS SDPS Project Team Member

ECS SDPS Project team members will play an active role with SDPS activities by performing the following:

- Identify and report any inability to perform a procedure to the project manager or Quality Assurance Engineer
- Provide information needed to conduct a quality evaluation
- Identify and implement the corrective action for discrepancy issues.

3.5 Quality Assurance Facilities and Tools

The Quality Assurance Organization provides office space and equipment to support Quality Assurance activities. The Quality Assurance Organization will provide software to support the quality assurance records tracking system. Appropriate SDPS training for the Quality Assurance Engineers is coordinated by the Quality Assurance Organization.

The following represents the standard tools used by the Quality Assurance Engineer:

- MS Project
- MS Excel
- MS Word
- MS Power Point
- QA Tracking Database (MS Access)
- Other tools provided by the project

3.6 Quality Assurance Resource Allocation

The Quality Assurance staff has been aligned to support ECS SDPS functional areas. The goal of this alignment is to maximize the use of a small staff to cover the life cycle activities of the project and create more synergy. As the functional areas use tailored processes and procedures, the Quality Assurance Engineer assigned to the functional area will be responsible for evaluating, reporting, and assisting with the use of and adherence to those processes and procedures.

3.7 Quality Assurance Training

Each Quality Assurance Engineer is expected to have fundamental knowledge of the following areas through prior experience or training:

- Internal Auditor Training
- ISO 9001
- SEI/CMM
- IPDS
- Raytheon Six Sigma
- ECS SDPS Program

The ECS SDPS Quality Assurance Department complies with the ITS Training System, LFP 3-0-8, which outlines the training program for the Landover facility. Additionally, the ECS SDPS training plan is used as a guide to help identify recommended training for the Quality Assurance Engineers.

3.8 Customer Communication

ECS SDPS QA maintains open communications and a close working relationship with ESDIS Quality Assurance and the Government's IV&V contractor. This relationship allows coordination of work activity and schedule to maximize the value to the ECS SDPS Project and efficient use of limited Quality Assurance resources. This is facilitated by frequent working level interactions with the customer to include periodic status/coordination meetings to review status, issues, and successes.

3.9 Independent Evaluation

An independent evaluation of the ITS Quality Assurance organization will be performed annually using an internal auditor outside of the Quality Assurance reporting chain. In accordance with documented corrective action procedures, areas of noncompliance will be documented in deficiency reports requiring the ITS Quality Assurance organization to resolve all areas of noncompliance. To ensure accountability of the results, audit reports will be distributed to the ECS Program Manager and the Director of Engineering.

The Quality Assurance Manager has the responsibility for determining qualifications and assigning internal auditors to conduct the independent audit. Internal auditors must be trained and meet the requirements for conducting Internal Quality System Audits. At a minimum, auditors must have Internal Auditor training or, alternatively, four years of related experience and two years experience in Quality Assurance. Specific qualifications are as follows:

- Knowledge of the QA auditing process
- Technical knowledge of the processes to be audited
- Ability to communicate both orally and in writing.

In addition to the internal evaluation, there are additional audits conducted throughout the year that support independent evaluation. The following audits are conducted for the period indicated:

- Raytheon ISO 9001 audits; annually
- Oversight audits conducted by NASA or their designated representative; as scheduled
- NQA ISO 9001 audits; every three years.

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4. Quality Assurance Activities

4.1 Overview

This section addresses the activities that are performed by the ECS SDPS Quality Assurance team. The ECS SDPS Quality Assurance team performs the following activities in accordance with documented procedures:

- Quality Assurance Planning
- Quality Assurance Evaluations
- Quality Assurance Evaluation Criteria Development
- Quality Assurance Deficiency Reporting
- Quality Assurance Records
- Quality Assurance Schedule
- Quality Assurance Status and Metrics Reporting
- Other ECS SDPS Project Activities
- ISO 9001:2000
- Raytheon Six Sigma

4.2 Quality Assurance Planning

Quality Assurance Planning activities are performed in accordance with the contract and ITS Landover Facility Procedure 19-0-4, Software Quality Assurance Program Planning. The objective of the planning effort is to identify the resources, activities, and schedule of the ECS SDPS quality assurance team.

4.3 Quality Assurance Evaluations

The Quality Assurance Engineer will perform quality assurance evaluations to provide the ECS SDPS Project Management insight into the use of and adherence to the standards, processes, and project instructions required for use on the program. There are two types of evaluations performed: audits and product evaluations. An audit is an objective examination of documented processes to verify that company and/or contractual requirements are being met. An audit may be conducted for an undocumented process depending on the product impact and maturity of the process.

A product evaluation is an objective examination of deliverable, non-deliverable, or non-developmental products to verify they are in agreement with company and/or contractual requirements.

4.3.1 Quality Assurance Audits

Quality Assurance Engineers will follow documented procedures to conduct consistent and objective quality assurance process audits. The procedures direct the Quality Assurance Engineer to prepare and deliver the audit package, conduct the audit, document the results of the audit in the quality assurance database and report the results of the audit to the appropriate point of contact in the functional area.

When a process is published, QA will evaluate the procedure and develop an audit strategy. QA will determine the start/end, frequency, duration and audit criteria necessary to demonstrate sufficiency. QA will allow, at a minimum, 4 weeks for a new process to be in place prior to conducting an audit.

The following subsections provide examples of the ECS SDPS processes, by functional area, that will be evaluated by the Quality Assurance Engineers.

4.3.1.1 Program Management

- Planning and Tracking
- Program Controls
- ROM Board

4.3.1.2 Maintenance and Operations

- Help Desk Operations Process
- Problem Management Process (Problem Review Board)
- Patch Management
- Release Deployment Management
 - Internal Walkthrough
 - DAAC Walkthrough
 - Pre-Ship Review (PSR)
 - Configuration Change Request/Engineering Change Order (CCR/ECO)
- Maintenance Records Management (Failure Review Board)

4.3.1.3 Systems Engineering

- Configuration Management Processes
 - Configuration Control
 - Baseline Management
 - Audit Management-Configuration Audits
 - SW Build, Verification and Delivery
- Nonconformance Reporting
- Process Variance
- Requirements Management
- Requirements Change Control
- ECS Program Reviews (IRR, CSR, RRR)

4.3.1.4 System Integration and Test (SIT)

- Peer Reviews
- Formal Testing
- System Integration Readiness Review (SIRR)
- Test Readiness Review (TRR)

4.3.1.5 Development

- Peer Reviews
 - Software Estimation
 - Preliminary Design
 - Detailed Design
 - Code and Unit Test
 - Action Item Work-Off Evaluation
- Merge Process
- Integration Process
- Development Planning and Tracking of Operational NCRs (Sustaining Engineering)

4.3.2 Quality Assurance Product Evaluations

Quality Assurance Engineers will follow documented procedures to conduct consistent and objective quality product evaluations. The procedures direct the Quality Assurance Engineer to prepare and deliver the product evaluation package, conduct the product evaluation, document the results of the product evaluation in the quality assurance database, and report the results of the audit to the appropriate point of contact in the functional area.

The following subsections provide examples of the work products that will be evaluated by the Quality Assurance Engineer by functional area.

4.3.2.1 Maintenance and Operations

- Mission Operations Procedures D1D 611
- ECS Project Training Material (Vol. 1-17) DID 625
- Release Notes

4.3.2.2 Systems Engineering

- Science System Release Plan (334)
- Configuration Management Plan (102)
- COTS Deployment Plan (335)
- Configuration Audit Report (506)
- Interface Control Documents (209)

4.3.2.3 System Integration and Test (SIT)

- System Integration and Test Plans
- Acceptance Test Plan (409)
- Acceptance Test Procedures (411)
- Acceptance Test Reports (412)
- Acceptance Test Folders

4.3.2.4 Development

- Software Development Plan (308)
- Software Development Folders and associated development artifacts
- Release Segment/Design Specification (305)
- Release Internal ICDs (313)
- Release Operations Tools Manuals (609)
- Release Database Design Specification (311)
- Build Plans

4.4 Quality Assurance Evaluation Criteria

The Quality Assurance Engineer will create audit and product review criteria based on existing plans, corresponding project instructions and work instructions. Quality Assurance Engineers will follow documented procedures to develop consistent and objective criteria for quality evaluations. This criteria is provided to the functional departments prior to audits or product evaluations.

4.5 Quality Assurance Deficiency Reporting

The Quality Assurance Engineer will prepare and maintain the results of audits, product evaluations, and cited deficiencies in accordance with LFP 19-0-14, Quality Assurance

Deficiency Reporting. This procedure defines the criteria for the Quality Assurance Engineer to report deficiencies as either Corrective and Preventive Action Reports (C/PAR) or Deficiency Reports (DR). Additionally, this procedure defines the steps taken in reporting deficiencies to higher levels of management until resolution is achieved. This procedure also describes the Quality Assurance Tracking Database, which is used to record quality assurance evaluations. The Quality Assurance Engineer will also be responsible for filing a hard copy of the evaluation and corresponding discrepancy reports.

4.6 Quality Assurance Records

All quality assurance records such as audit and product evaluation reports are maintained in the Quality Assurance Tracking Database. Additionally, copies of the audit and product evaluation reports, discrepancy reports, and supporting data are located in the Quality Assurance Records Repository.

4.7 Quality Assurance Schedule

The Quality Assurance Lead Engineer develops the QA schedule in conjunction with the project schedule and updates are made as needed. The schedule includes all QA activities i.e., QA evaluations and QA participation in other related project activities.

4.8 Quality Assurance Status and Metrics Reporting

The Quality Assurance Lead Engineer will provide a monthly written status report to the ECS SDPS Program Manager and ESDIS QA. Each Quality Assurance Engineer responsible for an ECS SDPS functional area will provide a monthly status report to the appropriate functional manager. The report will contain the same information that is provided to the ECS SDPS Program Manager regarding the specific functional area.

The report will address the following:

- Number of reported compliant, partially compliant, and non-compliant evaluations conducted per month
- Number of deficiencies escalated to the next leadership level
- Average number of days deficiencies remain open
- Ratio of quality assurance evaluations conducted out of the total number of quality assurance evaluations scheduled.

Additionally, the ECS Quality Assurance Department completes a Product Assurance Monthly Progress Report and a Three Month Projection Report. These reports are consolidated with other ECS functional area monthly reports and provided to ESDIS.

Quality Assurance metrics will be evaluated on a monthly basis and used to make decisions to improve the team's ability to meet the goals that are defined in section 3.2, Goals and Objectives, of this document. Quality Assurance Status and Metrics Reporting, LFP 19-0-23, is used to guide the quality status and metrics reporting activity.

4.9 Other ECS SDPS Program Activities

In addition to the quality assurance activities identified herein, the Quality Assurance Engineers support the following ECS SDPS activities:

- Software Engineering Process Group (SEPG)
- ECS CCB
- EDF/SCDV CCB
- M&O CCB
- Physical Configuration Audits (PCA)
- Functional Configuration Audits (FCA)
- ECS Hardware Quality Assurance Activities

4.9.1 Software Engineering Process Group (SEPG)

The SEPG is a group established to define and refine the software development processes for ECS SDPS. The SEPG is comprised of representatives from each organization: Systems Engineering, System Integration and Test, Quality Assurance, Science Data Engineering, Development, and Maintenance and Operations. Quality Assurance supports the SEPG to address software engineering process issues based on audit and metric reports.

4.9.2 ECS CCB

Membership and responsibilities for all ECS CCBs are defined in ECS document 151-TR-001, "ECS Project CCB's: Allocation of Authority and Responsibility". The ECS CCB is the highest level change control board at Landover and is the interface between the ESDIS CCB and the ECS project. The ECS CCB primarily deals with deliverable documents, high-cost purchases and flow-down of higher level requirement changes. Quality Assurance is a member of the board to ensure the documented ECS change control process is being followed. Additionally, Quality Assurance attends the meetings to bring change requests to the attention of the board that have associated items with open QA deficiencies.

4.9.3 EDF/SCDV CCB

The EDF/SCDV CCB is responsible for the establishment and management of the development baselines. Quality Assurance is a member of the board to ensure the documented ECS change control process is being followed. Additionally, Quality Assurance attends the meetings to bring change requests to the attention of the board that have associated items with open QA deficiencies.

4.9.4 M&O CCB

The Maintenance and Operations (M&O) CCB controls ECS SDPS operations baselines after Release Readiness Review (RRR) and subsequent Consent to Ship Reviews (CSR). The M&O

CCB meets on a regular schedule to consider proposed content and schedule for individual patch deliveries. Quality Assurance is a member of the board to ensure the documented ECS change control process is being followed. Additionally, Quality Assurance attends the meetings to bring change requests to the attention of the board that have associated items with open QA deficiencies.

It is important to note that the agenda and minutes from the CCB meetings are distributed via email to QAE staff to facilitate CCB communication across the team.

4.9.5 Physical Configuration Audits

Quality Assurance support provided to CM for the Physical Configuration Audit (PCA) is to help conduct the audit, control the output data and participate in verification activities. The CM organization plans, leads, assigns discrepancies, coordinates closure, reports, and presents the audit statistics at the Test Readiness Reviews (TRR), Consent to Ship Review (CSR), and Site Readiness Assessment (SRA) reviews. This activity is performed using the ECS Project Instruction, Physical Configuration Audit, CM-1-009. The results are documented in CDRL #081, Audit Reports (DID 506).

4.9.6 Functional Configuration Audits

The objective of the Functional Configuration Audit (FCA) is to verify that the Release's actual performance complies with its requirements and interface specifications. FCAs for ECS SDPS Releases are satisfied by an inspection of the Acceptance Test results. ECS SDPS Project Quality Assurance leads the FCA team using ECS Project Instruction, Functional Configuration Audit, CM-1-036 to guide the FCA effort. This inspection confirms the Acceptance test results have been properly mapped to requirements, determined, and reported, and that NCRs are properly accounted for. The results are presented at the Consent to Ship Review (CSR) and documented in CDRL #081, Audit Reports (DID 506).

4.9.7 ECS Hardware Quality Assurance Activities

The ECS Performance Assurance Requirements (PAR) GSFC 420-05-03 defines specific hardware quality assurance requirements in section 7 of the document. These requirements have been recognized and appropriately implemented in the ECS Performance Assurance Implementation Plan (PAIP). The ISO Internal Audits, Quality Assurance Audits, and Quality Assurance Product Evaluations described in this ECS QA Plan are the activities through which compliance to the hardware quality assurance requirements have been verified and are monitored. The following Table 4-1, ECS Hardware Quality Assurance Activities, documents ECS Quality Assurance actions which address specific hardware QA requirements.

Table 4-1. ECS Hardware Quality Assurance Activities (1 of 2)

PAR Section	ECS Hardware Quality Assurance Actions
7.1 General Requirements	Addressed in the ECS Quality Assurance (QA) Plan, section 4.12.7
7.2 Quality Assurance Plan	Documented as the ECS QA Plan and schedule of QA activities
7.3 Document Change Control	Verified and monitored in QA Audits of CM Configuration Control and Data Management and ISO Internal Audits
7.4 Identification and Traceability Requirements	Verified and monitored in ISO Internal Audits
7.5 Procurement Requirements	Verified and monitored in QA Audits of CM Configuration Control and Baseline Management, ISO Internal Audits, and QA participation in COTS vendor source selection during competitive procurements
7.6 Review and Approval of Procurement Documents	Accomplished by QA review of COTS vendor solicitations, responses, and subcontracts during participation in competitive COTS vendor source selection activities of ECS COTS Procurement
7.7 Procurement Review by the Government	All COTS Hardware procurements are approved by ESDIS before purchase orders are submitted. Competitive procurement documents were provided to DCMAO on-site QAR for review
7.8 Contractor Source Inspection	Not applicable as specified conditions have not occurred
7.9 Contractor Receiving Inspection	Verified and monitored in ISO Internal Audits
7.10 Control of Fabrication, Integration, and Operations Phase Maintenance Activities	Verified and monitored in QA Audits of CM Configuration Control and Baseline Management, and QA Audits of M&O Training, Certification, and Maintenance Records, and ISO Internal Audits
7.11 Electrostatic Discharge Control	Verified and monitored in ISO Internal Audits
7.12 Nonconformance Control	Verified and monitored in QA Audits of Systems Engineering Nonconformance Reporting, and ISO Internal Audits
7.13 Environmental Controls	Verified and monitored in ISO Internal Audits
7.14 Special Notices and Alert Information	Verified and monitored in ISO Internal Audits
7.15 Inspections and Tests	Verified and monitored in QA Audits and Product Evaluations of M&O Maintenance Records and of System Integration and Test Peer Reviews, Test Execution and Test Folders, and ISO Internal Audits
7.16 Maintenance Records	Verified and monitored in QA Audits and Product Evaluations of M&O Maintenance Records and ISO Internal Audits
7.17 Configuration Verification	Verified and monitored in QA Audits and Product Evaluations of M&O Maintenance Records and through QA participation in Physical Configuration Audits (PCAs) for CM
7.18 Metrology	Verified and monitored in ISO Internal Audits
7.19 Stamp Control System	Not applicable as discussed in the PAIP

Table 4-1. ECS Hardware Quality Assurance Activities (2 of 2)

PAR Section	ECS Hardware Quality Assurance Actions
7.20 Handling, Storage, Preservation, Marking, Labeling, Packaging, Packing, and Shipping	Verified and monitored in ISO Internal Audits
7.21 Government Property Control	Verified and monitored in ISO Internal Audits
7.22 Government Acceptance	QA supports as defined in ECS procedures regarding delivery to the Government, and QA performs a Product Evaluation on the Acceptance Data Package deliverable

4.10 ISO 9001:2000

4.10.1 ISO Internal Audits

Internal audits of each section of the ISO 9001:2000 (9K2K) standard are conducted on an ongoing basis in accordance with LFP 19-0-17, Internal Quality System Audits. The Quality Assurance manager develops a rotating quarterly schedule and is responsible for ensuring that audits are conducted in the month scheduled. Based on audit results, the Quality Assurance manager determines if more frequency is appropriate for specific sections. Audits are conducted by trained Quality Assurance Engineers or other trained personnel as appropriate (i.e., when QA is the subject of the audit).

4.10.2 Corrective and Preventive Action

The Quality Assurance Organization is responsible for the tracking and status reporting of Corrective and Preventive Actions (C/PAR) that result from internal ISO audits, process audits, and product evaluations. The QA manager, who is also the Raytheon Site ISO Coordinator, reports on ISO activities (ISO training, scheduled audits, C/PAR status) to ECS SDPS Program and Executive Management.

4.10.3 ISO Awareness Training

The Quality Assurance Organization conducts ISO awareness training on a periodic basis to provide an overview of the ITS quality system. The training also explains the purpose of internal audits, the ECS SDPS program benefits of adherence to the ISO standard, and how each employee has a role in the quality system.

4.11 Raytheon Six Sigma

The Quality Assurance Organization participates in the Raytheon Six Sigma program by providing Six Sigma training for QA Staff and by supporting their participation in Six Sigma projects. The QA organization is committed to maintaining at least one fully qualified staff member with Specialist level certification and ensuring that all staff members meet their

individual yearly Six Sigma performance goals. QA Staff members are encouraged to use Six Sigma techniques in solving problems within the QA organization and to suggest and/or lead Six Sigma projects to make ECS project improvements.

Appendix A: Quality Assurance Procedures

The following represents the Quality Assurance procedures mapped to the appropriate section of the ECS SDPS Quality Assurance Plan:

Quality Assurance Plan Section	Corresponding Procedure
Quality Assurance Training	3-0-8 ITS Training System
Quality Assurance Planning	19-0-4 Software Quality Assurance Program Planning
Quality Assurance Audits	19-0-19 Quality Assurance Audit Procedure
Quality Assurance Product Evaluations	19-0-22 Quality Assurance Product Evaluation Procedure
Quality Assurance Evaluation Criteria	19-0-20 Quality Assurance Evaluation Criteria Procedure
Quality Assurance Deficiency Reporting	19-0-14 Quality Assurance Deficiency Reporting
Quality Assurance Status and Metrics Reporting	19-0-23 Quality Assurance Status and Metrics Reporting
ISO 9001:2000	19-0-0 ISO Implementation Map 19-0-2 Quality System Management Review 19-0-16 Quality Records 19-0-17 Internal Quality System Audits

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