ELECTRONIC RECORDS ARCHIVES

QUALITY MANAGEMENT PLAN
(QMP v2.6)

(WBS # 1.1.7)

for the

**NATIONAL ARCHIVES AND
RECORDS ADMINISTRATION**

**ELECTRONIC RECORDS ARCHIVES
PROGRAM MANAGEMENT OFFICE
(NARA ERA PMO)**

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ERA QUALITY MANAGEMENT PLAN (QMP)

Signature Page

Program Director

I recommend approval of the Quality Management Plan (QMP).

_____ _____

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QUALITY MANAGEMENT PLAN (QMP)

1.0 Purpose

The purpose of this document is to provide details on a Quality Management (QM) strategy for information technology activities (software, hardware, and services) to be performed in support of the Electronic Records Archives (ERA) system. This document provides a basis for planning, performing, managing, monitoring, and measuring the ERA quality management activities.

The primary intent of the plan is to provide a basis for the Program Management Office (PMO) evaluation of quality. This plan affords the PMO a mechanism to preclude major deficiencies in quality, provides input for annual contractor past quality evaluations, and enables decision making whether to exercise further contract options.

This *Quality Management Plan (QMP)* defines the QM principles and the QM activities to be performed during the lifecycle of the ERA system. It supplies a systematic method for identifying, tracking, and resolving all quality issues. It also describes the responsibilities and authorities for accomplishing the planned quality management activities and identifies the required coordination of quality management activities with other program activities. Finally, it identifies the tools and the software items (configuration items will be established and the information required will be provided after down-select and when the ERA Configuration Control Board (CCB) ratifies the ERA Concept baseline) and human resources required for the execution of the plan. Each of the development contractors will develop a QMP after contract award, based on the contents of this QMP.

The QMP is a program level document and is applicable to ERA quality activities in the acquisition lifecycle, as documented in the *ERA Acquisition Strategy (AS)* and the systems development lifecycle as defined in the **ERA Life Cycle Processes** section of the *ERA Life Cycle (ELC)* document. The QM methodology is based on a tailored version of Institute of Electrical and Electronics Engineers (IEEE)-STD 730-2002 IEEE Standard for Software Quality Assurance Plans and though a point-to-point format compliance was not achieved, the document is in full compliance with the content requirements of the standard. Refer to **Appendix A, QMP v2.6 Roadmap to IEEE Std. 730-2002** for a mapping of those items that were tailored.

1.1 Introduction

The *QMP* documents how the ERA PMO will plan, implement, and assess the effectiveness of its quality planning, quality assurance, quality control, and quality improvement activities. The following activities make up the quality system that will be used by the Quality Management Specialist (QMS) to manage and support ERA's PMO quality actions:

- Quality Planning (QP): The process that identifies the relevant quality standards and determines how to satisfy them,
- Quality Assurance (QA): Evaluating overall project performance on a regular basis to provide confidence that the ERA project will satisfy the relevant quality standards established during QP,

- Quality Control (QC): Monitoring specific ERA products to ensure they comply with relevant quality standards, and
- Quality Improvement (QI): To use output indicators to help identify better standards in order to increase ERA's effectiveness and efficiency.

The plan outlines QM activities to be performed in support of the National Archives and Records Administration (NARA) ERA system acquisition. QM activities are an integral part of the processes used to develop and deliver work products and services to the ERA PMO.

1.2 ERA Program Overview

ERA will be a comprehensive, systematic, and dynamic means for preserving virtually any kind of electronic record, free from dependence on any specific hardware or software. The ERA, when operational, will make it easy for NARA customers to find records they want and easy for NARA to deliver those records in formats suited to customers' needs.

The success of the ERA PMO in building the ERA system will depend in large part on the maturity level of the program and program management with an emphasis on QM principles.

1.3 Scope

The scope of QM is to provide processes that are required to ensure the ERA PMO that the quality program implemented will satisfy the delivery of the ERA system and associated documentation. The overall management determines and implements the quality policy (guidance) as described in the *ERA Quality Management Guidance (QMG)* document, objectives, and responsibilities; implementation is conducted under the mantles of Quality Planning (QP), Quality Assurance (QA), and Quality Control (QC), with the ultimate goal of producing a quality product while facilitating/fostering Quality Improvement (QI). Avoiding mistakes and reworks will save valuable time, effort, and resources. QM provides the tools, techniques, and methodologies to support every step in the ERA lifecycle.

1.4 QM Principles

QM in the ERA program is based on principles established by the ERA PMO and NARA. In general, a QM principle can be described as a supporting rule or belief for leading and operating an organization.

The ERA PMO bases its activities on the following specific QA principles, and applies proven methodologies, tools, and techniques to carry out the quality program to attain quality and excellence:

- Total commitment from the Program Director (PD) and communication of that commitment;
- Empowerment of program team members to make improvements within their areas of expertise;

- A focus on the customer and the notion that achieving customer satisfaction is an ongoing process while still addressing the needs of all stakeholders;
- A commitment to continuous process and product improvement over the long term;
- Emphasis on monitoring, inspection, and prevention; and
- Independence in order to objectively present findings.

Note: The above principles are also essential for the Integrated Product and Process Development (IPPD).

1.5 Limitations and Constraints

A list of limitations and constraints as they may impact the administration of QM activities for the ERA program are discussed below.

- Multiple independent ERA development contractor teams may be selected for the development of individual components of the ERA system. ERA QM must ensure that adequate protection of contractor information and assets is provided during implementation of all QM activities throughout the entire lifecycle of the ERA system.
- ERA development contractor teams may be geographically distributed. ERA QM must ensure that the QM support environment and infrastructure will support QM activities for geographically distributed development.
- ERA will be developed in several increments with multiple system releases to provide increasing functionality to users within reasonable timeframes and to allow shorter periods for the evaluation of contractor progress and product suitability. ERA quality management must ensure that adequate QM activities are provided to support the incremental release of system components and functionality.

1.6 Definitions and Acronyms

The technical terms used in this plan are defined in IEEE Std. 610.12-1990, *IEEE Standard Glossary of Software Engineering Terminology*. **Table 1-1, Acronyms List,** contains a list of acronyms used herein.

ACRONYM	DEFINITION
AI	Action Item
AS	Acquisition Strategy
C&A	Certification and Accreditation
CAAD	Cost Analysis Assumption Document
CCB	Configuration Control Board
CD-ROM	Compact Disk – Read Only Memory
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CFSR	Contract Funds Status Report

ACRONYM	DEFINITION
CI	Configuration Item
CM	Configuration Management
CMM	Capability Maturity Model
CMMI	CMM - Integration
CMP	Configuration Management Plan
COBIT	Control Objectives for Information and related Technology
CONOPS	Concept of Operations
COOP	Continuity of Operations Plan
CPR	Cost Performance Report
COTS	Commercial Off-the-Shelf
CWBS	Contract Work Breakdown Structure
DAP	Document Development and Approval Process
DC	Development Contractor
ELC	ERA Life Cycle
ERA	Electronic Records Archives
EVMS	Earned Value Management System
FCA	Functional Configuration Audit
FP	File Plan
GUI	Graphic User Interface
IBR	Integrated Baseline Review
ICD	Interface Control Document
IEEE	Institute of Electrical and Electronics Engineers
IP	Integrated Plan
IPPD	Integrated Product and Process Development
IPT	Integrated Product Team
IRS	Interface Requirements Specification
IS	Integrated Schedule
ISO	International Organization for Standardization
MNS	Mission Needs Statement
MP	Metrics Plan
MSR	Monthly Status Report
N/A	Not Applicable
NARA	National Archives and Records Administration
O&S	Operations and Support
OMB	Office of Management and Budget
ORR	Operational Readiness Review
PCA	Physical Configuration Audit
PD	Program Director
PDR	Preliminary Design Review
PM	Program Manager
PMO	Program Management Office
PMP	Program Management Plan

ACRONYM	DEFINITION
PR	Peer Review
PRP	Peer Review Process
PSD	Program Support Division
PWS	Performance Work Statement
QA	Quality Assurance
QC	Quality Control
QI	Quality Improvement
QM	Quality Management
QMG	Quality Management Guidance
QMP	Quality Management Plan
QMS	Quality Management Specialist
QP	Quality Planning
QPP	Quality Management Processes and Procedures
RD	Requirements Document
RFP	Request for Proposal
RKM	Risk Management Plan
RO	Risk Officer
RR	Requirements Review
RSRR	Release System Requirements Review
SA&D	System Analysis and Design
SADD	System Architecture and Design Document
SDP	Software Development Plan
SDR	System Design Review
SED	System Engineering Division
SEMP	System Engineering Management Plan
SIP	System Integration Plan
SQA	Software Quality Assurance
SRR	System Requirement Review
STEP508	Simple Tool for Error Prioritization for Section 508
STP	System Test Plan
SyRS	System Requirement Specifications
TBD	To Be Determined
TEP	Technical Review Process
TO	Testing Officer
TPDMP	Training Program Development and Management Plan
TRA	Training Needs Assessment
TRR	Test Readiness Review
TSP	Testing Management Plan
UDR	User Documentation Reviews
WBS	Work Breakdown Structure
XO	Executive Officer

Table 1-1: Acronyms List

2.0 Reference Documents

The standards, guidelines, and documentation used to develop the *ERA QMP* are described in the sections that follow.

2.1 ERA PMO Documents

The following ERA PMO documentation was used to support the generation of this document.

- Acquisition Strategy (AS) Version 4.0
- Configuration Management Plan (CMP) Version 2.3
- Cost Analysis Assumption Document (CAAD) Version 2.0
- Document Development and Approval Process (DAP) Version 2.2
- ERA Life Cycle (ELC) Version 3.1
- File Plan (FP) Version 1.0
- Metrics Plan (MP) Version 3.0
- Mission Needs Statement (MNS) Version 1.2
- Peer Review Process (PRP) Version 1.1
- Program Management Plan (PMP) Version 2.3
- Quality Management Guidance (QMG) Version 1.1
- Quality Management Processes and Procedures (QPP) Version 1.2
- Requirements Document (RD) Version 3.0
- Risk Management Plan (RKM) Version 3.0
- Technical Review Process (TEP) Version1.0
- Testing Management Plan (TSP) Version 2.1
- Training Needs Assessment (TRA) Version 2.1

2.2 Standards and Guidelines

The standards and guidelines referenced in this document are listed below.

- Office of Management and Budget (OMB) Circular NO. A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities (Revised)
- IEEE Std. 730–2002, IEEE Standard for Software Quality Assurance Plans
- IEEE Std. 828-1998, IEEE Standard for Software Configuration Management Plans
- IEEE Std. 829–1998, IEEE Standard for Software Test Documentation
- IEEE Std 830-1998, Recommended Practice for Software Requirements Specifications
- IEEE Std 610.12-1990, IEEE Standard Glossary of Software Engineering Terminology

- IEEE Std. 1016-1998, IEEE Recommended Practices Software Design Descriptions
- IEEE Std. 1028-1997, IEEE Standard for Software Reviews
- IEEE Std. 1061-1998, IEEE Standard for a Software Quality Metrics Methodology
- IEEE Std. 1062-1998, IEEE Recommended Practice for Software Acquisition
- IEEE Std 1063-2001, IEEE Standard for Software User Documentation
- IEEE Std. 1233-1998, IEEE Guide for Developing System Requirements Specifications
- IEEE Std. 1540-2001, IEEE Standard for Software Life Cycle Processes – Risk Management
- IEEE/EIA 12207.2-1997, IEEE/EIA Guide, Industry Implementation of International Standard ISO/IEC 12207:1995, (ISO/IEC 12207) Standard for Information Technology – Software life cycle processes – Implementation Considerations
- IEEE/EIA J-STD-016 Standard for Information Technology, Software Life Cycle Processes, Software Development, Acquirer-Supplier Agreement
- International Organization for Standardization (ISO) 15939, Software Engineering – Software Measurement Process
- ISO 15489-1:2001 - Information and Documentation – Records Management
- ISO 15504-7:1998 - Information Technology – Software Process Assessment – Part 7: Guide for use in process improvement
- ISO 14721:2003 - Reference Model for an Open Archival Information System
- Governance, Control and Audit for Information and Related Technology, Control Objectives for Information and related Technology (COBIT)
- NIST Special Publication 800-18, Guide for Developing Security Plans for Information Technology Systems, December 1998
- NIST Special Publication 800-37, Guide for the Security Certification and Accreditation of Federal Information Systems, May 2004.
- The Access Board Section 508 Standards

3.0 Management

This section contains organizational information that is specific to ERA and will address the following:

- Organization,
- Tasks,
- Roles and responsibilities, and
- QA Estimated Resources.

3.1 Organization

The organizational elements of the ERA organization, as it relates to QM, consist of the following representatives.

- PD - responsible for ensuring the independence of the QM function,
- Executive Officer (XO) – responsible for supporting QM activities,
- QMS - responsible for implementing the *ERA QMP*,
- QM Team - responsible for supporting the QMS in implementing ERA policies and procedures,
- Risk Officer (RO) - responsible for mitigating program risks,
- Development Contractor (DC) - responsible for performing all quality activities as specified,
- Program Support Division (PSD) Director – responsible for coordinating and overseeing processes performed by division staff,
- CM Specialist - responsible for coordinating configuration audits with the QMS,
- System Engineering Division (SED) Director – responsible for ensuring that releases are delivered on time and within budget, and
- Testing Officer (TO) - responsible for managing test cycles and resolve test problems.

The ERA organizational structure is illustrated in **Figure 3-1, ERA PMO Organization Chart,** shown below.

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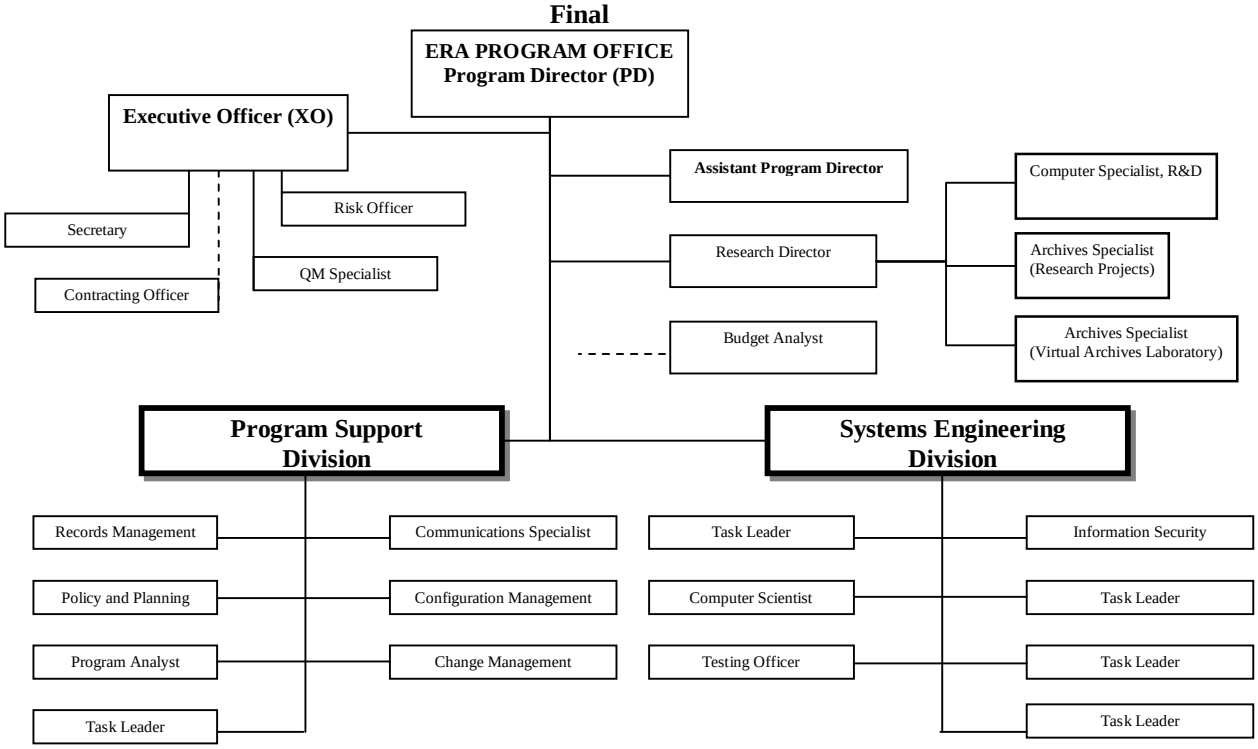

Figure 3-1: ERA PMO Organization Chart

The PD has overall responsibility for Quality Management for the ERA and delegates the authority to discharge this responsibility to the various members of the organization depicted in Figure 3-1, above. For additional roles and responsibilities please refer to **Table 3-2, PMO QM Organization Roles and Responsibilities**.

The QMS will execute the approved QMP following the processes and procedures identified in the QMP. The QMS is responsible to the PD through the XO and has that authority to ensure its organizational freedom and objectivity when evaluating and monitoring products and processes of both the ERA-PMO and the contracting organizations. As such the QMS will report its findings directly to the PD and initiate follow-up activities to ensure adequate and complete resolution of identified problems.

3.2 Tasks

QM tasks are designed to prevent and uncover defects in the product or the processes that are used to develop the product. All QM activities and specific tasks are integrated throughout the ERA lifecycle, as illustrated in **Figure 2-3, ERA Development Life Cycle Release Detail** in the *ERA ELC* document. Tasks that support this function include defining applicable standards, procedures, and processes to help ensure that the ERA system is well designed, technically sound, and thoroughly documented. The following sections identify those tasks for conducting and documenting QA reviews, assessments/audits, problem reporting, and process improvement.

- QA Reviews – See **Section 6.0, Minimum Review and Audits**
- Assessments/Audits – See **Section 6.3.6, Internal Assessments/Audits**

- Problem reporting – See **Section 8.0, Problem Reporting and Corrective Action**
- Process Improvement – See **Section 6.3.5 Process Improvement Reviews**

QM tasks also include following-up on required traceability analysis and evaluations, identifying and helping in mitigating program risk, and providing program management and ERA PMO members with visibility into ERA lifecycle activities. These tasks apply to each phase of the ERA lifecycle, and these tasks (activities) are triggered by events (e.g., delivery of the System Requirements Specification (SyRS) triggers QM review of the Requirements Document). This plan establishes program guidelines that produce complete, accurate, and easily understood products within the framework of the ERA lifecycle model.

Before the QMS can assign a particular task that product must meet minimum entry criteria as listed below:

- The product that is to be reviewed, assessed or audited is complete and conforms to consensus based standards for content and format;
- Prior milestones are satisfied as identified in the appropriate planning documents; and
- Required supporting documentation is available.

Table 3-1, Lifecycle Phases and QM Tasks, shows the ERA lifecycle phases, QM tasks, and the organizational elements related to the corresponding QM tasks. Refer to **Figure 5-1, ERA Lifecycle Processes** in the *ERA Program Management Plan (PMP)* for additional information on lifecycle phases, milestones, and activities. Note that the iterative nature of the ERA lifecycle will require selected QM tasks to be performed for each increment/release.

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Lifecycle Phase	PMO Tasks (identified in the ELC)	QM Tasks	Organizational Element									
			PD	XO	QM	QM Team	RO	DC	SED Dir	TO	PSD Dir	CM
Requirements & Design	Requirements Analysis	Review System requirements specification document	A		R	S	R	O	R	P		S
		Review Interface requirements specification	A		R	S		O	R		S	
	Develop System Design	Review System architectural and design document	A		R	S	R	O	R	P		S
		Review Interface Control Document	A		R	S		O	R	R		
	Plan Testing	Review Acceptance Plan (Draft) document			R	S		O	A	P	S	S
		Review System Test Plan (Draft) document			R	S		O	A	P	S	S
	Develop Design Documents	Review Preliminary design documents			R	S		O	A	R		S
		Review Critical design documents			R	S		O	A	R		S
	Quality Management	Conduct Assessment/Audits		S	O/P	S						
		Generate Assessment/Audit reports	A	S	O	S					R	
		Identify and mitigate program risks.		S	O	S	R					
Implementation & Test	Code Software and Test Components	Review component test results			R			O		P		
		Review test documentation			R			O		P		
		Review Code/Unit Test documents			R			O		P		
	Perform Integration Testing	Review Test Readiness Review documentation			R			O	R	P		S
		Witness Integration Testing			P	S		O		S		
		Review test case results			R	P		O		S		
		Review test documentation			R	P		O		S		
	Perform System Testing	Review Test Readiness Review documentation			R	P		O	R	S		S
		Witness System Testing			R	P		O		P		
		Review test case results			R	P		O		P		
	Perform Acceptance Testing	Review test documentation			R	S				O		S
		Review Test Readiness Review documentation			P			O	R	P		S
		Witness Integration Testing			R	P		O		P		
		Review test case results			R	P		O		P		

Lifecycle Phase	PMO Tasks (identified in the ELC)	QM Tasks	Organizational Element									
			PD	XO	QM	QM Team	RO	DC	SED Dir	TO	PSD Dir	CM
	Quality Management	Conduct Assessment/Audits		S	O/P	S						
		Generate Assessment/Audit reports	A	S	O	S					R	
		Identify and mitigate program risks.		S	O	S	R					
	Configuration Management	Conduct Physical Configuration Audit	A		R					S	S	O/P
		Conduct functional configuration audit	A		R					S	S	O/P
		Validate product acceptance	A		R				S	S		O/P
Installation & Checkout	Prepare Site	Review Final Site Layout Drawings	A		R				P		S	
	Perform System Installation	Review Installation package	A		R	P		S	R	P		
	Perform Operational Testing	Conduct Operational Readiness Review	A		R	S		S	R	O	P	
		Conduct Operational Testing	A		R			S	S	P		S
		Review Operational Testing results	A		P			S	S	S		S
		Conduct Assessment/Audits	A		O/P	S						S
Operations & Support	Process Anomaly Reports		A		R	P		S		S		S
	Process Change Requests		A		R	S	S	S	S	S		P
	Provide Support (Help Desk)				R			S	P			S
	Assess Security		A		R	S		S	S	P		S

Table 3-1: ERA Lifecycle Phases and QM Tasks

Key – A = Approve, O = Originate, P=Perform, R = Review, S = Support

3.3 Roles and Responsibilities

Roles and responsibilities of the PMO and the QM Team are found in the ERA PMP.

Table 3-2 PMO QM Organization Roles and Responsibilities, list the primary responsibilities of each role as it relates to QM.

Roles	Required Responsibilities
Program Director (PD)	• Approve the QM Plan. • Ensure the independence of the QM function. • Make staff and other resources available as needed to support QM.
Executive Officer (XO)	• Support QM activities by confirming QM responsibilities and authority. • Ensure that the QM staff has the appropriate QM skills and training. • Ensure compliance with QM program audits • Ensure that the QMP is updated or revised, as needed, to reflect the state of quality activities in the program and delegate the task of updating or revising the document to the QMS.
QM Specialist (QMS)	• Ensure that training is provided to program teams on QM Program, QM processes (peer reviews), and key process tools (metrics). • Implement, with teams, processes and procedures that fit program size, scope, and priorities and meet quality standards. • Provide new and transfer team members a "hands-on" introduction to program processes and organizational goals necessary to perform their role(s): - Ensure Quality Improvement Awareness; - Ensure walkthroughs are being held by developers/testers; - Perform Inspections (Audits); - Ensure Peer review process; and - Perform Defect Tracking. • Develop and maintain QM Plan for ERA • Identify and mitigate program risks. • Perform process and product audits/assessments and reviews to ensure compliance with standards and procedures.

Roles	Required Responsibilities
	• Report deviations from documented policies, processes, procedures, and standards to program management, and work with the program teams to develop an action plan to correct deviations.
QM Team	• Participate in audits. • Coordinate with customers, stakeholders, and program team members in understanding ERA policies and procedures. • Support the QMS in developing and implementing ERA policies and procedures. • Communicate with other NARA programs and Program Managers (PMs) and others who may propose improvements to QM practices. • Identify areas for process improvement.
Risk Officer	• Assist in mitigating program risks identified by the QMS and/or QM Team. • Monitor risk management performance of ERA staff and report status to the PD.
Development Contractor **Note**: The development contractor(s) QA activities and tasks will be documented in their individual WBS(s).	• Participate in reviews and audits. • Perform all quality activities as specified by the standards, policies, and procedures applicable to the program. • Implement development contractor QMP.
System Engineering Division Director	• Ensure that releases are delivered on time and within budget, and that they comply with quality standards. • Ensure that support team leads and other persons in management roles support the objectives of this *QMP*.
Testing Officer	• Ensure testing is conducted per the test plan and other test documentation. • Ensure entry criteria are achieved prior to Acceptance Test start. (see Ensure exit criteria… below) • Perform Acceptance Testing of the delivered product. • Ensure exit criteria are achieved prior to Acceptance Test signoff. Refer to the Acceptance Test Entrance and Exit Criteria section of the *ERA TSP*.

Roles	Required Responsibilities
Program Support Division Director	• Coordinate and oversee the Verification and Validation Plans, CM, Communications, and Organizational Change Management processes performed by PMO staff. • Work closely with the System Engineering Division to ensure the successful implementation of ERA.
CM Specialist	• Coordinate configuration audit responsibilities with the QMS. • Store records (reviews) and artifacts (audits) generated by QM activities. • Conduct functional and physical audits of configuration items.

Table 3-2: PMO QM Organization Roles and Responsibilities Table

3.4 Quality Assurance Estimated Resources

Reference the *ERA Work Breakdown Structure (WBS) and Schedule* for information on the allocation of resources for QA and QC tasks. The OMB 300 submission package describes the anticipated cost of the ERA QM effort.

4.0 Documentation

The following sections describe the purpose of the documentation and the minimum documentation requirements for this plan. All documents will be checked for accuracy and adequacy through reviews (e.g., peer reviews) and contractor work product audits. Reference **Section 6.0, Reviews and Audits,** for additional information.

All documentation governing the planning, development, verification and validation, implementation, use, and maintenance of the ERA system are subject to QM review as defined in this QM plan. This plan defines the requirements for document production quality criteria used to determine the quality of each document in terms of achieving its purpose, covering the intended subject and scope, and providing appropriate level of detail.

4.1 Purpose

Documentation is necessary to ensure ERA activities are planned, monitored, and controlled to verify the adequacy of processes used to satisfy software requirements. The following contractor work products are required to ensure the quality of the ERA program. These work products are described in more detail in the sections that follow.

- System Requirements Specification (SyRS),
- System Architecture and Design Document (SADD)

- Requirements Specifications
- System (Master) Test Plan
- Award Fee Plan
- Training Program Development and Management Plan (TPDMP)
- Facilities Plan
- Configuration Management Plan (CMP)
- Operations and Support Plan
- Risk Management Plan (RKM)
- Security Plan
- Certification and Accreditation (C&A) Plan
- Continuity of Operations Plan (COOP)
- Integrated Plan (IP)
- Quality Management Plan (QMP)

4.2 Minimum Documentation Requirements

Table 4-1, Minimum Documentation, Lifecycle Phase, Desired Characteristics, and Consensus Standard lists the minimum documentation (work products) identified in this section, as well as the lifecycle phase, desired characteristics and the consensus standard for each document.

Document	Lifecycle Phase	Desired Characteristics	Consensus Standard
System Requirement Specification (SyRS)	Development-Requirements	• Correctness • Consistency • Completeness • Accuracy • Readability • Testability • Conforms to Standard	IEEE Std. 1233-1998, Standard for System Requirements Specification
System Architecture and Design Document (SADD)	Development-Requirements	• Correctness • Consistency • Completeness • Accuracy • Readability • Testability • Conforms to	IEEE Std. 12207.2-1997, Standard for Information Technology

Document	Lifecycle Phase	Desired Characteristics	Consensus Standard
		Standard	
Requirements Specifications	Development-Requirements	• Correctness • Consistency • Completeness • Accuracy • Readability • Testability • Conforms to Standard	IEEE Std 1233-1998, Guide for Developing System Requirements Specifications; IEEE Std 830-1998, Recommended Practice for Software Requirements Specifications
System (Master) Test Plan	Requirements & Design Phase	• Traceability • Adequacy • Completeness • Consistency • Conforms to Standard	IEEE Std. 829-1998 IEEE Standard for Software Test Documentation
Award Fee Plan	Requirements & Design Phase	• Adequacy • Completeness • Consistency • Conforms to Standard	Award Fee Plan Template, Section J-8 of the RFP
Training Program Development and Management Plan (TPDMP) **(Harris Only for SA&D phase)**	Requirements & Design Phase	• Adequacy • Completeness • Conforms to Standard	EIA/IEEE J-STD-016 Standard for Information Technology, Software Life Cycle Processes, Software Development, Acquirer-Supplier Agreement DI-ILSS-81070 Training Program Development and Management Plan
Facilities Plan	Requirements & Design Phase	• Adequacy • Completeness • Conforms to Standard	DI-MGMT-80033/T
Configuration Management Plan (CMP)	Requirements & Design Phase	• Adequacy • Completeness • Consistency • Conforms with Standard	IEEE Std. 828-1998 Standard for Software Configuration Management
Operation and Support Plan	Development	• Adequacy • Completeness • Consistency	To Be Determined (TBD)

Document	Lifecycle Phase	Desired Characteristics	Consensus Standard
		• Conforms to Standard	
Risk Management Plan (RKM)	Requirements & Design Phase	• Adequacy • Completeness • Consistency • Conforms with Standard	IEEE Std. 1540-2001, Standard for Software Life Cycle Processes – Risk Management
Security Plan	Development	• Adequacy • Completeness • Consistency • Complies with Standard	NIST Special Publication 800-18, *Guide for Developing Security Plans for Information Technology Systems*, December 1998.
Certification and Accreditation (C&A) Plan	Development	• Adequacy • Completeness • Consistency • Complies with Standard	NIST Special Publication 800-37, *Guide for the Security Certification and Accreditation of Federal Information Systems*, May 2004.
Continuity of Operations Plan (COOP)	Development	• Adequacy • Completeness • Consistency	TBD
Integrated Plan (IP)	Development-Requirements	• Adequacy • Completeness • Consistency • Conforms with Standard	TBD
Quality Management Plan (QMP)	Development	• Adequacy • Completeness • Consistency • Conforms with Standard	IEEE Std. 730-2002, Standard for Software Quality Assurance Plans

Table 4-1: Minimum Documentation, Lifecycle Phase, Desired Characteristics, and Consensus Standard

For a more detailed list of the development contractors deliverables (work products) as well as the evaluation method to be used and if the work product will receive a QM and/or Independent Verification and Validation review for the System Analysis and Design (SA&D) phase, refer to **Appendix B, Harris Work Products/SA&D Phase** and/or **Appendix C, Lockheed Martin Work Products/SA&D Phase**.

4.2.1 System Requirements Specification (SyRS)

The SyRS document is a development contractor(s) supplied document that contains descriptions of hardware, software, and operational elements and will be reviewed by the ERA PMO according to **Section 6.2.1 System Requirements Review (SRR)**. The SRR resolves, finalizes, and formalizes the requirements of systems and subsystems.

4.2.2 System Architecture and Design Document (SADD)

The SADD is a development contractor(s) supplied document that identifies the major system components and assigns requirements to them. It contains the system level design and the requirements allocation schema. Additionally, the SADD contains the rationale for the allocation of requirements to the products and subsystems described. It will also assist system engineers to meet the specifications described in the SyRS. The SADD will be reviewed by the ERA PMO according to **Section 6.2.2 System Design Review (SDR)**. The SDR is conducted to evaluate the optimization, traceability, correlation, completeness, and risks associated with the allocated program/design requirements, including the corresponding test requirements in fulfilling the performance requirements specified in the system/subsystem design description (i.e., functional configuration identification).

4.2.3 Requirements Specifications

Requirements Specifications are produced for each level of the system breakdown structure with the lowest level being reviewed at Preliminary Design Review.

4.2.4 System Test Plan

The System Test Plan addresses and provides guidance for the testing management activities to be performed in support of system acquisition and to identify the items being tested, the features to be tested, the tests to be performed, and the personnel responsible for each test.

4.2.5 Award Fee Plan

The Award Fee Plan sets forth procedures and guidelines that will be used in evaluating the technical performance of the development contractor(s) during development and operation.

4.2.6 Training Program Development and Management Plan (TPDMP)

The Training Program Development and Management Plan (TPDMP) detail's the processes, schedules, and milestones for the contracts deliverables.

4.2.7 Facilities Plan

The Facilities Plan is a process that examines existing and potential programs and assists facilities leaders in developing a framework for change in response to site and facility challenges and opportunities. As an operational tool, the Facilities Plan must be flexible and look beyond the entire delivery system.

4.2.8 Configuration Management Plan (CMP)

The CMP defines the schedules, functions, responsibilities, and procedures for controlling the system configuration during the development, testing, and deployment. The Contractor(s) CMP will describe the approach and processes for performing CM for all work products produced during the entire systems engineering lifecycle.

4.2.9 Operations and Support Plan

The contractor(s) Operations and Support (O&S) Plan describes the approach to performing O&S throughout the entire systems engineering lifecycle. It will include computer operations, hardware and software maintenance (including Commercial Off-the-Shelf (COTS) software), system availability, Help Desk Support, facility build-out and maintenance, establishing and maintaining system instances, and any relative documentation, reports and metrics.

4.2.10 Risk Management Plan (RKM)

The Contractor(s) Risk Management Plan describes its risk organization and approach to risk management including risk identification, risk characterization, risk mitigations, risk tracking, risk control, and risk officer responsibilities. It will also include the processes, measures, and tools used for risk management.

4.2.11 Security Plan

This document is listed but not described in the Request for Proposal (RFP). The security plan provides an overview of the security requirements of the system and describes the controls in place or planned for meeting those requirements. The system security plan also delineates responsibilities and expected behavior of all individuals who access the system.

4.2.12 Certification and Accreditation (C&A) Plan

This document is listed but not described in the RFP. The Certification and Accreditation (C&A) Plan describes the process of assessing the management, operational, and technical security controls in an information system in support of security accreditation to determine the extent to which the controls are implemented correctly, operating as intended, and producing the desired outcome with respect to meeting the security requirements of the ERA system. The results of the security certification are used to reassess the risks and update the system security plan, thus providing the factual basis to render a security accreditation decision.

4.2.13 Continuity of Operations Plan (COOP)

The Continuity of Operations Plan (COOP) identifies potential impacts that threaten ERA and provides a framework for building resilience and effective responses that safeguard the interest of key ERA system stakeholders.

4.2.14 Integrated Plan (IP)

The Integrated Plan (IP) captures the core activities and related processes necessary for the Contractor to achieve ERA program requirements. It describes how the Contractor will complete the work defined in the Contractor(s) WBS. The plan will encompass all activities for all increments of the ERA system.

4.2.15 Quality Management Plan (QMP)

The Quality Management Plan (QMP) defines the QA principles and the QA activities to be performed during the lifecycle of the ERA system. It supplies a systematic method for identifying, tracking, and resolving all quality issues. It also describes the responsibilities and authorities for accomplishing the planned quality assurance activities and identifies the required coordination of quality assurance activities with other program activities.

5.0 Standards, Practices, Conventions, and Metrics

This section identifies the standards, practices, conventions, and metrics for the ERA program.

5.1 Purpose

The ERA PMO is responsible for identifying standards, practices, conventions, and metrics for lifecycle management of records that will be implemented in the ERA system. Product and process measurements are essential to QM; and if not generated, there is no way to tell if quality goals are being maintained. Metrics collected from quality activities are intended to identify weak areas in the process, measure system quality and product characteristics, and monitor the status of the work products. Metrics and associated procedures are documented in the **Metrics Collection and Use** section of the *ERA Metrics Plan (MP)*. This section of the *ERA MP* provides details regarding metrics definition, collection, and reporting.

Table 5-1, Standards, Practices, Conventions, and Metrics, lists the minimum standards, practices, conventions, statistical techniques to be used as well as the quality requirements and metrics used to ensure system acquisition activities, including their compliance standard.

Standards	Applicable Standard	Compliance
• Records Management Standards	ISO 15489-1:2001 Information and Documentation – Records Management ERA File Plan NARA Records Schedule	TBD
• Information Transfer Standards	ISO 14721:2003 Reference Model for an Open Archival Information System	TBD
• Project Standards	Consensus-based Standards as defined by OMB Circular A-119	TBD

	(Revised)	
• GUI Development Standards	GUI Standards will be identified by the ERA PMO prior to exercise of Option One (1)	TBD
• Test Documentation Standards	IEEE Std. 829-1998 Standard for Software Test Documentation (includes component, integration, system and acceptance test documentation)	TBD
• Measurement and Analysis Standards	ISO/IEC 15939 Software Engineering – Software Measurement Process	TBD
• Product Control Standards	Control Objectives for Information and related Technology (COBIT)	TBD
Practices	**Applicable Standard**	**Compliance**
• Capability Maturity Model (CMM) and Capability Maturity Model - Integration (CMMI)	Provides guidance for improving the organization's processes and ability to manage the development and maintenance of products and services.	TBD
Conventions	**Applicable Standard**	**Compliance**
• Requirement numbering Conventions	Reference the *ERA Requirements Document (RD)*	TBD
• Naming Conventions	Reference the **Naming Configuration Items** section in the *ERA Configuration Management Plan (CMP)*	TBD
• Documentation Conventions	Reference the **Naming Document Configuration Items (CIs)** section of the *ERA Configuration Management Plan (CMP)*	TBD
• Testing Conventions	*Reference the ERA Testing Management Plan (TSP)*	TBD
• Action Item Form Naming Conventions	Reference the ERA Rational ClearQuest tool for information	TBD
• Data Element Conventions		TBD
• Configuration Item Naming Conventions	Reference the **Naming Configuration Items** section in	TBD

	the *ERA Configuration Management Plan (CMP)*	
Quality Requirements	**Applicable Standard**	**Compliance**
• Quality Inspections	IEEE 1028-1997	Formal inspection of the RD, SyRS, and Interface Requirements Document for six (6) characteristics; correct, feasible, necessary, prioritized, unambiguous, and verifiable.
Reviews	**Applicable Standard**	**Compliance**
• Joint Reviews • Technical Reviews • Project Management Reviews • Test Readiness Reviews • Preliminary Design Reviews • Critical Design Reviews • Operational Readiness Reviews	IEEE Std 1028-1997	Formal reviews will not be held until entry criteria have been met. Refer to **Section 3.2 Tasks** for information on minimum entry criteria for each product. Exit criteria must be met prior to continuing to the next phase of the lifecycle. Refer to the *ERA TEP* for information on exit criteria for each review.
Audits	**Applicable Standard**	**Compliance**
• Quality Audits • Functional Configuration Audit • Physical Configuration Audit	*ERA Quality Management Processes and Procedures (QPP)* IEEE Std 1028-1997	Formal audits will not be held until entry criteria have been met. Refer to **Section 3.2 Tasks** for information on minimum entry criteria for each product. Exit criteria must be met prior to continuing to the next phase of the lifecycle.

Table 5-1: Standards, Practices, Conventions, and Metrics

5.2 Content

Table 5-2, Basic Technical, Design, and Programming Activity Standards, lists the basic technical, design, and programming activities involved, such as documentation, variable and module naming, programming, inspection, and testing and includes their compliance standard.

Standards	Compliance
• Program Documentation Standard	Refer to **Table 4-1** for a list of the minimum list of program documentation standards. Standards will be agreed to prior to contract signing and incorporated into the contract. Compliance with agreed upon standards will be made a mandatory term of the contract. The contract will state that the Contractor is responsible for adhering to all applicable standards.
• Design Standards	IEEE Std. 1016-1998 Recommended Practices Software Design Descriptions. Standards will be agreed to prior to contract signing and incorporated into the contract. Compliance with agreed upon standards will be made a mandatory term of the contract. The contract will state that the Contractor is responsible for adhering to all applicable standards.
• Coding Standards	Coding (including commentary) standards will be agreed to prior to the first Increment development option. Compliance with agreed upon standards will be made a mandatory term of the contract. The contract will state that the Contractor is responsible for adhering to all applicable standards.
• Test Standards and Practices	Refer to **Table 5-1** for a list of the minimum list of test standards and practices. Standards will be agreed to prior to contract signing and incorporated into the contract. Compliance with agreed upon standards will be made a mandatory term of the contract. The contract will state that the Contractor is responsible for adhering to all applicable standards.
• Quality assurance product and process metrics	Product and process metrics and their standards will be agreed to prior to contract signing and incorporated into the contract. Compliance with agreed upon standards will be made a mandatory term of the contract. The contract will state that the Contractor is responsible for adhering to all applicable standards.

Table 5-2: Basic Technical, Design, and Programming Activity Standards

6.0 Reviews and Audits

QM reviews are used to determine if the program is using the processes, procedures, standards, and plans to help prevent or remove defects from work products and processes. Audits are used to identify deviations in process performance, identify noncompliance items, validate process improvement, and to provide reports to management. For more information on the reporting process, refer to **Section 8.0, Problem Reporting and Corrective Action**.

6.1 Purpose

The iterative lifecycle of the ERA will require QM to perform the identified reviews and audits multiple times during development, test, installation, operations and maintenance. For example, Requirements Reviews (RRs) and design reviews will take place for the ERA system, and again for each increment and each release. The QM Team may be witnessing Acceptance Testing for Increment One/Release One while concurrently engaged in System Design Review for Increment One/Release Three.

The QM Team will be responsible for conducting a process evaluation to ensure that review and audit processes are being followed, and will also perform a product evaluation to ensure the document follows required standards and for technical adequacy. The reviews and audits identified below will be conducted according to the *ERA WBS and Schedule*.

- System Requirements Review
- System Design Review
- Requirements Specifications Reviews
- Preliminary Design Review
- Critical Design Review
- Verification and Validation Plan Review
- Functional Configuration Audit
- Physical Configuration Audit
- In-process Audits (quality assessments)
- Managerial Reviews
- Configuration Management Plan Review
- Post-Implementation Review
- Other Reviews and Audits:
  - Program Management Plan Reviews
  - Peer Reviews
  - Informal Walkthrough
  - User Documentation Review
  - Process Improvement Reviews
  - Internal Assessment/Audits
  - Test Readiness Review
  - Operational Readiness Review
  - Section 508 Compliance Review

The work products generated during the ERA lifecycle, as shown in **Table 3-1, Lifecycle Phases and QM Tasks**, are reviewed and/or audited on a planned basis to determine the extent of progress, and to evaluate the adequacy of the work and its conformance to requirements and standards. Reviews and audits serve the purpose of providing an objective assessment and are to be used by management as a QM tool for identifying areas for improvement and technical adequacy. The QM team participates in technical and managerial reviews, and conducts process audits with respect to plans and schedules. Corrective action from non-compliance (requirements) or non-conformance (contractual) are documented and addressed in **Section 8.0, Problem Reporting and Corrective Action**.

6.2 Minimum Reviews and Audits

This section identifies the minimum set of reviews and audits that must be conducted. The iterative nature of the ERA lifecycle will require reviews and audits for the Increment and for each of the Releases since each will go through a complete lifecycle. **Table 6-1, Minimum Reviews/Audits and Lifecycle Phase**, lists the minimum reviews and audits in this section, and the lifecycle phase in which they are conducted. An asterisk (*) denotes those technical reviews that are part of an iterative process in the development lifecycle, as shown in **Figure 2-3, ERA Development Life Cycle Release Detail** in the *ERA ELC*. The review will focus on such things as the adequacy of system requirements, the completeness of the system requirements in terms of identification, whether the design of the system and its comprising hardware and software satisfies all aspects of the requirements, and the assurance of product completeness at each release and increment.

Minimum Reviews/Audits	Lifecycle Phase
System Requirements Review (SRR) *	Development-Requirements
System Design Review (SDR) *	Development-Design
Preliminary Design Review (PDR) *	Development-Design
Critical Design Review (CDR) *	Development-Design
Verification and Validation Plan Reviews	Acquisition
Functional Configuration Audit (FCA)*	Test
Physical Configuration Audit (PCA)*	Installation
In-Process Audits	Throughout the lifecycle
Managerial Reviews	Throughout the lifecycle
Configuration Management Plan Review	Acquisition
Program Management Plan Review	Acquisition
User Documentation Reviews (UDR)	Development-
Process Improvement Reviews	Throughout the lifecycle
Internal Assessment/Audits	Throughout the lifecycle
Test Readiness Review (TRR) *	Development-Test
Section 508 Compliance Review	Development-Test

Table 6-1: Minimum Reviews/Audits and Lifecycle Phase

6.2.1 System Requirements Review (SRR)

A System Requirements Review (SRR) resolves, finalizes, and formalizes the requirements of systems and subsystems. In the technical review process, the SRR follows the RR. The Development Contractor is responsible for conducting the SRR.

The purpose of the SRR is to determine if the system definition is sufficiently mature to progress to subsystem definition.

The SRR is conducted when the system functional requirements have been decomposed and allocated to the system level design. The SRR will verify the system-level requirements as presented in the SyRS. The technical review process, which includes the inputs, procedures, exit criteria, and outputs are described in more detail in the *ERA Technical Review Process (TEP).*

QMs role in this review is to assess the degree of completion of the technical efforts related to this review, see **Appendix D, System Requirements Review Checklist**, for the list of questions that will be used for this review.

6.2.2 System Design Review (SDR)

The System Design Review (SDR) is conducted to evaluate the optimization, traceability, correlation, completeness, and risks associated with the allocated program/design requirements, including the corresponding test requirements in fulfilling the performance requirements specified in the system/subsystem design description (i.e., functional configuration identification). In the technical review process, the SDR follows the SRR (see **Section 6.2.1**). The Development Contractor is responsible for conducting the SDR.

The purpose of the SDR is to verify the system design and allocation information presented in the SADD. It will also ensure that the ERA PMO and the Development Contractor concur that the proposed system design meets baseline functionality and performance requirements.

The SDR is conducted when the system definition effort has proceeded to the point where system characteristics are defined and the configuration items are identified. The technical review process, which includes the inputs, procedures, exit criteria, and outputs are described in more detail in the *ERA TEP*.

QMs role in this review is to assess the degree of completion of the technical efforts related to this review, see **Appendix E, System Design Review Checklist**, for the list of questions that will be used for this review.

6.2.3 Requirements Specifications Reviews

For the ERA program, there will be a product definition stage to open each increment and a subsystem definition stage to open each release. Each stage will, necessarily, require appropriate reviews.

6.2.4 Preliminary Design Review (PDR)

A Preliminary Design Review (PDR) is a technical review or a series of reviews of the basic design approach for each Configuration Item (CI), or aggregate of CIs, or for a functionally related group of CIs and will be held prior to the start of detailed design the lowest level of requirements specifications. The PDR ensures that a sufficient level of detail for each release has been provided to allow detailed design to begin and that the design meets all the functional requirements allocated to that release. In the technical review process, the PDR follows the Release System Requirements Review (RSRR) (see **Technical Review** section of the *ERA TEP*). The Development Contractor is responsible for conducting the PDR.
The purpose of each PDR is to ensure that:

- The subsystem definition is sufficiently mature to meet ERA Program Master Schedule criteria
- Component allocations and component specifications are reasonable and provide a sound subsystem concept
- Subsystem risks have been assessed and mitigated to an appropriate level to continue development
- Trade-study data are adequate to substantiate that subsystem requirements are achievable
- Decisions made in arriving at the subsystem configuration definition are well supported by analysis and technical data
- The "design-to" baseline is documented in the appropriate subsystem and lower-level requirements specifications and in a subsystem design description

QMs role in this review is to assess the degree of completion of the technical efforts related to this review, see **Appendix F, High-Level Design Review Checklist**, for the list of questions that will be used for this review.

6.2.5 Critical Design Review (CDR)

A Critical Design Review (CDR) is a technical review or a series of reviews of the basic design approach for each CI or aggregate of CIs or for a functionally related group of CIs, and will be held prior to the start of detailed design. It is at the CDR that the design description for each of the lowest level requirements is reviewed. The CDR ensures that a sufficient level of detail for each release has been provided to allow detailed design to begin and that the design meets all the functional requirements allocated to that release. In the technical review process, the CDR follows the PDR (see **Section 6.2.4**). The Development Contractor is responsible for conducting the CDR.

The purpose of the CDR is to ensure that:

- Each detailed component definition is sufficiently mature to meet the measure of effectiveness/measure of performance criteria
- Component specifications are reasonable and provide a sound component concept
- Component and related lifecycle process risks have been assessed and mitigated to an appropriate level

- Trade-study date are adequate to substantiate that detailed component requirements are achievable
- Decisions made in arriving at the detailed component definition configuration are well supported by analysis and technical data
- The "build-to" baseline is documented in the appropriate subsystem and lower-level design descriptions.

QMs role in this review is to assess the degree of completion of the technical efforts related to this review, see **Appendix G, Detailed Design Review Checklist**, for the list of questions that will be used for this review.

6.2.6 Verification and Validation Plans Review

The reviews associated with these plans consist of the various readiness reviews that are conducted before the start of formal verification and validation activities. These plans will be reviewed against the appropriate standard as well as for accuracy, completeness and consistency in describing the ERA system activities.

6.2.7 Functional Configuration Audit (FCA)

The FCA will generally be performed towards the end of concept development and prior to system production for each increment. The purpose of the audit is to verify that each configuration item as delivered for each increment satisfies the Product Requirements Specification. The audit is made on the test plans, descriptions, test reports, and procedures and is compared against the official test data. The test results are checked for their completeness and accuracy. The CM Team is responsible for conducting the FCA. Deficiencies will be noted in the CM teams audit report. For information on the FCA Report, refer to the **FCA Audit Reports** section in the ERA CMP.

6.2.8 Physical Configuration Audit (PCA)

The PCA will be performed towards the end of concept development and prior to any system operation for each release. The purpose of this audit is to verify internal consistency of the product and the documentation, and their readiness for release. The CM team reviews each item to ensure that it is part of each increment and that the current version is included in the system release. The CM Team is responsible for conducting the PCA. Deficiencies will be noted in the CM teams audit report. For information on the PCA Report, refer to the **PCA Audit Reports** section in the ERA CMP.

6.2.9 In-Process Audits

In-process audits (quality assessments) are conducted on a sample of the designs that are held to verify the consistency of the design, including the following:

- Product configuration and content versus design documentation,
- Interface specifications (hardware and software) for each level of the System Breakdown Structure,

- Design implementation versus functional requirements, and
- Functional requirements versus test descriptions.

More complete details for the In-Process Audits will be developed by ERA PMO during the initial design phase of ERA.

6.2.10 Managerial Review

Managerial Reviews are periodic assessments of the execution of the activities and items as specified by the QM Plan. All QM activities (see **Table 6-2, Managerial Review Activities and Responsible Organization**) are evaluated and findings are documented, including any exceptions to the process stated in the QM plan, which may result in recommended changes or improvements to the plan. Managerial reviews assess the adequacy of the ERA QM program and are accomplished through the following.

Activity	How activity is performed?	Responsible Organization
Periodic review of quality performance reports.	The Executive Officer (XO) will conduct periodic reviews on QM activities to verify the adequacy of the work completed according to the planned minimum required reviews and audits (see **Section 6.2** for that list)	Executive Officer (XO)
Major program review meetings.	The XO and PD will review QM activities at the end of each major milestone to verify the adequacy of work completed according to the planned (minimum required) reviews and audits (see **Section 6.2** for that list)	PD and XO
Scheduled program reviews/bi-weekly meetings	The XO and PD will review QM activities at the bi-weekly managers meeting to verify the adequacy of work completed according to the planned (minimum required) reviews and audits (see **Section 6.2** for that list)	PD and XO

Table 6-2: Managerial Review Activities and Responsible Organization

6.2.11 Configuration Management Plan (CMP) Review

The CMP review and internal assessment/audit, as described in **Section 6.3.6**, is held to evaluate the adequacy and completeness of the Configuration Management (CM) methods, specifications, and standards defined in the *ERA CMP*. The QM Team and PD will use collected metrics and performance measurement data to evaluate whether additional activities must be added to the *ERA CMP*. See **Table 3-1, ERA PMO Metric Data Items**, located in the *ERA MP*, under column headings “Change Request Inventory” and “CM Rate of Change” for a list of data items that will be tracked by the QM Team. For additional metrics data being collected related to CM

activities and reported in the QM Status Report, reference **Section 8.0, Problem Reporting and Corrective Action**.

If the program team is not following the procedures and policies outlined in the *ERA CMP*, the QM Team will identify corrective actions. The QM Team and the CM Specialist will agree on the schedule for implementing the corrective actions.

6.2.12 Post-Implementation Review

The Post-Implementation Review is held at Initial Operational Capability and Full Operational Capability, and the conclusion of the program, to assess the development activities and to provide recommendations for appropriate actions. It compares all planning information with metrics collected on work completed, effort expended, and funds expended and uses the resulting analysis to determine improvements needed in areas such as resource utilization and quality systems. The ERA PMO Executive Officer will be responsible for ensuring that the appropriate resources are available to conduct this review. A Post-Implementation Review Report will be generated after the review.

6.3 Other Reviews and Audits

Other possible QM reviews may be included but are not limited to those described in the following sections. In the event deficiencies are identified during these reviews, refer to **Section 8.0, Problem Reporting and Corrective Action (Section 8.2 Deficiency Reporting)** for additional information on the reporting process. **Table 6-3, Other Review, Criteria for Adequacy, and Compliance Standard**, lists the other reviews to be used, including their criteria for adequacy, and compliance standard. These reviews are discussed in the following sections.

Other Reviews	Criteria for Adequacy	Compliance Standards
Program Management Plan Review	• Conform to Standard • Complete • Consistent • Adequate	IEEE Std. 1028-1997 Standard for Software Reviews
Peer Reviews (PR)	• Satisfies specifications • Satisfies quality attributes • Conforms to Standards	IEEE Std. 1028-1997 Standard for Software Reviews
Informal Walkthrough	• Satisfies specifications • Satisfies quality attributes • Conforms to Standards	IEEE Std. 1028-1997 Standard for Software Reviews (Walkthrough)

Other Reviews	Criteria for Adequacy	Compliance Standards
User Documentation Reviews (UDR)	• Conform to Standard • Complete • Consistent • Adequate • Correct • Useable	IEEE Std 1063-2001 Standard for Software User Documentation
Process Improvement Reviews	TBD	ISO/IEC 15504-7:1998 Information Technology – Software Process Assessment – Part 7: Guide for use in process improvement
Internal Assessment/Audits	TBD	IEEE Std. 1028-1997 Standard for Software Reviews
Post-Increment Review	• Processes and products conform to Standards • Processes conform to Plans	IEEE Std. 1028-1997 Standard for Software Reviews (Management Reviews)
Test Readiness Review (TRR)	• Documents and product conform to Standards • Test plans adequately address the specifications • All participants and the product are ready to proceed	IEEE Std. 1028-1997 Standard for Software Reviews (Management Reviews/Technical Reviews)
Operational Readiness Review (ORR)	• Documents and products conform to Standards • Documents and product satisfy quality attributes • Product satisfies specifications	IEEE Std. 1028-1997 Standard for Software Reviews
Section 508 Compliance Review	• Processes and products conform to Standards • Product satisfies specifications	The Access Board Section 508 Standards

Table 6-3: Other Reviews, Criteria for Adequacy, and Compliance Standard

6.3.1 Program Management Plan (PMP) Reviews

The *ERA PMP* reviews support execution of program management best practices, continuous process improvement, and implementation of quality principles. The QM Team will compare the *ERA PMP* with the corresponding practices to ensure that the program team is adhering to the documented procedures and policies, and to examine the necessity for plan modifications. The QM Team will use collected metrics and performance measurement data to evaluate whether additional activities must be added to the PMP.
In the event of discrepancies, the QM Team will identify corrective actions. The QM Team and the PMO will agree on the schedule for implementing the corrective actions.

6.3.2 Peer Reviews

QM methodologies are integrated sets of tools and techniques. The peer review process is the initial methodology choice for QM when assessing ERA PMO generated documentation. The tools include, but are not limited to, process review checklists (See **Appendix H, Peer Review Process Checklist**), standards, forms and documentation (See **Appendix B, Document Deliverables Quality Control Edit Checklist** in the *ERA Document Development and Approval Process (DAP)*, which is a tool to ensure consistency among ERA PMO deliverables). The Peer Review (PR) is a general method for reviewing development work products in order to eliminate defects as early in the development lifecycle as possible.

The PR is an iterative process, supporting continuous improvement in achieving the plan mission as stated in the *ERA Mission Needs Statement (MNS)*. Each PR is a planned formal meeting conducted by staff with the sole purpose of uncovering quality problems. The type of product being reviewed dictates who will attend; the review chair (facilitator) exercises discretion concerning whom to invite. A complete PR process description can be found in the *ERA Peer Review Process (PRP)* document.

6.3.3 Informal Walkthrough

Informal walkthrough ensures that developers/testers are looking over each others work in a less threatening environment than a peer review or other technical reviews. The purpose of a walkthrough is to improve the quality of a work product by discovering potential problems. A walkthrough, when done properly, is seen as a positive contribution to the author of the work product; it is not seen as criticism or a negative activity or threat. Refer to the **Walkthrough Procedures** section of the *ERA QPP* for additional information on the process.

6.3.4 User Documentation Reviews (UDR)

The User Documentation Review (UDR) is to ensure that the structure and information content provides minimum requirements, technical substance, and addresses editorial and stylistic considerations.

6.3.5 Process Improvement Reviews

The Process Improvement Reviews lend support to the whole QM concept in that they are held to evaluate metrics from the development effort. Process Improvement is successful when an effective process emerges or evolves that can be characterized as: practical, documented, enforced, trained, measured and improvable. Their findings provide information needed to determine if processes need to be modified to prevent or reduce quality related problems in the future of the program or in new efforts. This type of review generates process improvement recommendations.

6.3.6 Internal Assessments/Audits

A product assessment/audit is an independent examination of work product(s) to assess compliance with specifications, standards, customer requirements, or other criteria. Product assessments/audits are used to ensure that the work product was evaluated against agreed upon standards, procedures, or other requirements; that deviations are identified, documented and tracked to closure; and to verify corrections.

A process assessment/audit is a systematic and independent examination, to determine whether quality activities and related results comply with planned standards, policies, and procedures and whether these are implemented effectively and are suitable to achieve ERA's objectives. Refer to the **Internal Assessments/Audits** section of the *ERA QPP* for more detailed information.

6.3.7 Test Readiness Review (TRR)

The Test Readiness Review (TRR) provides an independent evaluation and assessment of the system's readiness for testing to PMs and project engineers. TRRs will be held for each release and increment at the completion of system testing. In the technical review process, the TRR follows the CDR (see **Section 6.2.5)**. The Development Contractor is responsible for conducting the TRR.

The purpose of the TRR is to provide management with the assurance that the product under development has reached the degree of completeness and validity to ensure that the ERA PMO is ready to begin acceptance testing (formal and monitored). The scope of the TRR is to inspect the test products and test results from the completed test phase for completeness and accuracy, and to verify that test procedures, test cases, test scenarios, test scripts, environment, and test data have been prepared for the next test phase.

The TRR is the Government's decision milestone in determining the completion of unit, integration, and system tests. The Development Contractor will demonstrate that all deficiencies were corrected or provide satisfactory explanation to the contrary. The TRR will be conducted on a release and incremental basis as established in the *ERA TSP*. The technical review process, which includes the inputs, procedures, exit criteria, and outputs are described in more detail in the *ERA TEP*.

QM's role in this review is to assess the degree of completion of the technical efforts related to this review; see **Appendix I, Test Readiness Review Checklist**, for the list of questions that will be used for this review.

6.3.8 Operational Readiness Review (ORR)

An Operational Readiness Review (ORR) is intended to determine the status of completion of the specific actions that will be satisfactory and accomplished prior to the PD executing an operational go-ahead decision. In the technical review process, the ORR follows the TRR (see **Section 6.3.7**). The ORR conducted by the ERA PMO and the Development Contractor will support the ORR, as needed.

The purpose of the ORR is to accomplish, in an incremental fashion during the development phase, initial reviews to assess the risk in exercising the operational go-ahead decision. Timing of the incremental ORRs is a function of program posture and is not specifically locked into other reviews. The ORR is performed to decide if the system is in a suitable condition to become an operational release. The technical review process, which includes the inputs, procedures, exit criteria, and outputs are described in more detail in the *ERA TEP*.

The ORR verifies that necessary approved requirements documentation is in place and that the procedures, personnel, equipment, and systems support the approved requirements. It provides the verification process that management needs to be assured that the system is ready to operate.

QMs role in this review is to assess the degree of completion of the technical efforts related to this review, see **Appendix J, Operational Readiness Review Checklist**, for the list of questions that will be used for this review and to identify the readiness of the product to move to the next phase of the lifecycle.

6.3.9 Section 508 Compliance Review

The purpose for the Section 508 Compliance review is to verify that Federal departments and agencies that develop, procure, maintain, or use electronic information technology to ensure that Federal employees and members of the public with disabilities have access to and use of information and data, comparable to that of employees and members of the public without disabilities. Simple Tool for Error Prioritization for Section 508 (STEP508) is a new compliance tool that prioritizes the repairs you should make to ensure that your website is compliant with accessibility requirements of Section 508.

7.0 Test

Testing prior to piloting or deployment ensures that QC of the product is sufficient to support the planned functionality that unresolved problems are known, and workarounds are developed before the cost deployment is incurred. The management of all testing activities is described in detail in the **Management and Software Quality Assurance (SQA) Review** section of the *ERA TSP*. There is no QM testing scheduled to be performed outside of that already planned for the program. The QM Team's responsibilities include, but are not limited to the following:

- Ensuring that the test environment and related test tools are calibrated, certified, and documented prior to testing;
- Witnessing Testing;
- Reviewing plans, procedures, and reports for compliance to contract requirements and ERA standard procedures; and
- Certifying testing results on all deliverables products.

Note: Calibration is the comparison of a device against a known standard in order to establish the accuracy or error of the device. Certification involves conducting a dry run of the equipment to be used in any test as a pre-cursor to formal testing to ensure its accuracy, i.e., it is the verification that the tool works as expected prior to its use in a formal test.

8.0 Problem Reporting and Corrective Action

This section describes the procedures to be followed for reporting, tracking, and resolving problems identified in both software/hardware items and system development and maintenance processes. Problems encountered during planning and development may result from defects in software, hardware, and supporting and development processes. Because of this diversity, the determination of the sources of a problem and the appropriate corrective action requires a centrally controlled system for monitoring problems and determining root causes.

The QM Team will address the following in order to support the problem reporting and corrective action process. For an example of the problem reporting process workflow, see **Figure 8-1, Problem Report Process Workflow Diagram**. Each of these areas is described in detail in the following sections.

- Problem reporting
- Deficiency reporting
- Corrective action
- QM feedback mechanisms
- Metrics and measures

Final

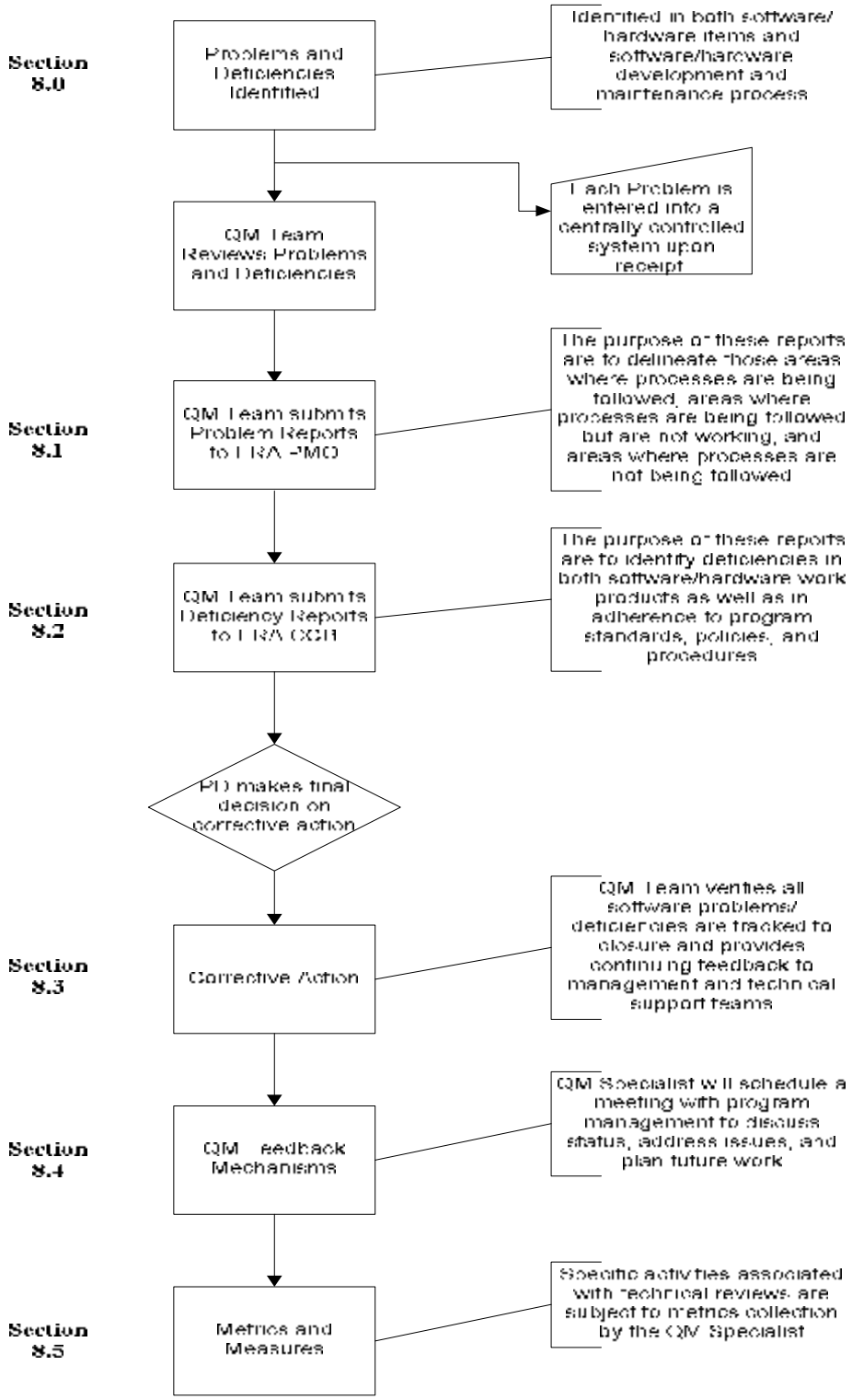

Figure 8-1: Problem Reporting Process Workflow Diagram

Note: Over the next year the ERA PMO will develop an overall consolidated problem reporting process and will evolve to another tool for the process.

8.1 Problem Reporting

The ERA PMO will record and manage QM discrepancies in the ERA Rational ClearQuest database. A status report is provided on a regular basis to the PD, division heads, Integrated Product Team (IPT) teams, and other affected groups. The purposes of these reports are to delineate those areas where:

- Processes are being followed correctly and are working effectively,
- Processes are being followed but are not working effectively, and
- Processes are not being followed.

The frequency and process for posting these reports will be consistent with the reporting guidance contained in the **Reporting** section of the *ERA PMP*. The content of these reports will be as follows:

- Accomplishments for the reporting period, e.g., completed QA reviews or audits;
- Activities for the reporting period, e.g., specific QM activities accomplished or current activity compared to scheduled tasks; and
- Issues and/or problems during the reporting period (e.g., issues that surfaced during QA reviews or audits) are reported to Program Management for review.
- Status of open issues or problems

The focus of the program management meetings is the overall status of the program, the opportunity for information sharing across the integrated parts of the program, and to address issues which have been raised through the problem reporting of the individual program teams.

8.2 Deficiency Reporting

During the conduct of QM activities, deficiencies are identified in both the software/hardware work products as well as in adherence to program standards, policies, and procedures. These deficiencies must be itemized, documented, tracked to closure, and reported by the QM team. At such time as a process for reporting and managing deficiencies is baselined this QMP will be updated. The ERA CCB is the responsible group for authorizing and implementing software problem reporting and corrective actions, and submission to unresolved issues to management for resolution. The ERA CCB is composed of representatives from the ERA PMO and from NARA user organizations; refer to the **Table 2-1, CM Organization Roles and Responsibilities** in the *ERA CMP* for additional information.

8.3 Corrective Action

The ERA corrective action procedure defines the system used for corrective action and continual improvements in the ERA program. Quality Management (QM) is responsible for this procedure. Corrective action is defined as an action taken to correct the occurrence of noncompliance, nonconformance and other conditions adverse to the quality of the ERA system. For additional information on the corrective action process, refer to the **Corrective Action** section of the *ERA QPP* document.

8.4 QM Feedback Mechanisms

The QMS will schedule a meeting with program management to discuss status, address issues, and plan work for the next period. The key points of these discussions will be documented and the reporting mechanism to program management. Meeting minutes of these discussions will be stored in the ERA Rational ClearCase tool and according to the **General Administration** section of the *ERA File Plan (FP)*. The *ERA FP* describes the categories of records to be filed.

8.5 Metrics and Measures

The ERA PMO has selected performance metrics to provide insight into the development and operation of the ERA system with metrics collection beginning during the development process and continuing through the remainder of the ERA system development lifecycle. Specific activities associated with technical reviews are subject to metrics collection by the QMS. Metrics collection process is described in detail in the **Metrics Collection and Use** section of the *ERA MP* document. The applicable standard for software quality metrics, see IEEE Std. 1061-1998, IEEE Standard for a Software Quality Metrics Methodology.

QM activities are reported on a regular basis to the PD, program management, development teams, and other affected groups. These status reports delineate areas where evaluation is raising issues concerning system configuration or system functionality, as well as those areas where evaluation is changing to accommodate the changes in system requirements or design. The following metrics will be tracked by the QM Team and reported to the PD:

- Numbers of product and process audits and activity reviews compared to the plan,
- Completion of milestones of QM activities compared to the plan,
- Status of AIs open/closed/on-hold,
- Number of non-conformance or non-compliance items,
- Status of non-conformance and non-compliance items identified,
- Number of days to correct and close a non-conformance or non-compliance item,
- Number of peer reviews compared to the plan.

For more information on the contents of the ERA Program Monthly Status Report, refer to the **Reporting** section defined in the *ERA PMP*. Each major participant in the ERA Program provides a Status Report in support of program communication and information flow.

9.0 Tools, Techniques and Methodologies

This section identifies the tools, techniques, and methodologies to be used to support QM. **Table 9-1, Tools, Techniques, and Methodologies by Lifecycle Phase,** contains the lifecycle phases and their related tool(s), techniques, and the methodologies. Tools related to Process Improvement will be added in a future update. A definition of each area is listed below.

- Tools – are used to aid in the evaluation of program quality
- Techniques – are technical and managerial procedures that aid in the evaluation and improvement of quality

- Methodologies – are integrated sets of tools (checklists, standards, forms, and documentation) used to review development work products

During the Operations phase of the lifecycle, modifications may be made to the ERA system. These modifications may be in the form of corrections or in the form of new functionality. These maintenance activities will be accomplished according to the same standards and procedures used during the development phase.

Lifecycle Phase	Tools	Techniques	Methodologies
Requirements & Design	• Microsoft Access • Microsoft Word • Rational	• Peer Reviews • Walkthroughs • Audits • Problem/Deficiency Reporting	• Action Item Form (ClearQuest) • Change Request/Proposal Form (ClearQuest) • Peer Review Action Item Tracking System Database Users Guide • Peer Review Action Item Log Form • Assessment/Audit Checklist and Report
Implementation & Test	• Microsoft Access • Microsoft Word • Rational	• Peer Reviews • Walkthroughs • Audits • Problem/Deficiency Reporting	• Action Item Form (ClearQuest) • Change Request/Proposal Form (ClearQuest) • Peer Review Action Item Tracking System Database Users Guide • Peer Review Action Item Log Form • Assessment/Audit Checklist and Report
Installation & Checkout	• Microsoft Word • Rational	• Audits • Problem/Deficiency Reporting	• Action Item Form (ClearQuest) • Change Request/Proposal Form (ClearQuest) • Assessment/Audit Checklist and Report
Operations & Support	• Microsoft Word • Rational	• Audits • Problem/Deficiency Reporting	• Action Item Form (ClearQuest) • Change Request/Proposal Form (ClearQuest) • Assessment/Audit Checklist and Report

Table 9-1: Tools, Techniques, and Methodologies by Lifecycle Phase

10.0 Media Control

Computer program media is defined as those media on which computer data are stored such as CD-ROM, RAM disks, or tape cartridges. Media control covers storage, handling, packaging, shipping, and external distribution of hardware/software and associated documentation. The *ERA CMP* provides information on Media Control in the **Acquiring Configuration Items** section. Library management is the underlying process for ingesting, maintaining and disseminating the contents of the libraries.

The QM team shall review the following media control activities to ensure that they are being implemented in a manner consistent with the *ERA CMP*:

- Proper handling of media to prevent physical, electrostatic, or environmental damage while stored;
- Proper packaging for shipment to prevent physical, electrostatic, or environmental damage during transit;
- Proper labeling, storage, tracking, and release of all media and documents;
- Action to prevent mismatched or unmarked media from being stored or shipped; and
- Verification that the correct media is being shipped.

More complete specification of media storage and requirements will be identified by the ERA PMO at contract award.

11.0 Supplier Control

The supplier control activities are to ensure the selection of qualified supply contractor(s). To ensure that the products provided by supply contractor(s) meet established requirements, the ERA PMO will participate in and approve RR results, design review results, and conduct acceptance testing.

More complete information for specific Contractor(s) controls will be specified by the ERA PMO at contract award. A checklist for artifacts (work products) will be added as an Appendix to this document after down-select has been completed. The use of voluntary consensus standards, whenever practicable and appropriate, is required by OMB Circular NO. A-119, Revised February 10, 1998.

11.1 Supplier Policy

Potential Contractor(s) of critical, complex, or costly items or services will, prior to the award of a contract, be evaluated to ascertain that they have the capability to provide items or services that consistently conform to technical and quality requirements of the procurement. The ERA PMO will ensure that the goods or services provided by the Contractor(s) are acceptable for the intended use.

11.2 Supplier Evaluation Procedure

The ERA PMO must determine if the prospective Contractor(s) have a QMP that ensures the quality of the requested items or services. Refer to the **Software** and **Hardware** sections of the *ERA Cost Analysis Assumption Document (CAAD)* document for summary of the hardware and software (COTS) currently identified for the ERA system. The hardware and software summaries detail the equipment and software necessary to operate the system as currently configured through the lifecycle analyzed.

See **Appendix K, L**, and **M** for a list of sample questions from the Contractor(s) Evaluation Checklists. These QM checklists are used to assess the performance, capabilities, and that the Contractor(s) staff is knowledgeable of the processes, per IEEE Std. 1062-1998 IEEE Recommended Practice for Software Acquisition.

Prior to the evaluation, background information that pertains to the procurement will be obtained by the assessment team. The information will include:

- Description of the items and its requirements;
- Description of the QM requirements;
- Required quantity and delivery schedule;
- Description of any measurement or test equipment requirements;
- Description of any critical process, or material requirements;
- Knowledge of the seller's quality history; and
- Names of key seller personnel.

12.0 Records Collection, Maintenance, and Retention

All documentary materials that control, report, and demonstrate execution of the QM function will be managed as records of the PMO. The QMS and QM team members will collect and retain adequate and proper records of QM activities. All QM reports and audit and review reports are considered to be federal records and as such will be managed in accordance with the NARA records schedule and the *ERA FP*.

The CM Specialist maintains applicable files and reports as listed below and stores them in the Configuration Library. See **Table 12-1, QM Documents and Storage Location**, for their exact location, as listed under the heading "Where Stored."

- Peer Review Action Item Log Forms
- Documentation Review Comment Forms
- Assessment/Audit Checklists
- Assessment/Audit Reports
- QM Overall Status Reports

Table 12-1, QM Documents and Storage Location, lists the proper records of QM activities and the person(s) responsible for maintaining that information.

Documentation Required	Frequency	Where Stored S:\ERAPMO\	Responsible Person	Documentation Description
Peer Review Action Item Log Forms	Ad hoc	ERA Quality Management\Administration\Peer Review Action Item Form	QM Specialist	Captures results of peer reviews, Action Items (AIs), Defects, and Issues.
Documentation Review Comment Form	Ad hoc	ERA Quality Management\Administration\ERA Documentation Review Comment Form Template	QM Specialist	Captures review comments from Government reviewers.
Assessment/Audit Checklist	Every 6 months	ERA Quality Management\Administration\Assessment-Audit Checklist Template	QM Specialist	Checklist is used to identify deviations in process performance.
ERA Assessment/Audit Report	Every 6 months	ERA Quality Management\Administration\Assessment-Audit Report Template	QM Specialist	Report is used to report the findings of the assessment/audit.
QM Overall Status Report	Ad hoc	ERA Quality Management\Administration\QM Overall Status Report Template	QM Specialist	Report is used to track estimated lines of code, number of requirements, AIs, peer reviews, and the number of defects detected.

Table 12-1: QM Documents and Storage Location

13.0 Training

Specific training needs for support of QM activities for the ERA Program have been identified in **Table 13-1, QM Training Needs,** below. The list of training requirements is expected to change as development of the ERA program continues to expand.

Training	Type of Training	Description	Level	Vendor(s)	Position
Reviews **	Classroom	Training on how to conduct reviews.	Basic	TBD	QM Team
Assessment and Audits	Classroom	Training on how to conduct assessments and audits.	Basic	TBD	QM Team
Problem Reporting and Corrective Action	Classroom	Training on how to generate problem reports and record corrective actions.	Basic	Rational	QM Team
Records Collection, Maintenance, and Retention	Classroom	Training on how to collect records, maintain records and how to create a retention schedule.	Basic	NARA	QM Team
Use of Automated Tools	Classroom	Training on how to use tools necessary to conduct quality assurance.	Basic	Rational	QM Team

Table 13-1: QM Training Needs

Additionally, training needs for the ERA PMO QM team have been identified and are discussed in the *ERA Training Needs Assessment (TRA)* document. Specific QM areas of training are identified in Appendix B, ERA PMO Training Needs Assessment Criteria Summary, Table II, Process Training (Quality Management) of the *ERA TRA* document. The QMS will continue to work with the Training Officer to reassess and update the training needs assessment for quality management personnel projected throughout the complete lifecycle of the ERA program.

**** Refer to IEEE Std. 1028-1997 IEEE Standard for Software Reviews, for the types of reviews that might be part of the review training.

14.0 Risk Management

The QM Team is responsible for identifying and assessing risks that arise during any phase of the ERA lifecycle covered by the *ERA QMP*. The risks include technical, economic, schedule, and managerial which are evident during the lifecycle phase. Each risk will be justified and the level of risk (low, medium, and high) assessed. The QM Team will report risks and required risk management data to the ERA Risk Management Officer. The risk process for QM is covered in the **Risk Monitoring and Control** section of the *ERA Risk Management Plan (RKM)*. This section states that risk monitoring and control is an on-going process of keeping track of identified risks, reviewing and evaluating the effectiveness of the implementation of risk review plans, monitoring residual risks, identifying new risks, and reporting risks.

15.0 Glossary

Table 15-1, Glossary of QMP Terms, contains a glossary of terms unique to this QMP.

Terms	Term Description
Action Item	Something agreed to be done as a result of a discussion at a meeting and usually recorded in the minutes of that meeting.
Configuration Item	A hardware, software, or composite item at any level in the system hierarchy designated for CM.
Configuration Management	Technical and administrative activities concerned with the creation, maintenance and controlled change of configuration throughout the life of the product.
Electronic Information Technology	Includes information technology and any equipment or interconnected system or subsystem of equipment that is used in the creation, conversion, or duplication of data or information. The term electronic and information technology includes, but is not limited to, telecommunications products (such as telephones), information kiosks and transaction machines, World Wide Web sites, multimedia, and office equipment such as copiers and fax machines. The term does not include any equipment that contains embedded information technology that is used as an integral part of the product, but the principal function of which is not the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information.
Quality Assurance	Are all planned and systematic activities implemented in the quality system to provide confidence that the ERA project will satisfy the quality standards agreed upon during QP.
Quality Control	Monitoring specific ERA products to validate that they comply with appropriate quality standards agreed upon during QP.
Quality Improvement	To use output indicators to help identify better standards and other practices in order to increase ERA's effectiveness and efficiency.

Terms	Term Description
Quality Management	That aspect of the overall management function that determines and implements the quality policy (guidance)
Quality Planning	The process that identifies the relevant quality standards and determines how to satisfy them
Voluntary Consensus Standard	Standards that are developed or adopted by voluntary consensus standards bodies, both domestic and international.

Table 15-1: Glossary of QMP Terms

16.0 Plan Maintenance

The ERA QMS is responsible for the development and maintenance of this plan. The plan will be updated as needed to maintain current and sufficient quality management activities. The plan will be placed under CM control following its initial approval by the ERA PMO. Updates to the *ERA QMP* will be controlled by the CCB.

Appendix A: QMP v2.6 Roadmap to IEEE Std. 730-2002

IEEE 730-2002 Sections	ERA QMP v2.6 Sections	Comments
4 Software Quality Assurance Plan 4.1 Purpose ---------- ---------- ---------- ---------- ---------- ----------	 1.0 Purpose 1.1 Introduction 1.2 ERA Program Overview 1.3 Scope 1.4 QM Principles 1.5 Limitations and Constraints 1.6 Definitions and Acronyms	 Tailored to Augment ERA standards
4.2 Reference Documents ---------- ----------	2.0 Reference Documents 2.1 ERA PMO Documents 2.2 Standards and Guidelines	 Tailored to ERA Standards Tailored to ERA Standards
4.3 Management 4.3.1 Organization 4.3.2 Tasks 4.3.3 Roles and Responsibilities 4.3.4 Quality Assurance Estimated Resources	3.0 Management 3.1 Organization 3.2 Tasks 3.3 Roles and Responsibilities 3.4 Quality Assurance Estimated Resources	
4.4 Documentation 4.4.1 Purpose 4.4.2 Minimum documentation requirements 4.4.2.1 Software Requirements Description (SRD) 4.4.2.2 Software Design Document (SDD) ---------- ---------- 4.4.2.3 Verification and Validation Plans 4.4.2.4 Verification and Validation Results Report 4.4.2.5 User Documentation ---------- ---------- ---------- 4.4.2.6 Software	4.0 Documentation 4.1 Purpose 4.2 Minimum Documentation Requirements 4.2.1 System Requirements Specification (SyRS) 4.2.2 System Architecture and Design Document (SADD) 4.2.3 Requirements Specification 4.2.4 System Test Plan 4.2.5 Award Fee Plan 4.2.6 Training Program Development and Management Plan (TPDMP) 4.2.7 Facilities Plan 4.2.8 Configuration Management	 Tailored to ERA Standards Tailored to ERA Standards Tailored to ERA Standards Tailored to ERA Standards Tailored Out Tailored Out Tailored Out

IEEE 730-2002 Sections	ERA QMP v2.6 Sections	Comments
Configuration Management Plan (SCMP)	Plan (CMP)	
----------	4.2.9 Operations and Support Plan	Tailored to ERA Standards
----------	4.2.10 Risk Management Plan	Tailored to ERA Standards
----------	4.2.11 Security Plan	Tailored to ERA Standards
----------	4.2.12 Certification and Accreditation Plan	Tailored to ERA Standards
----------	4.2.13 Continuity of Operations Plan	Tailored to ERA Standards
----------	4.2.14 Integrated Plan	Tailored to ERA Standards
----------	4.2.15 Quality Management Plan	Tailored to ERA Standards
4.4.3 Other documentation		Tailored Out
4.5 Standards, Practices, Conventions, and Metrics	5.0 Standards, Practices, Conventions, and Metrics	
4.5.1 Purpose	5.1 Purpose	
4.5.2 Content	5.2 Content	
4.6 Software reviews	6.0 Reviews and Audits	
4.6.1 Purpose	6.1 Purpose	
4.6.2 Minimum Requirements	6.2 Minimum Reviews and Audits	
4.6.2.1 Software Specifications Review (SSR)	6.2.1 System Requirements Review (SRR)	Tailored to ERA Standards
----------	6.2.2 System Design Review	Tailored to ERA Standards
----------	6.2.3 Requirements Specifications Reviews	Tailored to ERA Standards
4.6.2.2 Architecture Design Review (ADR)	6.2.4 Preliminary Design Review (PDR)	
4.6.2.3 Detailed Design Review (DDR)	6.2.5 Critical Design Review (CDR)	
4.6.2.4 Verification and Validation Plan Review	6.2.6 Verification and Validation Plans Review	
4.6.2.5 Functional Audit	6.2.7 Functional Configuration Audit	
4.6.2.6 Physical Audit	6.2.8 Physical Configuration Audit	
4.6.2.7 In-process audits	6.2.9 In-process Audits	
4.6.2.8 Managerial Reviews	6.2.10 Managerial Reviews	
4.6.2.9 Software Configuration Management Plan Review (SCMPR)	6.2.11 Configuration Management Plan Review	
4.6.2.10 Post-Implementation Review	6.2.12 Post-Implementation Review	

IEEE 730-2002 Sections	ERA QMP v2.6 Sections	Comments
4.6.3 Other Review an Audits	6.3 Other Reviews and Audits	
----------	6.3.1 Program Management Plan Review	Tailored to ERA Standards
----------	6.3.2 Peer Reviews	Tailored to ERA Standards
----------	6.3.3 Informal Walkthrough	Tailored to ERA Standards
----------	6.3.4 User Documentation Reviews (UDR)	Tailored to ERA Standards
----------	6.3.5 Process Improvement Reviews	Tailored to ERA Standards
----------	6.3.6 Internal Assessment/Audits	Tailored to ERA Standards
----------	6.3.7 Test Readiness Review (TRR)	Tailored to ERA Standards
----------	6.3.8 Operational Readiness Review (ORR)	Tailored to ERA Standards
----------	6.3.9 Section 508 Compliance Review	Tailored to ERA Standards
4.7 Test	7.0 Test	
4.8 Problem Reporting and Corrective Action	8.0 Problem Reporting and Corrective Action	
----------	8.1 Problem Reporting	Tailored to ERA Standards
----------	8.2 Deficiency Reporting	Tailored to ERA Standards
----------	8.3 Corrective Action	Tailored to ERA Standards
----------	8.4 QM Feedback Mechanisms	Tailored to ERA Standards
----------	8.5 Metrics and Measures	Tailored to ERA Standards
4.9 Tools, Techniques, and Methodologies	9.0 Tools, Techniques, and Methodologies	
4.10 Media Control	10.0 Media Control	
4.11 Supplier Control	11.0 Supplier Control	
----------	11.1 Supplier Policy	Tailored to ERA Standards
----------	11.2 Supplier Evaluation Procedures	Tailored to ERA Standards
4.12 Records Collection, Maintenance, and Retention	12.0 Records Collection, Maintenance, and Retention	
4.13 Training	13.0 Training	
4.14 Risk Management	14.0 Risk Management	
4.15 Glossary	15.0 Glossary	
4.16 SQAP Change Procedure and History	16.0 Plan Maintenance	ERA Standard Augment Section

IEEE 730-2002 Sections	ERA QMP v2.6 Sections	Comments
Appendix A	Appendix A: QMP v2.6 Roadmap to IEEE Std 730-2002 Appendix B: Harris Work Products/SA&D Phase Appendix C: Lockheed Martin Work Products/SA&D Phase Appendix D: System Requirements Review Checklist Appendix E: System Design Review Checklist Appendix F: High-Level Review Checklist Appendix G: Detailed Design Review Checklist Appendix H: Peer Review Process Checklist Appendix I: Test Readiness Review Checklist Appendix J: Operational Readiness Review Checklist Appendix K: ERA Contractor(s) Evaluation Checklist Appendix L: ERA Contractor(s) Performance Checklist Appendix M: ERA Contractor(s) Product Evaluation Checklist	

Appendix B: Harris Work Products/SA&D Phase

Contractor Deliverable	Evaluation Method	QM Review	IV&V Review
Award Fee Plan	Document Review	YES	NO
Certification and Accreditation (C&A) Plan	Document Review	YES	NO
Configuration Management Plan (CMP)	Document Review	YES	YES
Continuity of Operations Plan (COOP)	Document Review	NO	NO
Contract Data Requirements List (CDRL)	Document Review	NO	NO
Contract Funds Status Report (CFSR)	Document Review (Monthly)	NO	NO
Contract Work Breakdown Structure (CWBS)	Document Review (Monthly)	NO	NO
Cost Performance Report (CPR)	Document Review (Monthly)	NO	NO
Deliverable Technical Data and Computer Software	Document Review (Monthly)	YES	NO
Disposition/Scheduling and Template Management Prototype and Demonstration	Joint Review	YES	NO
Earned Value Management System (EVMS)	Document Review (Monthly)	NO	NO
Facilities Plan	Document Review	YES	NO
Integrated Baseline Review (IBR)	PMO Review	YES	NO
Integrated Plan (IP)	Document Review	NO	NO
Integrated Schedule (IS)	Document Review (Bi-Weekly)	NO	NO
Life-Cycle Cost Analysis (LCC)	Document Review	NO	NO
Monthly Status Report	Document Review (Monthly)	NO	NO
Monthly Status Review (MSR)	Joint Review (Monthly)	NO	NO
Operations and Support Plan	Document Review	YES	YES
Performance Work Statement (PWS)	Document Review	YES	NO
Program Management Plan (PMP)	Document Review	YES	NO
Quality Management Plan (QMP)	Document Review	YES	YES
Risk Management Plan (RKM)	Document Review	YES	YES
Security Plan	Document Review	YES	NO
System Architectural Design Description (SADD)	Document Review	YES	YES
System Design Review (SDR) Briefing	Joint Review	YES	NO
System Engineering Management Plan (SEMP)	Document Review	YES	NO
System Requirements Review (SRR) Briefing	Joint Review	YES	NO
System Requirements Specification (SyRS)	Document Review	YES	YES
System Test Plan (STP)	Document Review	YES	YES

Contractor Deliverable	Evaluation Method	QM Review	IV&V Review
Training Program Development and Management Plan (TPDMP)	Document Review	YES	NO
Transition Plan	Document Review	YES	NO
Updated Cost/Price	Document Review	NO	NO
Updated DD-254	Document Review	NO	NO

Appendix C: Lockheed Martin Work Products/SA&D Phase

Contractor Deliverable	Evaluation Method	QM Review	IV&V Review
Certification and Accreditation (C&A) Plan	Document Review	YES	NO
Configuration Management Plan (CMP)	Document Review	YES	YES
Continuity of Operations Plan (COOP)	Document Review	NO	NO
Contract Data Requirements List (CDRL)	Document Review	NO	NO
Contract Funds Status Report (CFSR)	Document Review (Monthly)	NO	NO
Contract Work Breakdown Structure (CWBS)	Document Review (Monthly)	NO	NO
Cost Performance Report (CPR)	Document Review (Monthly)	NO	NO
Deliverable Technical Data and Computer Software	Document Review (Monthly)	YES	NO
Disposition/Scheduling and Template Management Prototype and Demonstration	Joint Review	YES	NO
Earned Value Management System (EVMS)	Document Review (Monthly)	NO	NO
Facilities Plan	Document Review	YES	NO
Human Factors Engineering Specification	Document Review	NO	NO
Integrated Baseline Review (IBR)	PMO Review	YES	NO
Integrated Plan (IP)	Document Review	NO	NO
Integrated Schedule (IS)	Document Review (Bi-Weekly)	NO	NO
Interface Control Documents (ICDs)	Document Review	YES	NO
Interface Requirements Specifications (IRSs)	Document Review	YES	YES
Life-Cycle Cost Analysis (LCC)	Document Review	NO	NO
Master Test Plan	Document Review	YES	YES
Monthly Status Report	Document Review (Monthly)	NO	NO
Monthly Status Review (MSR)	Joint Review (Monthly)	NO	NO
Operations and Support Plan	Document Review	YES	YES
Performance Work Statement (PWS)	Document Review	YES	NO
Program Management Plan (PMP)	Document Review	YES	NO
Quality Management Plan (QMP)	Document Review	YES	YES
Risk Management Plan (RKM)	Document Review	YES	YES
Security Plan	Document Review	YES	NO
Security Risk Assessment Report	Document Review	NO	NO
Software Development Plan (SDP)	Document Review	YES	YES
System Architectural Design Description (SADD)	Document Review	YES	YES

Contractor Deliverable	Evaluation Method	QM Review	IV&V Review
System Concept of Operations (CONOPS)	Document Review	YES	NO
System Design Review (SDR) Briefing	Joint Review	YES	NO
System Engineering Management Plan (SEMP)	Document Review	YES	NO
System Integration Plan (SIP)	Document Review	YES	YES
System Requirements Review (SRR) Briefing	Joint Review	YES	NO
System Requirements Specification (SyRS)	Document Review	YES	YES
Updated Award Fee Plan	Document Review	YES	NO
Updated Cost/Price	Document Review	NO	NO
Updated DD-254	Document Review	NO	NO

Appendix D: System Requirements Review Checklist

Date of Review:	**Contractor:**
ERA-PMO:	Number of Non-compliances

General

Item No.	Question	Yes	No	N/A	Notes
1	Was written notification provided at least three (3) working days prior to the review?	o	o	o	
2	Was an agenda prepared?	o	o	o	
3	Were scheduled facilities adequate?	o	o	o	
4	Was a review package prepared?	o	o	o	
5	Were the participants notified of review materials location at least three (3) working days in advance?	o	o	o	
6	Was a review checklist prepared?	o	o	o	
7	Was the review agenda followed?	o	o	o	
8	Was the review checklist completed?	o	o	o	
9	Did the Recorder take minutes of the meeting?	o	o	o	
10	Did the Recorder distribute minutes of the meeting?	o	o	o	
11	Did the Review Coordinator summarize review findings?	o	o	o	
12	Were open/action items identified?	o	o	o	
13	Did the Recorder prepare the review report?	o	o	o	
14	Did the Recorder distribute the review report?	o	o	o	
15	Were the review metrics recorded in the metrics repository?	o	o	o	
16	Were open/action items tracked to resolution?	o	o	o	
17	Were Release Quality Findings/Recommendations: (List Release trouble reports /Action Items (Responsibility and Completion Date) discussed during Review?	o	o	o	
18	Were Customer Support Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during Review?	o	o	o	
19	Were Training Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?	o	o	o	

Item No.	Question	Yes	No	N/A	Notes
20	Were User Documentation Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?	o	o	o	
21	Were Overall Release Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?	o	o	o	

Functional Requirements

Item No.	Question	Yes	No	N/A	Notes
1	Have requirements in all categories (functional, regulatory, user interface, performance, interface, infrastructure, security, user training) been adequately defined, analyzed, and documented?	o	o	o	
2	Do the requirements, as documented, comply with the release plan?	o	o	o	
3	Are adequate security and information assurance requirements identified? Do they comply with the requirements of the ERA SSP?	o	o	o	
4	Are risks identified and mitigation plans in place?	o	o	o	
5	Have requirements adequately been traced back to the System Requirements Specification (SRS)?	o	o	o	
6	Has sufficient attention been placed on the human factors?	o	o	o	
7	Does the design team feel the System Requirements Description (SRD) is complete, consistent, and unambiguous enough to create a complete design?	o	o	o	
8	Does the test team feel the requirements contained in the SRD are unambiguous and testable?	o	o	o	
9	Does the application's operational, systems, and technical architecture comply with those at the enterprise level?	o	o	o	
10	Are there procedures and tools in place to track and report the status of all requirements changes and trouble reports?	o	o	o	
11	Are "to be determined" items (TBDs) known and is there a plan and schedule to "fill in the blanks"?	o	o	o	
12	Does the SRD meet the format and content requirements contained in the ERA SRD documentation standard?	o	o	o	

Appendix E: System Design Review Checklist

Date of Review:	**Contractor:**
ERA-PMO:	Number of Non-compliances

General

Item No.	Question	Yes	No	N/A	Notes
1	Was written notification provided at least three (3) working days prior to the review?	o	o	o	
2	Was an agenda prepared?	o	o	o	
3	Were scheduled facilities adequate?	o	o	o	
4	Was a review package prepared?	o	o	o	
5	Were the participants notified of review materials location at least three (3) working days in advance?	o	o	o	
6	Was a review checklist prepared?	o	o	o	
7	Was the review agenda followed?	o	o	o	
8	Was the review checklist completed?				
9	Did the Recorder take minutes of the meeting?				
10	Did the Recorder distribute minutes of the meeting?				
11	Did the Review Coordinator summarize review findings?				
12	Were open/action items identified?				
13	Did the Recorder prepare the review report?				
14	Did the Recorder distribute the review report?				
15	Were the review metrics recorded in the metrics repository?				
16	Were open/action items tracked to resolution?				
17	Were Release Quality Findings/Recommendations: (List Release trouble reports /Action Items (Responsibility and Completion Date) discussed during Review?				
18	Were Customer Support Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during Review?				
19	Were Training Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?				

Item No.	Question	Yes	No	N/A	Notes
20	Were User Documentation Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?				
21	Were Overall Release Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?				

Functional Requirements

Item No.	Question	Yes	No	N/A	Notes
1	Does the introductory chapter include the purpose, scope, references, and acronyms?	o	o	o	
2	Does the purpose explain the intent of the document (not system)?	o	o	o	
3	Does the scope describe the documents content and does it indicate any specific limitations and/or omissions?	o	o	o	
4	Is the system purpose stated?	o	o	o	
5	Are functional (user) requirements addressed?	o	o	o	
6	Are potential system users identified?	o	o	o	
7	Are inputs and outputs addressed?	o	o	o	
8	Are initial security requirements addressed?	o	o	o	
9	Is there a preliminary system architecture shown?	o	o	o	
10	Are preliminary hardware support requirements (computers, modems, etc.) addressed?	o	o	o	
11	Are preliminary software support requirements (language, DBMS, other COTS) addressed?	o	o	o	
12	Are preliminary data storage requirements (initial and growth) addressed?	o	o	o	
13	Are interfacing systems identified?	o	o	o	
14	Are non-functional (performance) requirements (response time, transmission times, etc.) addressed?	o	o	o	
15	Are conversion activities addressed?	o	o	o	

Appendix F: High-Level Design Review Checklist

Date of Review:		**Contractor:**
ERA-PMO:		**Number of Non-compliances:**

Structure

Item No.	Question	Yes	No	N/A	Notes
1	Are data structures clearly partitioned?	o	o	o	
2	Has the design been decomposed to the point at which the next phase of design can begin?	o	o	o	
3	Has each component been completely and testably specified?	o	o	o	
4	Is the modular decomposition consistent with local standards for modular strength and coupling?	o	o	o	

Data

Item No.	Question	Yes	No	N/A	Notes
1	Are global constants and passed data parameterized?	o	o	o	
2	Has all the data been properly defined?	o	o	o	
3	Are data structures and element names meaningful? Do they adhere to existing naming conventions?	o	o	o	

Standards and Traceability

Item No.	Question	Yes	No	N/A	Notes
1	Have all design standards been followed?	o	o	o	
2	Does the human interface follow project standards?	o	o	o	
3	Can all parts of the high-level design be traced back to requirements?	o	o	o	

Interfaces

Item No.	Question	Yes	No	N/A	Notes
1	Are all interfaces clear and well-defined?	o	o	o	
2	Is minimum data passed at each interface?	o	o	o	
3	Is minimum global system data added or impacted by the design?	o	o	o	

Robustness

Item No.	Question	Yes	No	N/A	Notes
1	Have self-test, fail-safe, and degraded mode requirements been accounted for?	o	o	o	
2	Has an error handling mechanism been identified?	o	o	o	
3	Are unusual situations handled reasonably and nondestructively?	o	o	o	

Correctness and Completeness

Item No.	Question	Yes	No	N/A	Notes
1	Is the high-level design complete, i.e., does it implement all of the requirements?	o	o	o	
2	Has all of the infrastructure been specified (backup, recovery, checkpoints, etc.)?	o	o	o	
3	Are the error messages unique and meaningful?	o	o	o	
4	Have all reliability and performance requirements been designed?	o	o	o	
5	Have all reliability and performance requirements been designed?	o	o	o	
6	Have internationalization issues been properly and adequately addressed?	o	o	o	
7	Have file maintenance procedures been addressed?	o	o	o	
8	Have file maintenance procedures been addressed?	o	o	o	
9	Have processing priorities been addressed?	o	o	o	
10	Are there credible analyses to determine that required throughput, response times, and accuracies will be achievable by this design?	o	o	o	
11	Is there a memory budget to allocate estimated storage requirements for each module, table, and file?	o	o	o	
12	Have all security considerations been designed?	o	o	o	
13	Does the high-level design consider all existing constraints?	o	o	o	
14	Does the high-level design contain unnecessary redundancy that is already implemented in another system component?	o	o	o	
15	Does the high-level design provide an adequate base for the detail design?	o	o	o	
16	Have maintainability issues been addressed?	o	o	o	
17	Is the high-level design complete, correct, and unambiguous?	o	o	o	
18	Is the high-level design feasible?	o	o	o	
19	Is the high-level design verifiable?	o	o	o	

Appendix G: Detailed Design Review Checklist

Date of Review:		**Contractor:**
ERA-PMO:		**Number of Non-compliances:**

Structure

Item No.	Question	Yes	No	N/A	Notes
1	Is the pseudocode (or other representation format) consistent in its level of detail?	o	o	o	

Data

Item No.	Question	Yes	No	N/A	Notes
1	Have missing details from the system data description been filled in?	o	o	o	
2	Has all the data been properly defined and initialized?	o	o	o	
3	Is all defined data used?	o	o	o	
4	Are data elements named and used consistently throughout the module and the module interface?	o	o	o	
5	Are defaults used, and are they correct?	o	o	o	

Standards and Traceability

Item No.	Question	Yes	No	N/A	Notes
1	Have all detailed design standards been followed?	o	o	o	
2	Does the calling protocol follow project standards?	o	o	o	
3	Can all parts of the detailed design be traced back to the high-level design and to requirements?	o	o	o	

Robustness

Item No.	Question	Yes	No	N/A	Notes
1	Are error conditions handled in a nondestructive manner?	o	o	o	
2	Can corrective action be taken by the module that traps an error?	o	o	o	
3	Are unusual conditions handled reasonably and nondestructively?	o	o	o	

Correctness and Completeness

Item No.	Question	Yes	No	N/A	Notes
1	Is the detailed design a complete and accurate implementation of the high-level design?	o	o	o	
2	Are the external specifications of each module complete and testable?	o	o	o	
3	Have all numerical techniques been analyzed for accuracy?	o	o	o	
4	Has critical timing been analyzed?	o	o	o	
5	Has the high-level design memory budget been expanded into further detail and updated?	o	o	o	
6	Are the functions clearly specified?	o	o	o	
7	Are the functions logically independent?	o	o	o	
8	Have maintainability issues been addressed?	o	o	o	
9	Does each module have high internal cohesion?	o	o	o	
10	Does each module have low external coupling?	o	o	o	
11	Is the detailed design verifiable?	o	o	o	
12	Is the logic correct, clear, and complete?	o	o	o	
13	Have all operator dialogues been completely specified?	o	o	o	
14	Can the termination conditions for loops be realized?	o	o	o	
15	Have functional test specifications been prepared for each module?	o	o	o	
16	Can all logic be tested?	o	o	o	

Appendix H: Peer Review Process Checklist

Work Product Information

Product/Version # Reviewed:			
Author:		**Date:**	
Review Scribed By:		**Time:**	

Peer Review Process Checklist Item	Yes	No
Was a Facilitator designated?		
Was the peer review scheduled?		
Was this a re-review?		
Were the participants notified/invited to the peer review by the Author (with Date, Time, Location, Room #) and Description of their individual role?		
Was the work product to be reviewed provided at least two (2) working days (**48 hours**) prior to the review?		
Were the minimum required participants (i.e., author, facilitator, reviewers) in attendance (in order to conduct the review)?		
If the peer review needed to be rescheduled, was the reason recorded?		
Was an ERA Peer Review Action Item Log Form prepared by the scribe? (Date, Start Time, End Time, Work Product Type, and number of pages or size of the work product recorded?		
Were action items, defects, issues and their severities recorded by the scribe (an assigned)?		
Was the ERA Peer Review Action Item Log Form signed by all review participants?		
Did the Author turn over the completed Peer Review Action Item Log Form to QM?		
Did the Author turn over to QM the updated work product for verification that all changes have been completed?		
Was the process for preparing and conducting the peer review followed?		

Appendix I: Test Readiness Review Checklist

Date of Review:	**Contractor:**
ERA-PMO:	Number of Non-compliances

General

Item No.	Question	Yes	No	N/A	Notes
1	Was written notification provided at least three (3) working days prior to the review?	o	o	o	
2	Was an agenda prepared?	o	o	o	
3	Were scheduled facilities adequate?	o	o	o	
4	Was a review package prepared?	o	o	o	
5	Were the participants notified of review materials location at least three (3) working days in advance?	o	o	o	
6	Was a review checklist prepared?	o	o	o	
7	Was the review agenda followed?	o	o	o	
8	Was the review checklist completed?	o	o	o	
9	Did the Recorder take minutes of the meeting?	o	o	o	
10	Did the Recorder distribute minutes of the meeting?	o	o	o	
11	Did the Review Coordinator summarize review findings?	o	o	o	
12	Were open/action items identified?	o	o	o	
13	Did the Recorder prepare the review report?	o	o	o	
14	Did the Recorder distribute the review report?	o	o	o	
15	Were the review metrics recorded in the metrics repository?	o	o	o	
16	Were open/action items tracked to resolution?	o	o	o	
17	Were Release Quality Findings/Recommendations: (List Release trouble reports /Action Items (Responsibility and Completion Date) discussed during Review?	o	o	o	
18	Were Customer Support Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during Review?	o	o	o	
19	Were Training Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?	o	o	o	

Item No.	Question	Yes	No	N/A	Notes
20	Were User Documentation Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?	o	o	o	
21	Were Overall Release Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?	o	o	o	

Functional Requirements

Item No.	Question	Yes	No	N/A	Notes
1	Are all functions (that need be tested) being tested?	o	o	o	
2	Has the test environment been configured??	o	o	o	
3	Have all test tools been demonstrated prior to use?	o	o	o	
4	Has all test equipment been calibrated?	o	o	o	
5	Have all test procedure changes been documented and agreed to?	o	o	o	
6	Have all product versions been identified and verified?	o	o	o	
7	Are test cases, test scenarios, inputs, expected results, and actual results being documented completely?	o	o	o	
8	Are error message text and error actions relevant?	o	o	o	
9	Does the program, as written, properly utilize inputs (outputs)?	o	o	o	
10	Has all test data been obtained/built for testing?	o	o	o	
11	Are the products ready for turnover to the test group?	o	o	o	
12	Are resources available for testing?	o	o	o	

Appendix J: Operational Readiness Review Checklist

Date of Review:	**Contractor:**
ERA-PMO:	Number of Non-compliances

General

Item No.	Question	Yes	No	N/A	Notes
1	Was written notification provided at least three (3) working days prior to the review?	o	o	o	
2	Was an agenda prepared?	o	o	o	
3	Were scheduled facilities adequate?	o	o	o	
4	Was a review package prepared?	o	o	o	
5	Were the participants notified of review materials location at least three (3) working days in advance?	o	o	o	
6	Was a review checklist prepared?	o	o	o	
7	Was the review agenda followed?	o	o	o	
8	Was the review checklist completed?	o	o	o	
9	Did the Recorder take minutes of the meeting?	o	o	o	
10	Did the Recorder distribute minutes of the meeting?	o	o	o	
11	Did the Review Coordinator summarize review findings?	o	o	o	
12	Were open/action items identified?	o	o	o	
13	Did the Recorder prepare the review report?	o	o	o	
14	Did the Recorder distribute the review report?	o	o	o	
15	Were the review metrics recorded in the metrics repository?	o	o	o	
16	Were open/action items tracked to resolution?	o	o	o	
17	Were Release Quality Findings/Recommendations: (List Release trouble reports /Action Items (Responsibility and Completion Date) discussed during Review?	o	o	o	
18	Were Customer Support Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during Review?	o	o	o	
19	Were Training Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?	o	o	o	
20	Were User Documentation	o	o	o	

Item No.	Question	Yes	No	N/A	Notes
	Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?				
21	Were Overall Release Findings/Recommendations: Action Items (Responsibility and Completion Date) discussed during review?	o	o	o	

Functional Requirements

Item No.	Question	Yes	No	N/A	Notes
1	Is the facility constructed in accordance with the approved design?	o	o	o	
2	Can the facility be operated safely and efficiently?	o	o	o	
3	Will the facility be operated, maintained, and supported by trained and competent personnel?	o	o	o	
4	Will the facility be designed and operated in conformance with applicable standards and regulatory requirements?	o	o	o	
5	Are all activities formally and adequately documented?	o	o	o	
6	Is the Staffing plan described in the **ERA Staff Personnel Requirements** section of the *ERA CAAD* adequate for the scope of work?	o	o	o	
7	Is the operational/implementation schedule reasonable?	o	o	o	
8	Is the existing hardware, with planned upgrades, sufficient for the task?	o	o	o	

Final

Appendix K: ERA Contractor(s) Evaluation Checklist (Sample)

Project: ERA	**Supplier Evaluation for Software Acquisition**
Assessors:	**Date:**
Assesses:	**Time Evaluation Started:** **Time Evaluation Ended:**

Item #	Question	Yes	No	Assesses Comments	Assessor's Comments
	FINANCIAL SOUNDNESS				
1	Can a current financial statement be obtained for examination?				
2	Is an independent financial rating available?				
3	Has the company or any of its principals ever been involved in bankruptcy or computer-related litigation?				
4	How long has the company been in business?				
5	What is the company's history?				
	EXPERIENCE AND CAPABILITIES				
6	On a separate page, list by job function the number of people in the company				
7	On a separate page, list the names of sales and technical representatives and support personnel. Can they be interviewed?				
8	List the supplier's software products that are sold and the number of installations of each.				
9	Is a list of users available?				

Final

Appendix L: ERA Contractor(s) Performance Checklist (Sample)

Project: ERA	**Supplier Performance for Software Acquisition**
Assessors:	**Date:**
Assesses:	**Time Evaluation Started:** **Time Evaluation Ended:**

Item #	Question	Yes	No	Assesses Comments	Assessor's Comments
	PERFORMANCE CRITERIA				
1	Approach to meet software's functional requirements is defined?				
2	Growth potential or expansion of requirements of the system is defined?				
3	Supplier meets time constraints for deliverables?				
4	Test and acceptance criteria that are to be met are defined?				
5	Programming language standards and practices to be followed are defined?				
6	Documentation standards to be followed are defined?				
7	Ease of modification is addressed?				
8	Maximum computer resources allowed, such as memory size and number of terminals, are defined?				
9	Throughput requirements are defined?				
	EVALUATION AND TEST				
10	Software possesses all the functional capabilities required?				
11	Software performs each functional capability as verified by the following methods:				
	Documentation Evaluation?				

Appendix M: ERA Contractor(s) Software Evaluation Checklist (Sample)

Project: ERA	**Supplier Software Evaluation for Software Acquisition**
Assessors:	**Date:**
Assesses:	**Time Evaluation Started:** **Time Evaluation Ended:**

Item #	Question	Yes	No	Assesses Comments	Assessor's Comments
	FUNCTIONALITY				
1	Does the basic function of the software meet the acquirer's needs?				
2	Are its overall capabilities consistent with the requirements of the acquirer's application?				
3	Can the software be run under the acquirer's operating system?				
	PERFORMANCE				
4	Is the performance adequate for the acquirer's needs?				
5	Are believable performance figures available?				
6	How many users can be on the system before it begins to slow down?				
7	What verifiable evidence is available showing that the supplier has tested performance issues in a suitable environment?				
	RELIABILITY				
8	Does the product have a clean, modular design?				
9	Has it been in actual use long enough to make sure that most of its bugs have been cleaned up?				
10	Are there errors that a user can make that will bring the system down?				