ELECTRONIC RECORDS ARCHIVES

INDEPENDENT VERIFICATION AND VALIDATION PLAN (IVVP v1.1)

(WBS # 1.4.1.1.4)

for the

NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

ELECTRONIC RECORDS ARCHIVES PROGRAM MANAGEMENT OFFICE (NARA ERA PMO)

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Independent Verification And Validation Plan (IVVP)
Signature Page

Program Director,

I recommend approval of the Independent Verification and Validation Plan (IVVP).

_____ _____

Carmen Colon, Date
ERA Program

_____ _____

Kenneth Thibodeau, Date
ERA Program Director

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1.0 PURPOSE

This section describes the purpose and scope of the Electronic Records Archives (ERA) *Independent Verification and Validation Plan* (IVVP) prepared for the National Archives and Records Administration (NARA). IEEE Std. 1012-1998, *IEEE Standard for Software Verification and Validation* was utilized to provide guidance for production of this plan. The IVVP describes the purpose, goals, and scope of the Independent Verification and Validation (IV&V) effort.

1.1 Introduction

The NARA ERA Program encompasses the policies, procedures, practices, and the necessary technology that will enable NARA to build ERA. The system will receive, preserve, and provide access to electronic records maintained by NARA. Details of the ERA system are found in **Section 1.4, System Description**.

IV&V provides input on deliverables, procedures, standards, resources, effort, and duration to support the planning and deployment of ERA. The Verification process provides objective evidence that all life cycle processes have been properly and adequately performed. The Validation process examines and provides objective evidence of product compliance with the system's functional requirements and the users' needs.

The content of IV&V tasking is determined by the integrity level, described in **Section 4.3, System Integrity Level,** which itself was the result of the first ERA System Criticality Analysis. The resulting task layout is identified in this plan. The IV&V process provides independent assessments of the ERA system documents, plans, processes, and configuration components. Additionally, IV&V provides independent assessment of the test methodology applied at the integration, system, and acceptance test levels as well as providing an assessment of the deployment plan and process.

The focus of the IVVP is a description of the mechanisms, requirements, and management activities that will allow successful execution of IV&V. These activities will assist in ensuring procurement, integration, implementation, and deployment of a high quality ERA system. IV&V provides a disciplined approach to assessing ERA throughout the acquisition life cycle. Detailed descriptions of the tasks performed by IV&V are contained in **Section 5.0, IV&V Life Cycle Verification and Validation**.

This plan is based on the *IEEE Standard for Software Verification and Validation,* IEEE Std. 1012 - 1998. IEEE Std. 1012-1998 has been tailored to describe system-level activities rather than the software activities and tasks focused on by the standard. The life cycle acquisition processes used in this plan conform to those described in IEEE/EIA 12207.0-1996, *IEEE/EIA Guide – Industry Implementation of ISO/IEC 12207:1995, IEEE/EIS Standard for Information Technology – Software life cycle processes*, and in IEEE Std. 1012-1998. They are also in accordance with the ERA development life cycle as described in the *ERA Life Cycle (ELC)* document and the *ERA Program Management Plan (PMP).*

1.2 Goals

The IV&V goal is to ensure that the deployed system is capable of performing its intended functions and is testable, reliable, maintainable, usable, and easily enhanced. This IV&V program is designed to provide NARA with increased visibility into the acquisition process and can be used as a supplementary tool to help NARA reduce overall project risk. IV&V provides an independent assessment of ERA throughout its life cycle, continuously verifying and validating that the ERA system and documentation conforms to contract requirements, and meets user needs.

1.3 Scope

This plan describes the activities, methods, criteria, organizational structure, management, schedule, and resources planned for conducting IV&V in the ERA Program. This plan applies to the design, integration, test, acceptance, and deployment of all acquired configuration components of ERA.

1.4 Project Overview

ERA will provide a comprehensive, systematic, and dynamic means for preserving virtually any kind of electronic record, free from dependence on any specific hardware or software. 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.

1.5 Specific Processes and Procedures Covered

This IVVP describes the tasks that will be undertaken to verify and validate the acquisition process (**Section 5.2**), supply process (**Section 5.3**), development process (**Section 5.4**), operation process (**Section 5.5**), and maintenance process (**Section 5.6**). This IVVP also includes tasking required for the IV&V management process (**Section 5.1**).

The particular set of tasks chosen for ERA and described in this plan accommodates a modified integrity level three undertaking. At the time of production of this IVVP, verification of developer component test documentation and results, production of IV&V documentation for component and integration testing, and IV&V performance of component and integration testing, were considered outside of the scope for the ERA effort.

1.6 Organization of this document

This document is organized in a manner compliant with the content and format specified for a Software Verification and Validation Plan, as specified in Section 7 of IEEE Std. 1012-1998. **Section 1.0** of this document is concerned with describing the purpose, goals, and scope of the IV&V effort for ERA. **Section 2.0** lists the references used to generate this document. **Section 3.0** provides a definition of terms. **Section 4.0** provides an overview of the IV&V infrastructure. **Section 5.0** describes each primary life cycle process and identifies associated IV&V activities and tasks. Any changes to the list of deliverables or IV&V tasking will be reflected in **Section**

5.0 of this document. **Sections 6.0**, **7.0**, and **8.0** describe, respectively, the IV&V reporting, administrative, and documentation requirements for ERA.

1.7 Assumptions

To achieve the objectives defined in this plan, it is assumed that:

- The IV&V team will have:
  - Continuous access to ERA system plans, specifications, Configuration Management (CM) data, test data, tools, Commercial Off-The-Shelf (COTS) products, ERA Contract Data Requirements List (CDRL) products, test results, and identified issues (e.g. meeting minutes, contract exceptions, action items, etc.); and
  - Preliminary draft documents from the ERA contractor(s) available in sufficient time to allow feedback prior to formal delivery to the ERA Contract Office Representative (COR).
- Documents (such as the System Requirements Definition, Concept of Operations, Detailed Design Document, and Security Plan) are complete, consistent, and current; and
- The ERA Program Management Office (PMO) is empowered to maintain configuration item change control, and change control for engineering and user documentation.

2.0 REFERENCED DOCUMENTS

The following documents, of the exact issue shown, form a part of this plan to the extent specified herein.

2.1 Government documents

The following sections list contract documents, laws, regulations, and guidelines that were either used in the development of this plan or are referenced in this plan.

2.1.1 Contract Documents

The contract specific documents are listed below.

- TBD
- Other legislative and executive directives as they may apply to the management and deployment of this system.

2.1.2 Federal Laws and Regulations

The Federal laws and regulations are listed below.

- Office of Management and Budget (OMB) Circular No. A-11, *Preparation, Submission and Execution of the Budget*, (Revised 07/25/2003)
- Office of Management and Budget (OMB) Circular No. A-119, *Transmittal Memorandum, Federal Participation in the Development and Use of Voluntary Standards* (02/10/1998)

- Federal Acquisition Regulation, issued September 2001 by GSA, DoD, NASA
- General Accounting Office Information Technology: *An Audit Guide for Assessing Acquisition Risks*, December 1992 (Chapter 5)
- Defense Finance and Accounting Service, *Analysis of Alternatives Report*, DFAS 8000.1-R, Part C, Chapter 1
- E-Government Act of 2002, Public Law 107-347
- Federal Information Security Management Act of 2002, U.S.C. Vol. 44, Sections 3541-9

2.1.3 NARA Policies

TBD

2.2 Non Government documents

The following documents form a part of this plan to the extent as specified herein. Unless otherwise indicated, the contract version of the document shall apply.

Standard Identifier	Standard Title
IEEE Std. 610.12 -1990	*IEEE Standard Glossary of Software Engineering Terminology*
IEEE Std. 730-1998	*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	*IEEE Recommended Practice for Software Requirements Specifications*
IEEE Std. 1012-1998	*IEEE Standard for Software Verification and Validation*
IEEE Std. 1016-1998	*IEEE Recommended Practice for Software Design Descriptions*
IEEE Std. 1028 -1997	*IEEE Standard for Software Reviews*
IEEE Std. 1058-1998	*IEEE Standard for Software Project Management Plans*
IEEE Std. 1061-1998	*IEEE Standard for a Software Quality Metrics Methodology*
IEEE Std. 1062-1998	*IEEE Recommended Practice for Software Acquisition*
IEEE Std. 1063-1987	*IEEE Standard for Software User Documentation*
IEEE Std. 1220-1998	*IEEE Standard for Application and Management of the Systems Engineering Process*
IEEE Std. 1233 -1998	*IEEE Guide for Developing System Requirements Specifications*
IEEE Std. 1362-1998	*IEEE Guide for Information Technology-System Definition - Concept of Operations - Document*
IEEE Std. 2001-2002	*IEEE Recommended Practice for the Internet – Web Site Engineering, Web Site Management, and Web Site Life Cycle*
IEEE/EIA 12207.0 -1998	*IEEE/EIA Standard - Software life cycle processes*
IEEE/EIA 12207.1 -1997	*IEEE/EIA Standard - Software life cycle processes–Life cycle data*
IEEE/EIA 12207.2 -1997	*IEEE/EIA Standard - Software life cycle processes– Implementation considerations*
J-STD-016-1995	*IEEE/EIA Standard - Software life cycle processes– Software Development Acquirer-Supplier Agreement*

Standard Identifier	Standard Title
Department of Defense 5000.2-R, April 5, 2002	*Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs*
SEI-CMM	Technical Report CMU/SEI-93-TR-024 *Capability Maturity Model for Software*, version 1.1

Table 2-1: Applicable IEEE Standards

3.0 DEFINITIONS AND ACRONYMS

Section 3.1 provides a glossary of commonly used terms and their definitions to aid in the understanding of this document. **Section 3.2** provides a list of acronyms and respective definitions that are used throughout.

3.1 Definitions

The following technical terms, when used in this document, are defined as stated below. Definitions obtained from a standardized source are so annotated.

Term	Definition
Acceptance testing	Formal testing conducted to determine whether a system satisfies its acceptance criteria and enables the customer to determine whether or not to accept the system [IEEE Std. 610.12-1990, IEEE Standard Glossary of Software Engineering Terminology].
Anomaly	Anything observed in the documentation or operation of a system that deviates from expectations based on previously verified system products or reference documents. The criticality of an anomaly is assessed in accordance with the standards described in the template for the NARA IV&V Anomaly Report, found in **Appendix B** of this document. Three areas of classification are considered. They are: impact on the success of the system (red, yellow, green), urgency of the corrective action at the project level, and urgency of corrective action in terms of the impact on the enterprise.
Audit	An audit is defined, in the context of an acquisition effort, as a detailed accounting of a delivered product in the context of its defining baseline.
Concept phase	The initial set of activities and products of a [development] project, in which user needs are described and evaluated through documentation.
Functional baseline	In configuration management, the initial approved technical documentation for a configuration item [IEEE Std. 610.12-1990]. The Functional Baseline is usually defined by the System Requirements Specification (SyRS).
Hardware	Physical equipment used to process, store, or transmit computer programs or data [IEEE Std. 610.12-1990].

Term	Definition
Increment	A useful and supportable operational capability that can be effectively developed, produced, or acquired, deployed or sustained. Each increment of capability will have its own set of thresholds and objectives set by the user.
Independent verification and validation	Verification and validation tasks performed by an organization that is technically, managerially, and financially independent of the development organization.
Installation and Checkout	The period of time in the system life cycle during which system components are integrated into the operational environment and tested in this environment to ensure that they perform as required.
Integration testing	Testing in which system components are combined and tested to evaluate the interaction between them.
Interface testing	Testing conducted to evaluate whether systems or components pass data and control correctly to one another [IEEE Std. 610.12-1990].
Operation and maintenance phase	The period of time in the system life cycle during which the system is employed in the operational environment, monitored for satisfactory performance, and modified as necessary to correct problems or to respond to changing requirements.
Release	In the context of the ERA program, each release presents a subset of the functionality prescribed for its parent increment.
System life cycle	The period of time that begins when a system is conceived and ends when the system is no longer available for use [IEEE Std. 610.12-1990].
Technical Review	A Technical Review is a review conducted to assess the technical progress of an effort as compared to the requirements of an associated major milestone for the purpose of determining readiness to progress to the next milestone or event.
Test Phase	The period of time in the system life cycle during which its components are integrated, and the product is evaluated to determine whether or not requirements have been satisfied.
Test readiness review	A review conducted to evaluate preliminary test results for one or more configuration items; to verify that the test procedures for each configuration item are complete, comply with test plans and descriptions, and satisfy test requirements; and to verify that a project is prepared to proceed to formal testing of the configuration item [IEEE Std. 610.12-1990].
Validation	The process of evaluating a system or component during or at the end of the development process to determine whether or not it satisfies specified requirements [IEEE Std. 610.12-1990].
Verification	The process of evaluating a system or component to determine whether or not the products of a given development phase satisfy the conditions imposed at the start of the phase [IEEE Std. 610.12-1990].

Table 3-1: Definitions List

3.2 Acronyms

The following abbreviations appear in this document.

Acronym	Definition
CCB	Configuration Control Board
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CM	Configuration Management
ConOps	Concept of Operations
COR	Contracts Office Representative
COTS	Commercial Off-The-Shelf
DoD	Department of Defense
ELC	ERA Life Cycle
ERA	Electronic Records Archives
FCA	Functional Configuration Audit
FOC	Full Operational Capability
IDD	Interface Design Description
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IOC	Initial Operational Capability
IRD	Interface Requirements Document
IRS	Interface Requirements Specification
IV&V	Independent Verification and Validation
IVVP	Independent Verification and Validation Plan
NARA	National Archives and Records Administration
OMB	Office of Management and Budget
PCA	Physical Configuration Audit
PD	Program Director
PMO	Program Management Office
PMP	Program Management Plan
POST	Program Office Support Team
QA	Quality Assurance
RD	Requirements Document
RFP	Request for Proposal
RM	Risk Management
SARAD	System Architecture and Requirements Allocation Description
SE	Senior Systems Engineer
SEI-CMM	Software Engineering Institute – Capability Maturity Model
SME	Subject Matter Expert
SOO	Statement of Objectives
SRS	Software Requirements Specification
SyRS	System Requirements Specification
TBD	To Be Determined
TRR	Test Readiness Review

Acronym	Definition
WBS	Work Breakdown Structure

Table 3-2: Acronyms List

4.0 IV&V OVERVIEW

This section describes the organization, schedule, resources, responsibilities, tools, techniques, and methodologies necessary to perform the independent verification and validation tasks.

4.1 Organization

The NARA ERA Program Director (PD) has responsibility for the ERA program. That responsibility includes establishing policies, procedures and practices, and providing the necessary technology to enable NARA to build the ERA system to receive, preserve, and provide access to electronic records. The ERA PMO provides operational support for acquiring, operating, and maintaining the ERA system.

Through coordination with the NARA ERA PD and the ERA PMO, IV&V receives products delivered by the ERA contractor(s) and sub-contractors. These products undergo an assessment of their conformance to the appropriate standards specifying their format, purpose and content and of the completeness and accuracy of their technical content. Comments (usually in the form of an IV&V Task Report) together with a delivery letter are then provided to the ERA COR who submits them to the ERA PD and/or its designated representative for review and acceptance or rejection. The ERA COR will inform the IV&V contractor of the acceptance or rejection of the product delivery. If the delivery is rejected, it then becomes subject to comment adjudication. IV&V supports the ERA PMO during technical interchange meetings, program management reviews, milestone reviews, test witnessing, and other activities as authorized.

As shown in **Figure 4-1, Organization Hierarchy**, and **Figure 4-2, Organization Communications Flow**, IV&V has an ongoing relationship with the ERA PMO and its members. IV&V has a tangential relationship with the ERA contractor(s) and their representatives.

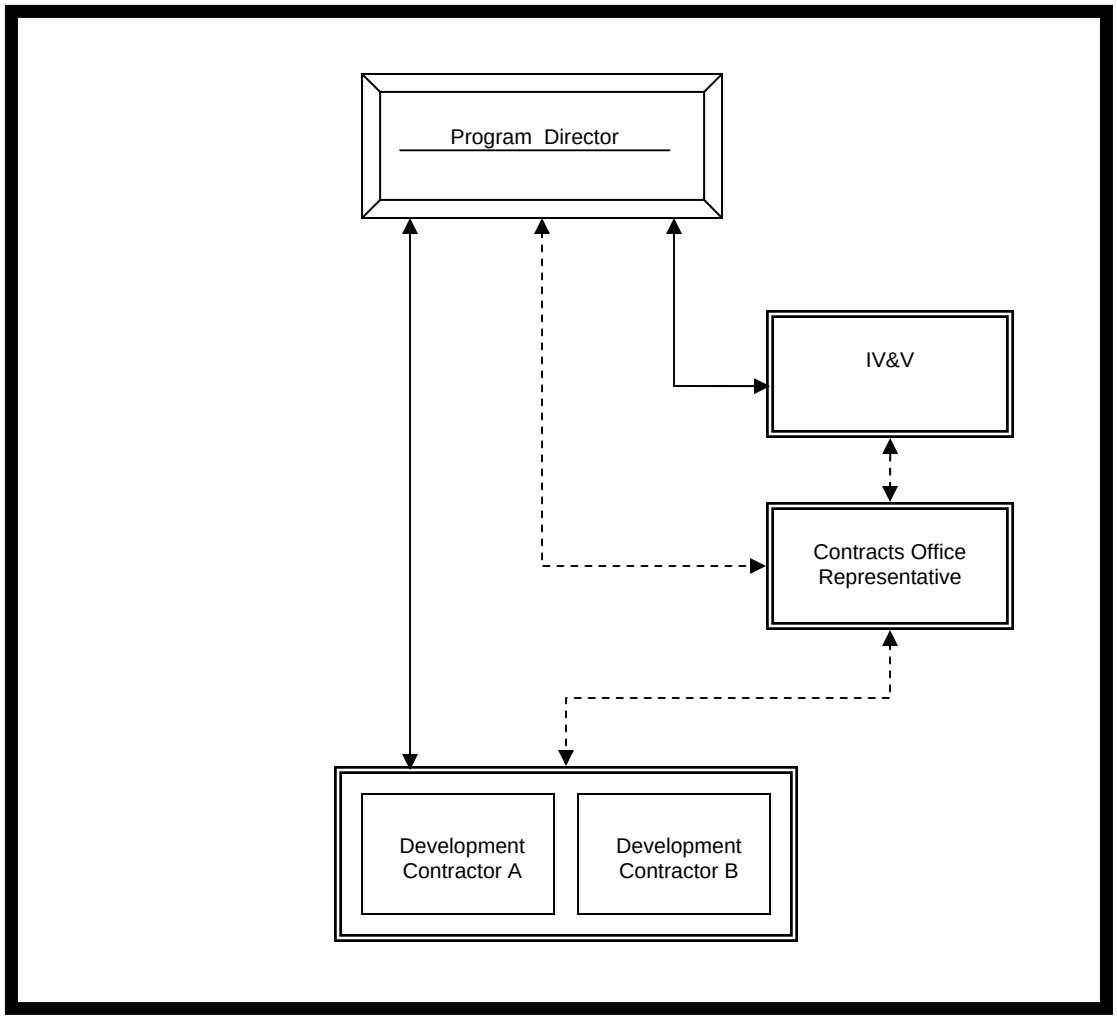

Figure 4-1: Organization Hierarchy

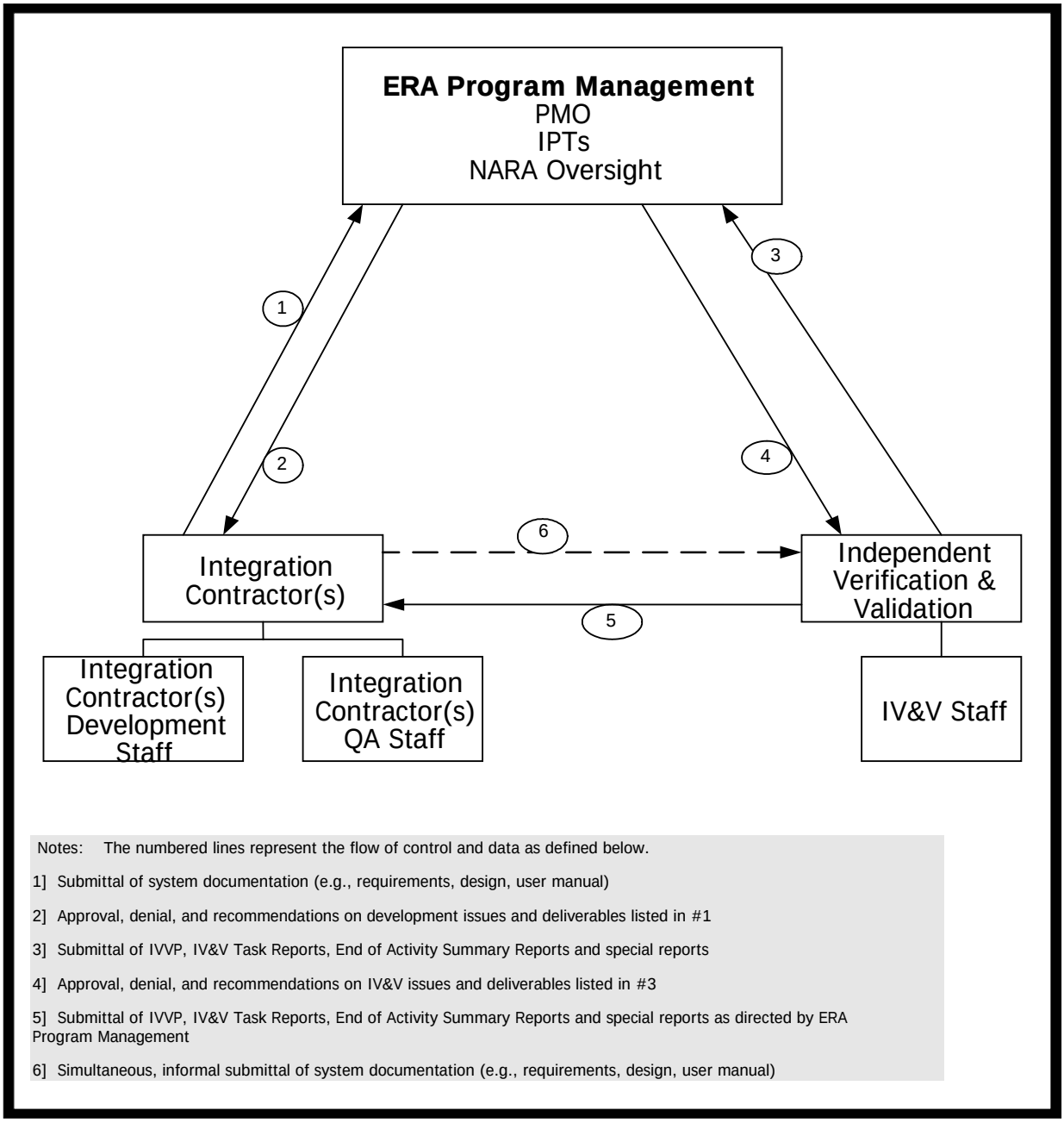

Figure 4-2: Organization Communication

4.2 Master Schedule

The ERA Master Schedule is maintained by the ERA PMO and is published as a part of the *ERA PMP*. The ERA Master Schedule identifies program life cycle milestones including formal reviews and audits. As a living document, updated as program events are affected, the ERA Master Schedule is developed and maintained through an iterative process throughout the development life cycle.

IV&V tasks providing feedback on the life cycle processes that support ERA management functions (e.g., comments on design review material) are scheduled prior to each milestone review. The timely "turn-around" of information provides ERA management with an independent product assessment prior to the milestone review. The IV&V schedule, addressing individual IV&V tasks, is included in the ERA Program Master Schedule.

4.3 System Integrity Level Scheme

The granularity of tasking undertaken by IV&V is, in large measure, determined by the integrity level of the system being developed. ERA has initially been assessed at a modified level 3 integrity (for a discussion on software integrity levels, consult IEEE Std. 1012-1998, Section 4.1). At this level, a function or system capability that fails may have catastrophic consequences on the NARA mission, however there is an infrequent likelihood of such a failure. For integrity level 3, IV&V is required to generate test documentation and execute IV&V tests (component, integration, system, and acceptance). Typically, for level 3 integrity, IV&V would not review the ERA contractor(s) test documentation but would prepare its own test documentation and execute its own tests.

However, for the ERA modified level 3 integrity, IV&V will evaluate the ERA contractor(s) test documentation, and witness the integration and system testing. IV&V will evaluate the ERA acceptance test documentation and witness the ERA acceptance tests. IV&V will execute a randomly selected number of system and acceptance test cases. IV&V will then, through statistical means, validate the results of the formal tests originally conducted. Further information regarding IV&V testing is contained in **Section 8.0, IV&V Documentation Requirements**. IV&V, at a minimum, will sample the tests at the completion of each release within each increment in the ERA development life cycle, and at Initial Operational Capability (IOC) and Full Operational Capability (FOC).

4.4 Resource Summary

The following subparagraphs identify the resources needed to perform all of the planned IV&V activities and tasks including staffing, facilities, tools and special procedural requirements (e.g., licenses, access rights and points of contact). An overview of the resources needed for the IV&V effort is contained in **Sections 4.4.1**, **Staffing, 4.5, Responsibilities**, and **4.6, Tools, Techniques and Methods**, and will not be repeated for individual tasks in **Section 5.1** through **5.6** of this plan.

4.4.1 Staffing

Table 4-1, Staffing Details to Support IV&V Activities, provides the staffing numbers for IV&V activities in the ERA Program.

Number of Staff	Percentage of Time Assigned	Title	Skill Level
1	100%	IV&V Technical Director	Manager
6	100%	IV&V SME	Expert
2	75 %	Test SME	Expert
TBD	As required	Consultant	TBD

Table 4-1: Staffing Details to Support IV&V Activities

4.4.2 Facilities

Offices and computing facilities in Archives II, in College Park, MD and offices co-located in or accessible to the ERA contractor(s) facilities.

4.4.3 Tools

IV&V will develop tools and templates as required to facilitate the assessment of the products delivered for evaluation. IV&V anticipates that these tools may all be developed and managed through use of the "off-the-shelf" capabilities of Microsoft Office XP Professional. For the evaluation of Web based products, IV&V may require the use of other automated tools specifically designed for the purpose of evaluating the content of Web based products. That need is TBD.

4.4.4 Finances

This section is not applicable to this plan.

4.4.5 Special Procedural Requirements (security, access rights, documentation control)

The Government will provide the IV&V contractor with "non-escort required" clearances to gain access to NARA in the College Park facility. Personnel assigned to areas requiring special briefings for need-to-know material will be provided those briefings in a timely manner. All IV&V contractor staff members will require access to the NARA ERA PD and other interfacing customer and contractor personnel. IV&V staff members require the accesses and authority necessary to attend program reviews and technical interchange meetings in order to effectively execute assigned tasks.

The ERA PMO PD will ensure that distribution procedures are implemented to provide documentation, information and policy memoranda, meeting notices and minutes, and program schedules and activities to IV&V in a timely manner.

4.5 Responsibilities

Table 4-2, Primary Participant Responsibilities, details the responsibilities for participants in the IV&V process.

Primary Participants	Primary Responsibilities	Support Responsibilities
IV&V Technical Director	Overall management of the ERA IV&V effort	Reports to the ERA PD
IV&V Subject Matter Expert (SME)	IV&V specialist with a high degree of knowledge of the V&V process and program/project life cycle process requirements. Performs technical reviews, assessments and tests as required	Participates in technical interchange and other meetings as required. Reports to the IV&V Technical Director
Test SME	Specialist with specific knowledge of Testing and Test techniques. Performs technical reviews, assessments and tests as required	Participates in technical interchange and other meetings as required. Reports to the IV&V Technical Director when supporting IV&V activities and tasks
ERA Program Director (PD)	Overall management responsibility for the ERA Program* ***NOTE:** *The PD is responsible for management of the IV&V effort for the ERA program and may delegate management tasks to Government staff as appropriate.*	Primary interface for issues, concerns, risks and/or anomalies identified by IV&V.
ERA Contractor(s)		Provide support as needed during IV&V testing, NARA ERA PMO acceptance, installation, and operational testing. Provide access to facilities and supporting work products related to ERA development and testing.
Consultant	TBD	

Table 4-2: Primary Participant responsibilities

4.6 Tools, Techniques, and Methods

The following paragraphs describe the tools, techniques, and methods to be used by IV&V.

4.6.1 Tools

IV&V will verify the accuracy of the requirements traceability matrix and maintain an independent anomaly tracking system using Microsoft Access. IV&V will maintain document assessment checklists in Microsoft Access. This will allow IV&V to record, track, and compare evaluations of iterative releases of the same document. If needed IV&V, also will maintain IV&V identified risks in Microsoft Access 2002.

IV&V anticipates that an automated tool for evaluating the components of a Web interface will be needed. Description and details are TBD.

4.6.2 Techniques

IV&V will participate in each technical interchange meeting with the ERA PD, or designated representative, and the ERA contractor(s). IV&V will provide information to aid in the delivery of products that are compliant with the technical and contractual requirements of the ERA program. All products identified herein will be reviewed. Additionally, IV&V will randomly select and perform a sampling of System and Acceptance Test Cases. Statistical analysis techniques will be used to project the results of the IV&V testing on the population of System or Acceptance Test results previously achieved. Results of IV&V analyses, evaluations and tests will be provided to the ERA PD, the IV&V COR, the ERA contractor(s) (if so directed), and appropriate members of the Program Office Support Team (POST), in a timely manner.

4.6.3 Methods

The methodology to be used for the ERA IV&V approach has been selected to be consistent with the overall ERA life cycle model. The focus of the method is to identify any flaws or errors as early as possible, when they are easier and more cost effective to correct. This plan provides a framework of activities that are performed during releases and increments within phases of the ERA life cycle. IV&V maintains an overall system perspective and analyzes each activity to ensure that progress continues toward the completion of the ERA system. This analysis includes ensuring that an ERA configuration baseline is established and maintained. This approach will be taken in order to maintain system integrity.

IV&V will accomplish system verification and validation by examining the correctness, completeness, consistency, reliability, and maintainability of the ERA products at each step in the process. Correctness means that the product being evaluated satisfies the baseline system requirements. Completeness means that all required functions are implemented and all necessary products are procured to fully support the program life cycle. Consistency means that the relationships between all requirements, documentation, and products are constant and appropriately detailed at each stage of development. Reliability means that the final (end item) product can be expected to perform its intended functions without error or failure as reflected in

the individual products. Maintainability is achieved when each product supports life cycle maintenance, modifications, and future enhancements.

Throughout the acquisition life cycle, IV&V will conduct verification and validation activities for the initial configuration as well as for modifications, enhancements, and approved changes. The results of these efforts may require certain task reiterations, such as documentation reviews for each version update.

ERA will be acquired through a down-select process to be followed by development using an incremental life cycle model. During the period prior to the down-select, the two ERA contractors will be developing a System Requirements Specification (SyRS) and a System Architecture and Requirements Allocation Description (SARAD). These documents usually define the Functional and Allocated Baselines. At this point the PMO will select a contractor to continue the development effort. IV&V will review these, and any other documents or plans, and will generate an IV&V Task Report for each document or plan formally reviewed. After down-select, the ERA contractor will be responsible for delivering ERA. A minimal level of operational capability will exist at the completion of Increment #1. This will be known as the IOC. Even as the ERA contractor completes work on the system IOC, the contractor will be initiating work on the capabilities that will be part of Increment #2. There will be no less than two releases for increment #2 and for successive increments until FOC is attained.

For each increment, and its respective releases, the ERA contractor will provide a full set of product documentation or change pages. IV&V will review each document and/or artifact and provide an IV&V Task Report on each. Additionally, IV&V, for each release within each increment, will participate in design reviews, technical interchange meetings, Test Readiness Reviews (TRRs), management reviews, and audits. IV&V will prepare an IV&V Meeting Summary Report for each meeting attended.

As a result of the incremental model, IV&V may be performing Operations IV&V Activity tasks for the capabilities delivered as IOC while performing Installation IV&V Activity tasks for the first release of Increment #2. IV&V may be performing Development IV&V Activity tasks for the second release of Increment #2 and concurrently performing Requirements IV&V Activity tasks for the first release of Increment #3.

In addition to the IV&V Task Reports generated at the completion of each IV&V task, IV&V also will produce an End of Activity Summary Report at the completion of each iteration of each IV&V activity. IV&V will generate a Final IV&V Summary Report after IOC and FOC.

5.0 IV&V Life Cycle Verification and Validation

This section provides detailed information about the IV&V activities performed during the ERA life cycle as described in the *ERA Life Cycle (ELC)* document. IV&V activities, and the tasks to implement them, are described as specified in IEEE Std. 1012–1998. For each identified task, this plan includes the methods and criteria, inputs and outputs, resources, schedules, risks, assumptions, and roles and responsibilities. Items that have been discussed elsewhere in this plan are not repeated for each identified task. Specifically, information relating to assumptions

is provided in **Section 1.7**, resources in **Section 4.4**, and roles and responsibilities in **Section 4.5**. For those tasks where the risks have been identified, a discussion of the risk is provided with the task description. The methodology used for the IV&V approach is derived from the IEEE/EIA Std. 12207.0 life cycle methodology. This methodology, in conjunction with IEEE Std. 1028-1997 governing reviews, provides the root evaluation criteria for configuration items and the entry/exit criteria associated with each milestone.

Each task in this section identifies the inputs required by IV&V to perform assigned responsibilities in accordance with this plan.

5.1 Management Process

The management process consists of a single activity with five (5) tasks that are performed by those responsible for managing the IV&V effort during the ERA acquisition life cycle. The IV&V management responsibilities are to:

- Prepare the plan for execution of the IV&V Process,
- Implement the plan,
- Monitor the execution of the plan,
- Analyze problems uncovered during the execution of the plan,
- Report progress,
- Ensure that products satisfy requirements,
- Assess evaluation results,
- Determine task completion, and
- Check the results for completeness.

5.1.1 Management Activity

The management responsibilities of the IV&V Technical Director are planning, reviewing, and controlling the IV&V process. Management's responsibility is to ensure positive, successful interaction between IV&V and other program activities to promote the deployment of a defect-free system. The planning for IV&V management considers the iterative nature of the IV&V tasks described in **Section 5.0**. IV&V management activities are executed throughout the ERA life cycle.

Specific IV&V management activity tasks include:

- Generate Independent Verification and Validation Plan,
- Perform Baseline Change Assessment,
- Perform Management Review of IV&V,
- Support Management and Technical Reviews,
- Interface With Organizational and Supporting Processes, and
- Identify process improvement opportunities in the conduct of IV&V.

5.1.1.1 Generate Independent Verification and Validation Plan

IV&V planning is most effectively performed in conjunction with the overall planning for system acquisition. ERA is being acquired and deployed as a series of releases and increments. This will require that IV&V tasks and activities be performed iteratively. Revisions will be made to this plan when changes to the scope of the ERA require modification (addition/deletion) to tasks specified in the plan, or as more detailed task management is required for future activities and tasks.

Revisions to the IVVP will not be made as a way of resolving deviations (e.g., although the IVVP calls for witnessing the ERA contractor(s) integration test, integration test may not be performed) from the program master plan. Significant variances from the baselined IVVP will be addressed in the appropriate Activity Summary Report and in the IV&V Final Report.

Task:	Generate Independent Verification and Validation Plan
Methods:	Material upon which the document is to be based will be collected and compiled. A proposed approach will be chosen and the IVVP will be generated and released for review. Updates will be published semi-annually or as necessary to accommodate significant program changes or as directed by the IV&V COR.
Inputs:	IEEE Std. 1012-1998, CONOPS, PMP, Program Master Schedule/Work Breakdown Structure (WBS) see **Appendix A, IV&V Work Breakdown Structure (WBS) and Schedule**, Program Criticality Analyses, other program-level and contractor planning documents as required.
Outputs:	IV&V Plan
Schedule:	Initial Final: Q3 2003 Modified Final: Q1 & Q3 2004, Q1 & Q3 2005, etc., and, as necessary. Plan submitted to the government for approval, upon completion
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The quality and completeness of the IVVP is highly dependant on the quality and completeness of program-level and contractor planning documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.1.1.2 Perform Baseline Change Assessment

Baseline change assessment may be the most dynamic task performed during the IV&V effort. Any proposed change to an existing baseline could affect an unknown amount of previously completed development and IV&V work. IV&V evaluates proposed changes for completeness, consistency, potential benefits, and technical impact; and to determine if the change will be provided without negatively impacting the system as a whole.

Task:	Perform Baseline Change Assessment

Methods:	Whenever a change request is generated, IV&V will review the proposed change to identify its impact on the system and on planned IV&V activities. If the proposed change would have an adverse or otherwise undesirable impact, IV&V will identify that impact and the associated risk. The proposed change evaluation will be completed and returned to the IV&V COR and the ERA Configuration Control Board (CCB).
Inputs:	Change proposals and other applicable documents.
Outputs:	IV&V Task Reports, input to Activity Summary Reports, Anomaly Reports.
Schedule:	IV&V will respond to the issuance of each formal change request and provide a preliminary change assessment (in the form of an IV&V Quick Look Report) within three working days to the IV&V COR. A full IV&V technical analysis and IV&V Assessment Task Report will be completed within five (5) working days after issuance of the IV&V Quick Look Report.
Resources:	Refer to **Section 4.4**.
Risks and Assumptions:	IV&V's ability to effectively analyze system change requests in a timely manner depends on the quality of the baseline documentation and the effectiveness of baseline control mechanisms.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.1.1.3 Perform Management Review of IV&V

Management review is used by IV&V and comprises all of the general responsibilities of management for the monitoring, controlling, and reporting of the IV&V effort.

Task:	Perform management review of IV&V.
Methods:	Manage implementation of the IV&V Plan, monitor effectiveness of IV&V activities, identify IV&V training needs, perform risk management, and ensure the quality of the IV&V products. Review the IV&V effort, effecting changes to IV&V tasks or redirecting the IV&V effort, when appropriate. Recommend to the PD whether to proceed to the next acquisition life cycle activity and provide IV&V Task Reports and End of Activity Summary Reports to the organization(s) identified in **Section 6.0**. The NARA ERA PD ensures that the IVVP is supported by all ERA contractor and Government personnel. Meetings are held to report progress and plan work for the coming period. IV&V staff, as needed, will obtain authorization to attend program reviews and technical exchange meetings. For each meeting attended, the IV&V lead prepares a report summarizing the proceedings and documenting the results. The IV&V Technical Director prepares a Monthly Status Report for the ERA PD.

	IV&V participates in risk management identification and mitigation activities. IV&V follows general risk management principles including teamwork, global perspective, forward-looking-view, open communications, and continuous process improvement. The IV&V staff applies these principles and discusses the identified risks and associated mitigation plans with the appropriate ERA personnel.
Inputs:	IV&V Plan, ERA deliverable products.
Outputs:	IV&V Program Reviews and Status Reports, program review briefings, identified risks and risk mitigation recommendations, Meeting Summary Reports, IV&V Task Reports, IV&V products and updates, inputs to End of Activity Summary Reports, Anomaly Reports.
Schedule:	Program reviews and deliverable status reports are scheduled activities. All other outputs are driven by meetings attended and products received.
Resources:	Refer to **Section 4.4**.
Risks and Assumptions:	It is assumed that status, concerns, issues and program risks identified through the management review activity will be accepted by the ERA PMO as a method of providing added value to the overall ERA program. The risk associated with this activity is the ERA PMO failure to recognize observations and findings; and to act on them in a timely manner to prevent or correct potential problems.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.1.1.4 Support Management and Technical Reviews

Formal review meetings are a common means of evaluating and approving the products of one ERA life cycle phase before going on to the next. IV&V contributes to the effectiveness of management and technical reviews through a variety of functions and tasks. In most cases, these functions and tasks will be similar from one review to the next. As a result, this plan will not have specific details for each individual review to be supported; rather, it will identify the general preparations to be made for a review, together with specific information such as the material to be evaluated. IV&V, as required, will support the following reviews: Preliminary Design Reviews, Critical Design Reviews (CDRs), TRRs, Technical Interchange Meetings, Program Management Reviews, Operational Readiness Reviews, and configuration audits, especially the Functional Configuration Audit (FCA) and the Physical Configuration Audit (PCA).

Task:	Provide Management and Technical Review Support.

Methods:	Before attending a review, IV&V will evaluate the relevant documents. The objectives of the review, as stated in the ERA Program Management Plan, are the focus of the evaluation. A list of questions and/or issues appropriate to the review may be prepared prior to the review. While attending the reviews, IV&V will evaluate the material presented based on predefined criteria. At the conclusion of each review, IV&V will support the Government meetings held to discuss the completeness of the review and any open technical issues. Following the review, IV&V will analyze the review data, issues, resolutions, and discussions. A report summarizing the events of the review will be prepared to identify any risks or open issues.
Inputs:	Integration contractor planning documents, product deliverables appropriate to each review, guidelines for contractor reviews and milestones, and standards for reviews.
Outputs:	IV&V Task Reports, inputs to the End of Activity Summary Report, Anomaly Reports.
Schedule:	Prior to each meeting associated with a milestone review.
Resources:	Refer to **Section 4.4**.
Risks and Assumptions:	None.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.1.1.5 Interface with Organizational and Supporting Processes

The IV&V Technical Director is responsible for coordinating the interfaces with the organizational and supporting processes. This task is designed to help insure the smooth flow of information and data between the IV&V effort and other ERA acquisition life cycle processes.

Task:	Coordinate the IV&V effort with organizational (e.g., management, improvement) and supporting processes (e.g., quality assurance, joint review, and problem resolution).
Methods:	Identify the IV&V data to be exchanged with these processes. Document the data exchange requirements in the IVVP.
Inputs:	The IVVP and data identified in the IVVP from the organizational and supporting processes.
Outputs:	Updates to the IVVP
Schedule:	As required.
Resources:	The IV&V Technical Director.
Risks and Assumptions:	None.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.1.1.6 Identify process improvement opportunities in the conduct of IV&V.

Identification of process improvement opportunities offers another opportunity for IV&V to add value.

Task:	Identify process improvement opportunities
Methods:	Opportunities will be identified as IV&V executes the tasks identified in this IVVP. Each identified opportunity for process improvement will be evaluated and a determination made concerning the most efficient and effective means of implementing the improvement. Process improvement may relate to the sequence in which tasks are executed, the manner in which tasks are executed, the way in which task results are reported or even the way in which staff are assigned to each task.
Inputs:	Tasks identified in IVVP
Outputs:	Change in IV&V processes; modification to IVVP; input to End of Activity Summary Reports
Schedule:	This task is ongoing and not schedule driven
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2 Acquisition Process

The ERA acquisition process begins with the identification of the need to acquire ERA. The process continues with the preparation and issuance of the Request For Proposal (RFP), selection of a supplier, and management of the acquisition process through to the acceptance and deployment of the system. The IV&V effort uses the acquisition process to scope the IV&V effort, plan interfaces with the ERA contractor(s) and the Government, and review the draft system requirements contained in the RFP.

5.2.1 Acquisition Support Activity

Providing acquisition support, IV&V addresses program initiation, RFP, contract preparation, contractor(s) monitoring, and the acceptance and deployment of ERA. IV&V shall scope the IV&V effort; plan the interfaces between the IV&V effort, the Government and the contractor(s); review the draft requirements, the RFP, the Source Selection Evaluation Board report, and the draft contract(s).

Specific acquisition support activity tasks include:

- Scope the IV&V Effort (preliminary);
- Plan the Interface between the IV&V effort, NARA, and the contractor(s);
- Review the *ERA Source Selection Plan*;

- Review the *ERA Acquisition Strategy* document;
- Review the *ERA Analysis of Alternatives* document;
- Review the *ERA Configuration Management Plan*;
- Review the *ERA Concept of Operations* document;
- Review the *ERA Life Cycle* document;
- Review the *ERA Metrics Plan*;
- Review the *ERA Program Management Plan*;
- Review the *ERA Quality Management Plan*;
- Review the *ERA Requirements Document*;
- Review the *ERA Requirements Management Plan*;
- Review the *ERA Risk Management Plan*;
- Review ERA *System Security Plan*;
- Review the *ERA Request for Proposal*;
- Review and Evaluate the Source Selection Process; and
- Review the ERA Draft Contract.

5.2.1.1 Scope the IV&V Effort (Preliminary)

Identify the ERA program criticality levels. Assign an integrity level to ERA. Establish the degree of independence required for IV&V. Identify the IV&V tasks appropriate to the identified integrity level.

Task:	Scope the IV&V effort (Preliminary)
Methods:	Identify the system integrity level, determine the minimum tasks based on Integrity level, identify optional tasks, establish scope (breadth and depth) of IV&V
Inputs:	*ELC* document, IEEE Std. 1012-1998, Table 2
Outputs:	Draft IV&V Plan, input to End of Acquisition Support Activity Summary Report
Schedule:	Q2 2003
Resources:	ERA COR, ERA PD, IV&V Technical Director, IV&V SMEs, ERA/POST Team Leads
Risks and Assumptions:	Delay in identifying integrity level will have a negative impact on the scoping of the IV&V effort. IV&V will support the Government decision making process. The assumption is that the Government will make the criticality decision in a timely manner.
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.2 Plan the Interfaces between the IV&V Effort, NARA, and the ERA Contractor(s)

Plan the schedule for each IV&V task. Identify the preliminary list of development processes and products to be evaluated by IV&V.

Task:	Identify the IV&V/ERA Contractor(s)/Government Interface.

Methods:	Based on the identified system integrity level (**5.2.1.1**) develop the preliminary list of development processes and products to be evaluated.
Inputs:	ERA Request for Proposal, ERA Life Cycle document, ERA Acquisition Strategy, ERA WBS.
Outputs:	Draft IV&V Plan, input to RFP, input to End of Acquisition Support Activity Summary Report.
Schedule:	Q2 2003.
Resources:	Refer to **Section 4.4**.
Risks and Assumptions:	ERA Request for Proposal, ERA Life Cycle document, ERA Acquisition Strategy and related documents contain adequate detail for task and will be available in a timely manner. IV&V planning will be incorrect if the documentation is not accurate and complete.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.2.1.3 Review the Source Selection Plan

Review the ERA Source Selection Plan for conformance to Government Regulations.

Task:	Evaluate *ERA Source Selection Plan (SLP)* document.
Methods:	Evaluate for conformance to *Federal Acquisition Regulation*
Inputs:	*ERA SLP* document, *Federal Acquisition Regulation*
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q3/Q4 2003 Report submitted to the Government within seven (7) business days of receipt of document.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.4 Review Acquisition Strategy document

Review the Acquisition Strategy for conformance to Government Regulations and applicable standards in format, purpose, and content.

Task:	Review *ERA Acquisition Strategy (AS)* document
Methods:	Review for conformance to DoD 5000.2-R, OMB A-11, *Federal Acquisition Regulation* and IEEE Std. 12207.1, section 6.1, IEEE Std. 1062, and other applicable federal laws and regulations.
Inputs:	*ERA AS* document, DoD 5000.2-R, OMB A-11, *Federal Acquisition Regulation*, IEEE Std. 12207.1, section 6.1, IEEE Std. 1062

Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q3/Q4 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.5 Review Analysis of Alternatives document

Review Analysis of Alternatives document for conformance to Government regulations and applicable standard in format, purpose, and content.

Task:	Review ERA *Analysis of Alternatives (AoA)* document
Methods:	Evaluate for conformance to Government regulations especially General Accounting Office, Information Technology: An Audit Guide for Assessing Acquisition Risks, December 1992 (Chapter 5), Defense Finance and Accounting Service, Analysis of Alternatives Report, DFAS 8000.1-R, Part C, Chapter 1
Inputs:	ERA *AoA* document, General Accounting Office, Information Technology: An Audit guide for Assessing Acquisition Risks, December 1992 (Chapter 5), Defense Finance and Accounting Service, Analysis of Alternatives Report, DFAS 8000.1-R, Part C, Chapter 1
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.6 Review Configuration Management Plan

Review the Configuration Management Plan for conformance to the applicable standard in format, purpose, and content.

Task:	Review ERA *Configuration Management Plan (CMP)* document.
Methods:	Evaluate for conformance to IEEE Std. 828-1998 in format, purpose, and content
Inputs:	*ERA CMP* document, IEEE Std. 828-1998
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.7 Review Concept of Operations document

Review the Concept of Operations document for conformance to the applicable standard in format, purpose, and content.

Task:	Review *ERA Concept of Operations (ConOps)* document
Methods:	Evaluate for conformance to IEEE Std. 1362-1998 for formal, purpose, and content
Inputs:	*ERA ConOps* document, IEEE Std. 1362-1998
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2/Q3 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.8 Review Life Cycle document

Evaluate the ERA Life Cycle document for conformance to the applicable standard in format, purpose, and content.

Task:	Review the *ERA Life Cycle (ELC)* document

Methods:	Evaluate for conformance to IEEE 12207, section 5.2 and IEEE Std. 1062-1998 in format, purpose, and content
Inputs:	*ELC* document, IEEE 12207, section 5.2, IEEE Std. 1062-1998
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: TBD Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.9 Review Metrics Plan

Evaluate the Metrics Plan for conformance to the applicable standard in format, purpose, and content.

Task:	Review *ERA Metrics Plan (MP)* document.
Methods:	Evaluate contents for minimum metrics identified by the *SEI-CMM for Software* (Level 2) and IEEE Std. 12207.1-1997, Section 5.2 in format, purpose, and content and general conformance with the principles stated in IEEE Std. 1028-1998, IEEE Std. 1045-1992 and IEEE Std. 1061-1998.
Inputs:	*ERA MP* document, *SEI-CMM for Software*, version 1.1, IEEE Std. 12207.1-1997, IEEE Std. 1028-1998, IEEE Std. 1045-1992 and IEEE Std. 1061-1998
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.10 Review Program Management Plan

Review Program Management Plan for conformance to applicable standard in format, purpose, and content.

Task:	Review *ERA Program Management Plan (PMP)* document.
Methods:	Evaluate for conformance to IEEE Std. 1058-1998 in format, purpose, and content.
Inputs:	*ERA PMP* document, IEEE Std. 1058-1998, PMBOK®
Outputs:	IV&V Task Report, input End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2 2003. Report submitted to the Government within seven (7) business days of receipt of document.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.11 Review Quality Management Plan

Review Quality Management Plan for conformance to applicable standard in format, purpose, and content.

Task:	Review *ERA Quality Management Plan (QMP)* document.
Methods:	Evaluate for conformance to IEEE Std. 730-1998, PMBOK®, and SEI-CMM level 2 in format, purpose, and content
Inputs:	*ERA QMP* document, IEEE Std. 730-1998, PMBOK®, SEI-CMM level 2
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2/Q3 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.12 Review Requirements Document

Review Requirements Document for conformance to applicable standard in format, purpose, and content.

Task:	Review *ERA Requirements Document (RD)* document.
Methods:	Evaluate for conformance to IEEE Std. 1233-1998 in format, purpose, and content, verify that criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	*ERA RD* document, IEEE Std. 1233-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2/Q3 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.13 Review Requirements Management Plan

Review Requirements Management Plan for conformance to applicable standard in format, purpose, and content.

Task:	Review *ERA Requirements Management Plan (RQM)* document.
Methods:	Evaluate for conformance to IEEE Std. 12207.1, section 5.2 in format, purpose, and content
Inputs:	*ERA RQM* document, IEEE Std. 12207.1, section 5.2, IEEE Std. 828-1998, SEI-CMM (Level 2)
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.14 Review Risk Management Plan

Review Risk Management Plan for conformance to applicable standard in format, purpose, and content.

Task:	Review *ERA Risk Management Plan (RKM)* document.
Methods:	Evaluate for conformance to IEEE Std. 1540-2001 in format, purpose, and content, and the SEI-CMM Risk Management Paradigm
Inputs:	*ERA RKM* document, IEEE Std. 1540-2001, SEI-CMM (Level 2, 3)
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.15 Review System Security Plan

Review the System Security Plan for conformance to applicable standards in format, purpose, and content, and applicable Government law and regulation.

Task:	Review *ERA System Security Plan (SSP)* document.
Methods:	Evaluate for conformance to P.L 107-347, U.S.C. Vol. 44, 3541-9, NIST SP 800-18
Inputs:	*ERA SSP* document, *E-Government Act of 2002*, Public Law 107-347, 17 December 2002, IEEE/EIA 12207.1-1997, *Software Life Cycle Processes – Life cycle data*, *Federal Information Security Management Act of 2002*, *U.S. Code*, Vol. 44, sections. 3541-9, NIST SP 800-18
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q2 2003 Report submitted to the Government within seven (7) business days of receipt of document.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.16 Review Request for Proposal

Review the Request for Proposal for conformance to applicable Government law and regulation. Review the RFP for inclusion of applicable standards for integration contractor(s) deliverables and for inclusion of ERA specific requirements.

Task:	Review *ERA Request for Proposal (RFP)* document.
Methods:	Evaluate for conformance to Government law and regulation and for inclusion of ERA specific requirements, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	*ERA RFP* document, OMB A-11, *Federal Acquisition Regulation*, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Initial Final: Q1 2003 Modified Final: Q3 2003 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.17 Review Evaluate the Source Selection Process

Evaluate the ERA source selection process to ensure conformance to Source Selection Plan.

Task:	Evaluate ERA Source Selection Process
Methods:	Evaluate for conformance to ERA source selection requirements and guidelines identified in the ERA Source Selection Plan
Inputs:	*ERA Source Selection Evaluation Report, ERA Source Selection Plan,* IV&V assessment instrument
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Q1 2004 Report submitted to the Government within seven (7) business days of completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.2.1.18 Review the Draft Contract

Review the Draft Contract to ensure the inclusion of ERA specific requirements and for adequacy, correctness, and completeness.

Task:	Review ERA Draft Contract
Methods:	Evaluate Draft Contract (sec. B, C, E, F, H) against the proposal and any negotiated changes to the proposal and for inclusion of ERA specific requirements such as standards for deliverables and active role of Government IV&V, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA Draft Contract, Request for Proposal, Proposal, negotiated changes, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Acquisition Support Activity Summary Report, Anomaly Reports
Schedule:	Q1 2004 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.3 Supply Process

The supply process is initiated by signing and entering into a contract with the supplier to provide ERA. The process continues with the identification of procedures and resources needed to manage the project. IV&V uses the supply process products to verify that the RFP requirements and the contract requirements are consistent with each other and with NARA's needs.

5.3.1 Planning IV&V

Planning IV&V addresses the initiation, preparation of response, contract planning, execution and control, review, and evaluation and delivery and completion of IV&V tasks and reports.

Specific IV&V planning activity tasks include:

- Planning the interface between the IV&V effort and the development contractor(s), and
- Verifying the contract.

5.3.1.1 Plan the Interface between the IV&V Effort and the ERA Contractor(s)

Review the ERA contractor(s) plans and schedules to coordinate the IV&V effort with development activities.

Task:	Plan the IV&V and ERA Contractor(s) Interface
Methods:	Review ERA contractor(s) plans and schedules to coordinate the IV&V effort with ERA contractor(s) activities
Inputs:	IV&V Task Report, contract (technical), integration contractor(s) plans and schedules
Outputs:	Revised IV&V Plan, IV&V Task Report, input to End of Planning IV&V Activity Summary Report
Schedule:	Q1 2004
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Planning the IV&V interface will be incorrect if the input documentation is not accurate and complete.
Roles and Responsibilities:	Refer to **Section 4.5**

5.3.1.2 Verify the Contract

Verify the contract for conformance to Government need and consistency with draft contract and negotiated items.

Task:	Verify the ERA contract(s)
Methods:	Evaluate the ERA contract(s) (sec. B, C, E, F, H) for consistency with RFP, and negotiated items. Verify that criteria described in IEEE Std. 1012-1998, Table 1 are satisfied.
Inputs:	RFP, ERA contract(s), draft contract, negotiated items, IEEE-Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Planning IV&V Activity Summary Report, Anomaly Reports
Schedule:	Q1/Q2 2004 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4 Development Process

The development process contains the ERA contractor(s) development activities and tasks. The process contains the activities for requirements analysis, design, coding, integration, testing, and installation and acceptance for the ERA software and ERA. The IV&V activities verify and validate all delivered products. The ERA IV&V activities, paralleling the development activities, are titled Concept, Requirements, Design, Implementation, Test, and Installation and Checkout.

5.4.1 Concept Activity

The concept activity represents the delineation of a specific implementation solution to address NARA's needs. During this activity, the system architecture is selected and system requirements are allocated to hardware, software, networking, database and interface components. The objectives of IV&V during this activity are to verify the allocation of system requirements, validate the selected architecture and system design solution, and ensure that no false assumptions have been incorporated into the proposed solution.

IV&V anticipates that there will be two ERA contractors performing tasks during the Concept phase. To insure that IV&V tasks are performed in an efficient, thorough and consistent manner, the IV&V team will be split to allow an independent team to be assigned to each of the two ERA contractors. The IV&V Technical Director will ensure that both teams are consistent in their application of evaluation criteria and standards.

The specific IV&V tasks are:

- Evaluate system requirements specification,
- Evaluate system architecture description,
- Evaluate system/subsystem design descriptions,
- Evaluate allocation of requirements,
- Evaluate plans,
- Perform (requirements) traceability analysis,
- Perform criticality analysis, and
- Perform risk analysis.

5.4.1.1 Evaluate System Requirements Specification

Evaluate ERA contractor(s) SyRS for conformance to the applicable standard in format, purpose, and content. The system requirements specification document is assessed for completeness, correctness, accuracy, and testability.

Task:	Evaluate the ERA contractor(s) system requirements specification document

Methods:	Evaluate the system requirements for conformance to IEEE Std. 1233-1998. Ensure the requirements are complete, correct, accurate, and testable. Verify that the criteria of IEEE Std. 1012-1998, Table 1 are satisfied.
Inputs:	ERA contractor(s) SyRS, ERA RD, ERA IRD, ERA ConOps, ERA Use Cases, IEEE Std. 1233-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Concept Activity Summary Report, Anomaly Reports
Schedule:	Q2 2004 Report submitted to the Government within ten business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.1.2 Evaluate System Architecture Description

The system architecture description displays the depth to which the ERA contractor(s) understands NARA needs. Evaluate the system architecture description portion of the SARAD for conformance to the applicable standard in format, purpose, and content. The system architecture description is assessed for completeness, correctness and accuracy.

Task:	Evaluate the ERA contractor(s) system architecture description
Methods:	Evaluate the system architecture for conformance to IEEE Std. 1471-2000, IEEE/EIA 12207.1, section 6.25 and to insure the proposed approach is consistent with NARA needs. Verify that the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA contractor(s) SyRS, system architecture description, ERA ConOps, ERA RD, ERA IRD, ERA Use Cases, IEEE Std. 1471-2000, IEEE?EIA 12207.1, section 6.25, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Concept Activity Summary Report, Anomaly Reports
Schedule:	Q2 2004 Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.1.3 Evaluate System/Subsystem Design Descriptions

Evaluate the system design description for conformance to the applicable standard in format, purpose, and content. Verify the correctness, accuracy, and completeness of the system design description.

Task:	Evaluate the integration contractor(s) system design document
Methods:	Evaluate the system/subsystem designs for conformance to J-STD-016-1995, section G.2.1. Insure the proposed approach is consistent with NARA needs. Verify the criteria described meet the requirements of IEEE Std. 1012-1998, Table 1.
Inputs:	ERA contractor(s) SyRS, system architecture and system/subsystem design documents, ERA concept documents, ERA RD, J-STD-016-1995, section G.2.1, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Concept Activity Summary Report, Anomaly Reports
Schedule:	Q2 2004 Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.1.4 Evaluate Allocation of Requirements

Verify the correctness, accuracy, and completeness of the requirements allocation to hardware, software, networking resources, databases, and user and external interfaces in the context of known user needs. Requirements allocation to the various subsystems that comprise the overall system is usually described in a SARAD.

Task:	Evaluate the ERA contractor(s) Requirements Allocation Description
Methods:	This analysis is a manual activity to ensure that all system requirements have been allocated and to insure the correctness, accuracy, and completeness of the allocation in the context of NARA needs. Verify that the requirements allocation description meets that part of the content requirements specified in IEEE/EIA 12207.1, section 6.25, for the System Architecture and Requirements Allocation Description. Verify that the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied.
Inputs:	ERA contractor(s) requirements allocation description, ERA contractor(s) concept documents, ERA contractor(s) system architecture description, ERA contractor(s) system/subsystem design descriptions, IEEE/EIA 12207.1-1997, section 6.25, IEEE Std. 1012-1998, Table 1

Outputs:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Schedule:	Q2 2004 Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.1.5 Evaluate Plans

Management plans (e.g., project management plan, configuration management plan, etc.) may be developed by the ERA contractor(s). Each plan, to be effective as a complete specification of the tasks required to achieve the objectives, must be thorough, comprehensive, and specific. Each plan will be reviewed against the appropriate standard in format, purpose, and content.

Task:	Review ERA contractor(s) plans when directed by the ERA PD or his designated representative. Review plans generated by NARA.
Methods:	Evaluate plans to insure conformance to applicable standards and to insure they are complete, consistent, concise, comprehensive, specific, and unambiguous. Documents will be evaluated to ensure they are internally and externally consistent with the governing documents, applicable standards, and with each other.
Inputs:	Project Management Plan, Configuration Management Plan, Cut-over Plan, Quality Assurance Plan, Maintenance Plan, and any others specified in the contractor(s) Statement of Objectives (SOO) or similar attachment, applicable consensus standards.
Outputs:	IV&V Task Report for each document reviewed, input to End of Concept Activity Summary Report, Anomaly Reports
Schedules:	Q2/Q3 2004 Report submitted to the Government within seven (7) business days of receipt of document. Subsequent evaluations take place each time a modified document or a request for change becomes available.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level planning documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.1.6 Perform (Requirements) Traceability Analysis

Verify that the allocated requirements documented in the various subsystem, component, database, and interface requirements sections of the requirements allocation description are traceable to viable requirements documented in the SyRS and to program-level requirements. Verify that all viable requirements from the SyRS have been correctly and completely allocated to the various subsystem, component, database and interface requirements components described in the requirements description.

Task:	Trace the ERA contractor(s) allocation of requirements to insure all system requirements have been allocated and no new requirements have been introduced
Methods:	Trace the system requirements to the allocated requirements. Trace the allocated requirements to the system requirements and to the program-level requirements. Verify that the criteria described in IEEE Std. 1012, Table 1 are satisfied
Inputs:	ERA contractor(s) SyRS and requirements allocation description, program-level requirements documents.
Outputs:	IV&V Task Report, input to End of Concept Activity Summary Report, Anomaly Reports
Schedule:	Q2 2004 Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.1.7 Perform Criticality Analysis

Determine whether or not to modify integrity levels as established for requirements, detailed functions, modules, subsystems, or other system partitions.

Task:	Re-assess ERA Integrity Level.
Methods:	Verify that the assigned integrity level(s) are correct. Verify that the most critical level assigned to an individual element is assigned to the entire system.
Inputs:	Prior IV&V Task Report(s)—Criticality Analysis.
Outputs:	Identification of revised ERA Integrity Level, IV&V Task Report input to End of Concept Activity Summary Report, Updated IV&V Plan.
Schedule:	Q2 2004 Report submitted to the Government upon completion of activity.
Resources:	ERA PD, ERA COR, ERA POST Team Leads, IV&V Technical

	Director, IV&V SMEs.
Risks and Assumptions:	Delay in identifying integrity level has negative impact on the scoping of the IV&V effort and the overall IV&V schedule. IV&V will support Government decision making process. The assumption is that the Government will make the criticality decision in a timely manner.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.4.1.8 Perform Risk Analysis

Determine that technical, budget and schedule risks identified by IV&V are correctly reviewed and tracked.

Task:	Identify technical and management risks.
Methods:	Documents being reviewed for conformance to user needs and applicable standards also will be reviewed for risk to program budget and schedule. Other risks will be noted during assessments of processes (CM Assessment, RM Assessment) or during technical interchange meetings, reviews, and audits. All identified risks will be entered in the ERA Risk Management data base through the process described in the ERA Risk Management Plan.
Inputs:	ERA PMO concept documentation, integration contractor(s) concept documentation, architectural design, allocation of requirements, IV&V Task Reports.
Outputs:	Input to ERA Risk Management Program, IV&V Task Report, input to End of Concept Activity Summary Report, Anomaly Reports.
Schedule:	Q2 2004 Identified risks submitted to ERA Risk Management Program for reporting and tracking.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Risk Management Team. Should this occur IV&V will maintain its own risk database and will issue its own risk reports. The assumption is that the ERA Risk Management Team will accept and manage IV&V identified risks if there is a perceived failure in the ERA Risk Management System.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.4.2 Requirements Activity

The requirements activity defines and identifies the requirements including functional and performance requirements, external interfaces, security requirements, data definitions, installation and acceptance requirements, user operation and execution requirements, and user maintenance requirements. The IV&V activity addresses requirements analysis. The objectives

of IV&V are to ensure the correctness, completeness, accuracy, testability, and consistency of the ERA requirements.

The specific IV&V requirements activity tasks include:

- Perform traceability analysis;
- Perform software/hardware requirements evaluation;
- Perform interface requirements evaluation;
- Perform criticality analysis;
- Verify ERA contractor(s) system test plan;
- Verify ERA PMO acceptance test plan;
- Generate IV&V system test plan;
- Generate IV&V acceptance test plan;
- Perform configuration management assessment; and
- Perform risk analysis.

5.4.2.1 Perform Traceability (Requirements) Analysis

Traceability analysis insures that the system requirements have been allocated correctly to software, hardware, networking resources, databases and interfaces. It also ensures that no new requirements have been introduced.

Task:	Evaluate developer(s) software requirements and interface requirements to the system requirements to insure that all requirements have been allocated and no new requirements have been introduced. Perform Traceability (Requirements) Analysis
Methods:	Assess traceability from software, hardware, networking, and interface requirements to the SyRS and from the SyRS to software, hardware, networking, and interface requirements. Verify that the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA contractor(s) SyRS, Software Requirements Specifications (SRSs), Interface Requirements Specifications (IRSs), database requirements specifications, network component requirements specifications, information security requirements specifications, any other subsystem or component requirements specifications, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Requirements Activity Summary Report, Anomaly Reports
Schedule:	Q2 2004 Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.

Roles and Responsibilities:	Refer to **Section 4.5**

5.4.2.2 Perform Software/Hardware Requirements Evaluation

Evaluate the software/hardware requirements for conformance to the applicable standard in format, purpose, and content. Requirements evaluation insures that the hardware and software requirements are correct, consistent, complete, accurate, readable, and testable.

Task:	Perform Software/Hardware Requirements Evaluation
Methods:	Evaluate allocated requirements for conformance to IEEE Std. 830-1998, IEEE/EIA 12207.1, J-STD-016-1995 and to insure they are correct, consistent, complete, accurate, readable, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA contractor(s) subsystem and component requirements specifications, IEEE Std. 830-1998, IEEE/EIA 12207.1-1997, J_STD-016-1995, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Requirements Activity Summary Report, Anomaly Reports
Schedule:	Q2 2004 Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.2.3 Perform Interface Requirements Evaluation

Evaluate the IRSs for conformance to J-STD-016-1995, Section F.2.3, for purpose, format, and content. Interface requirements evaluation insures that the interface requirements are correct, consistent, complete, accurate, readable, and testable.

Task:	Perform Interface Requirements Evaluation
Methods:	Evaluate ERA contractor(s) IRSs for conformance to J-STD-016-1995, section F.2.3, and to insure they are correct, consistent, complete, accurate and testable, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Integration contractor(s) software interface requirements, J-STD-016-1995, section F.2.3, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Requirements Activity Summary Report, Anomaly Reports

Schedule:	Q2 2004 Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.2.4 Perform Criticality Analysis

Determine whether or not correct integrity levels are established for requirements, modules, subsystems, or other system partitions.

Task:	Re-assess ERA Integrity Level.
Methods:	Verify that the assigned integrity level(s) are correct. Verify that the most critical level assigned to an individual element is assigned to the entire system.
Inputs:	Prior IV&V Task Report(s)—Criticality Analysis.
Outputs:	Identification of revised ERA Integrity Level, IV&V Task Report input to End of Requirements Activity Summary Report, Updated IV&V Plan.
Schedule:	Q2 2004 Report submitted to the Government upon completion of activity.
Resources:	ERA PD, ERA COR, ERA POST Team Leads, IV&V Technical Director, IV&V SMEs.
Risks and Assumptions:	Delay in identifying integrity level has negative impact on the scoping of the IV&V effort and the overall IV&V schedule. IV&V will support Government decision making process. The assumption is that the Government will make the criticality decision in a timely manner.
Roles and Responsibilities:	Refer to **Section 4.5**.

Task:	Re-assess ERA Integrity Level.
Methods:	Verify that the assigned integrity level(s) are correct. Verify that the most critical level assigned to an individual element is assigned to the entire system.
Inputs:	Prior IV&V Task Report(s)—Criticality Analysis.
Outputs:	Identification of revised ERA Integrity Level, IV&V Task Report input to End of Concept Activity Summary Report, Updated IV&V Plan.
Schedule:	Q2 2004

	Report submitted to the Government upon completion of activity.
Resources:	ERA PD, ERA COR, ERA POST Team Leads, IV&V Technical Director, IV&V SMEs.
Risks and Assumptions:	Delay in identifying integrity level has negative impact on the scoping of the IV&V effort and the overall IV&V schedule. IV&V will support Government decision making process. The assumption is that the Government will make the criticality decision in a timely manner.
Roles and Responsibilities:	Refer to section 4.5.

5.4.2.5 Verify ERA Contractor(s) System Test Plan

Evaluate the system test plan for conformance to the applicable standard for purpose, format, and content.

Task:	Verify the integration contractor(s) System Test Plan to insure that all requirements will be tested
Methods:	Verify System Test Plan conformance to IEEE Std. 829-1998 in format, purpose, and content. Verify that it includes a test traceability matrix (traceability to specific requirements in the SyRS) is included, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs;	ERA contractor(s) System Test Plan document, SyRS, IEEE Std. 829-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Requirements Activity Summary Report, Anomaly Reports
Schedule:	Q3/Q4 2004 Report submitted to the Government within 7 business days of completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.2.6 Verify ERA PMO Acceptance Test Plan

Evaluate the Acceptance Test Plan for conformance to the applicable standard in format, purpose, and content.

Task:	Verify the ERA PMO Acceptance Test Plan
Methods:	Verify that ERA PMO Acceptance Test Plan conforms to IEEE Std. 829-1998 in format, purpose, and content. Verify that tests are traceable to specific use cases and program-level requirements. Verify the criteria

	described in IEEE Std. 1012-1998, Table 1 are satisfied.
Inputs;	ERA PMO Acceptance Test Plan, program-level requirements documents, IEEE Std. 829-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Requirements Activity Summary Report, Anomaly Reports
Schedule:	Q3 2004 Report submitted to the Government within 7 business days of completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.2.7 Generate IV&V System Test Plan

Generate the IV&V System Test Plan as described in **Section 8.0**. Ensure conformance to the applicable standard in format, purpose, and content. **NOTE:** *The scope of IV&V testing will be determined by the ERA PD or his designated representative.*

Task:	Generate IV&V System Test Plan
Methods:	Produce an abbreviated IV&V System Test Plan that conforms to IEEE Std. 829-1998 and insures test coverage of system requirements, appropriateness of test methods and standards used, conformance to expected results, feasibility of system qualification testing, and feasibility and testability of operation and maintenance requirements. Use statistical sampling for determining which SyRS requirements to test. Analyze the results and project to the population. Verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	SyRS, deficiencies noted in integration contractor(s) system test plan, IEEE Std. 829-1998, IEEE Std. 1012-1998, Table 1, Program-level requirements documents.
Outputs:	IV&V System Test Plan, input to End of Requirements Activity Summary Report, Anomaly Reports
Schedule:	Q3/Q4 2004 Plan submitted to the Government upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's test plan depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.2.8 Generate IV&V Acceptance Test Plan

Generate the IV&V Acceptance Test Plan as described in **Section 8.0**. Ensure conformance to the applicable standard in format, purpose, and content. **NOTE:** *The scope of IV&V testing will be determined by the ERA PD or his designated representative.*

Task:	Generate IV&V Acceptance Test Plan
Methods:	Produce an abbreviated IV&V Acceptance Test Plan that conforms to IEEE Std. 829-1998 and will demonstrate that ERA will be operated and maintained in accordance with user needs. Using statistical sampling and analysis techniques, verify all operations, including system administration and maintenance, are performed in accordance with the respective documentation to insure the completeness, correctness, and consistency of the user documentation. Verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA Use Cases, ERA User documentation, ERA CONOPS, program-level requirements documentation, IEEE Std. 829-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Acceptance Test Plan, input to End of Requirements Activity Summary Report, Anomaly Reports
Schedule:	Q3 2004 Plan submitted to the Government within seven (7) business days of upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The accuracy of IV&V's assessment depends on the accuracy and completeness of the ERA program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.2.9 Perform Configuration Management Assessment

Verify that there is a process for describing product functionality, tracking system program versions and managing changes. Verify that the configuration management process is adequate for the development size and complexity, integrity level, plans and user needs.

Task:	Perform Configuration Management Assessment
Methods:	Verify ERA contractor and ERA PMO configuration management processes are consistent (internally and with each other), complete and adequate. Use criteria from SA/SW-CMM Level 3
Inputs:	ERA contractor(s) and ERA PMO configuration management plans, configuration management processes and procedures, other configuration management artifacts, SEI CMM for SA and SW
Outputs:	IV&V Task Report, input to End of Requirements Activity Summary Report, Anomaly Reports
Schedule:	Q2/Q3 2004

	Report submitted to the Government upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.2.10 Perform Risk Analysis

Determine that technical, budget, and schedule risks identified by IV&V are correctly reviewed and tracked.

Task:	Identify technical and management risks.
Methods:	Documents being reviewed for conformance to user needs and applicable standards also will be reviewed for risk to program budget and schedule. Other risks will be noted during assessments of processes (CM Assessment, RM Assessment) or during technical interchange meetings, reviews, and audits. All identified risks will be entered in the ERA Risk Management data base through the process described in the ERA Risk Management Plan.
Inputs:	ERA PMO program-level requirements and acceptance test documentation, ERA contractor(s) requirements and system test documentation, architectural design, allocation of requirements, subsystem and component requirements specifications, IV&V Task Reports and test plans.
Outputs:	Input to ERA Risk Management Program, IV&V Task Report, input to End of Requirements Activity Summary Report, Anomaly Reports.
Schedule:	Q4 2004 Identified risks submitted to ERA Risk Management Program for reporting and tracking.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Risk Management Team. Should this occur IV&V will maintain its own risk database and will issue its own risk reports. The assumption is that the ERA Risk Management Team will accept and manage IV&V identified risks if there is a perceived failure in the ERA Risk Management System.
Roles and Responsibilities:	Refer to **Section 4.5**.

Task:	Identify technical and management risks.
Methods:	Documents being reviewed for conformance to user needs and applicable standards also will be reviewed for risk to program budget and schedule. Other risks will be noted during assessments of processes (CM Assessment, RM Assessment) or

	during technical interchange meetings, reviews, and audits. All identified risks will be entered in the ERA Risk Management data base through the process described in the ERA Risk Management Plan.
Inputs:	ERA PMO concept documentation, integration contractor(s) concept documentation, architectural design, allocation of requirements, IV&V Task Reports.
Outputs:	Input to ERA Risk Management Program, IV&V Task Report, input to End of Concept Activity Summary Report, Anomaly Reports.
Schedule:	Q2 2004 Identified risks submitted to ERA Risk Management Program for reporting and tracking.
Resources:	Refer to section 4.4
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Risk Management Team. Should this occur IV&V will maintain its own risk database and will issue its own risk reports. The assumption is that the ERA Risk Management Team will accept and manage IV&V identified risks if there is a perceived failure in the ERA Risk Management System.
Roles and Responsibilities:	Refer to section 4.5.

5.4.3 Design Activity

In the Design activity, system requirements are transformed into an architecture and detailed design for each component. The design activity includes hardware, networking components, software, databases, Web components, and interfaces (internal and external). The objectives of IV&V are to demonstrate that the design is a correct, accurate, and complete transformation of the requirements and that no unintended features are introduced. These tasks are performed iteratively to accommodate the incremental development and delivery process that defines the ERA life cycle. During this activity IV&V typically verifies the component and component integration test documentation. However, IV&V will neither be verifying the development contractor(s) component test plans, nor developing IV&V integration test documents.

Specific IV&V design activity tasks include:

- Perform Preliminary Design Description evaluation and traceability analysis,
- Perform Detailed Design Description traceability analysis,
- Perform Detailed Design Description evaluation,
- Perform Interface Design Description Analyses,
- Verify ERA contractor(s) Integration Test Plan,
- Verify ERA contractor(s) Integration Test Design Specifications,

- Verify ERA contractor (s) System Test Design Specifications,
- Verify ERA PMO Acceptance Test Design Specifications,
- Generate IV&V Test Design Specifications (system, acceptance),
- Perform Risk Analysis, and
- Perform Criticality Analysis.

5.4.3.1 Perform Preliminary Design Description Evaluation and Traceability Analysis

Evaluate the ERA contractor(s) preliminary designs for correctness, consistency, and completeness. Analyze design implementation coverage of the subsystem and component requirements.

Task:	Evaluate developer(s) Detailed Design Traceability. Perform Preliminary Design Description Evaluation and Traceability Analysis
Methods:	Assess traceability from allocated requirements to preliminary design and from preliminary design to allocated requirements. Analyze requirements to/from preliminary design relationships for correctness, consistency, and completeness. Verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied. Use statistical sampling and analysis techniques.
Inputs:	Subsystem and component requirements specifications, subsystem and component preliminary design descriptions, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Quick Look Report, input to End of Design Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within five business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.2 Perform Detailed Design Description Traceability Analysis

Evaluate requirements to design relationships for correctness, consistency, and completeness according to the applicable standard.

Task:	Evaluate developer(s) Detailed Design Traceability. Perform Detailed Design Description Traceability Analysis
Methods:	Assess traceability from allocated requirements named in the various subsystem and component requirements specifications to detailed design descriptions and from detailed design descriptions to allocated requirements specifications. Analyze requirements to/from detailed

	design relationships for correctness, consistency, and completeness. Verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Requirements allocation description, subsystem and component requirements specifications, detailed design document, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Design Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.3 Perform Detailed Design Description Evaluation

Evaluate the detailed design elements for conformance to the applicable standard in format, purpose, and content.

Task:	Perform Detailed Design Evaluation
Methods:	Evaluate for conformance to IEEE Std. 1016-1998 and J-STD-016-1995 and to ensure that the design is correct, consistent, complete, accurate, readable and testable. Verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA contractor(s) Detailed Design Descriptions, subsystem and component requirements specifications, J-STD-016-1995, IEEE Std. 1016-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Design Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.4 Perform Interface Design Description Analyses

Evaluate the design interfaces according to the requirements of the applicable standard in format, purpose, and content.

Task:	Perform Interface Design Description (IDD) Analysis
Methods:	Evaluate the IDDs for conformance to J-STD-016-1995, section G.2.2, and to insure they are correct, consistent, complete, accurate and testable, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Integration contractor(s) software interface requirements, J-STD-016-1995, section G.2.2, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Design Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within 10 business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.5 Verify ERA Contactor(s) Integration Test Plan

Evaluate the ERA contractor(s) integration test plan for conformance to the applicable standard in format, purpose, and content.

Task:	Verify Integration Test Plan
Methods:	Verify for conformance to IEEE Std. 829-1998 in format, purpose, and content, validate that the requirements and design are correctly implemented as the system is incrementally integrated, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Integration contractor(s) integration test plan, subsystem and component requirements specifications and design descriptions, IEEE Std. 829-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Design Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of document.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None

Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.6 Verify ERA Contractor(s) Integration Test Design Specifications

Verify that the ERA contractor(s) test design specifications for conformance to the applicable standard in format, purpose, and content. The test design specifications may not be stand-alone documents and may be part of the test case specifications.

Task:	Verify ERA contractor(s) integration test design specifications.
Methods:	Verify that the test designs correctly emanate from the test plans and ensure conformance to IEEE Std. 829-1998 in format, content and purpose, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA contractor(s) integration test design specifications, ERA contractor(s) integration test plans, IEEE Std. 829-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Design Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.7 Verify ERA Contractor(s) System Test Design Specifications

Verify that the test design conforms to the applicable standard in purpose, format, and content. Verify that the test design traces to the test plan. The system test design may be a stand-alone document or it may be part of the test case document.

Task:	Verify ERA System Test Design Specification
Methods:	Verify that the test design correctly emanates from the test plan and conforms to IEEE Std 829-1998 in format, content, and purpose; verify the criteria described in IEEE Std 1012-1998 are satisfied
Inputs:	ERA system test design specification, ERA system test plan, IEEE Std 829-1998; IEEE Std 1012-1998, Table 1
Outputs:	IV&V Task Report; input to End of Design Activity Summary Report
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of document

Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.8 Verify ERA PMO Acceptance Test Design Specifications

Verify that the test design conforms to the applicable standard in purpose, format, and content. Verify that the test design traces to the test plan. The acceptance test design may be a stand-alone document or it may be part of the test case document.

Task:	Verify ERA PMO Acceptance Test Design Specification
Methods:	Verify that the test design correctly emanates from the test plan and conforms to IEEE Std 829-1998 in format, content, and purpose; verify the criteria described in IEEE Std 1012-1998 are satisfied
Inputs:	ERA acceptance test design specification, ERA acceptance test plan, IEEE Std 829-1998; IEEE Std 1012-1998, Table 1
Outputs:	IV&V Task Report; input to End of Design Activity Summary Report
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.9 Generate IV&V System and Acceptance Test Design Specifications

Generate IV&V test designs and insure conformance to the applicable standard in purpose, format, and content. Verify traceability to IV&V test plan (system, acceptance). The test design documents will not be stand-alone documents. They will, instead, be the first part of each respective test case document. **NOTE:** *The scope of IV&V testing will be determined by the ERA PD or his designated representative.*

Task:	Generate IV&V System and Acceptance Test Design Specifications
Methods:	Ensure that the test designs correctly emanate from the test plans and ensure conformance to IEEE Std. 829-1998 regarding purpose, format and content, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Test Plans, IEEE Std. 829-1998, IEEE Std. 1012-1998, Table 1
Outputs:	Input to End of Design Activity Report
Schedule:	TBD

	Document submitted to the Government upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The correctness of the IV&V documents depends on the accuracy and completeness of program-level requirements documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.3.10 Perform Risk Analysis

Determine that technical, budget, and schedule risks identified by IV&V are correctly reviewed and tracked.

Task:	Identify technical and management risks.
Methods:	Documents being reviewed for conformance to user needs and applicable standards also will be reviewed for risk to program budget and schedule. Other risks will be noted during assessments of processes (CM Assessment, RM Assessment) or during technical interchange meetings, reviews, and audits. All identified risks will be entered in the ERA Risk Management data base through the process described in the ERA Risk Management Plan.
Inputs:	ERA PMO program-level requirements and acceptance test documentation, ERA contractor(s) requirements, design, and integration and system test documentation, architectural design, allocation of requirements, subsystem and component requirements specifications, IV&V Task Reports and test plans.
Outputs:	Input to ERA Risk Management Program, IV&V Task Report, input to End of Design Activity Summary Report, Anomaly Reports.
Schedule:	TBD Identified risks submitted to ERA Risk Management Program for reporting and tracking.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Risk Management Team. Should this occur IV&V will maintain its own risk database and will issue its own risk reports. The assumption is that the ERA Risk Management Team will accept and manage IV&V identified risks if there is a perceived failure in the ERA Risk Management System.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.4.3.11 Perform Criticality Analysis

Determine whether or not correct integrity levels are established for requirements, modules, subsystems, or other system partitions.

Task:	Re-assess ERA Integrity Level
Methods:	Verify that the assigned integrity level(s) are correct. Verify that the most critical level assigned to an individual element is assigned to the entire system.
Inputs:	Prior IV&V Task Report(s)—Criticality Analysis
Outputs:	Identification of revised ERA Integrity Level, Updated IV&V Plan, IV&V Task Report, input to End of End of Design Activity Summary Report
Schedule:	TBD Report submitted to the Government upon completion of task.
Resources:	ERA PD, ERA COR, IV&V Director, ERA POST Team Leads, IV&V SMEs
Risks and Assumptions:	Delay in identifying integrity level has negative impact on the scoping of the IV&V effort and the overall IV&V schedule. IV&V will support the Government decision making process. The assumption is that the Government will make the criticality decision in a timely manner.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4 Implementation Activity

The implementation activity transforms the design into code, database structures, and related machine executable representations. The implementation IV&V activity addresses software coding and testing. The objectives of IV&V are to verify and validate that these transformations are correct, accurate, and complete. During this activity, IV&V typically verifies the component test cases and test procedures and witnesses component test execution. However, IV&V will be neither verifying the integration contractor(s) component test documentation, witnessing integration contractor(s) component testing nor performing IV&V component tests.

The specific IV&V implementation activity tasks include:

- Perform traceability analysis,
- Evaluate as-built documentation,
- Perform interface analyses,
- Verify ERA System Test Case Specifications,
- Verify ERA System Test Procedure Specifications,
- Verify ERA PMO Acceptance Test Case Specifications
- Generate IV&V System and Acceptance Test Case Specifications,
- Generate IV&V System Test Procedure Specifications,
- Perform criticality analysis, and
- Perform risk analysis.

5.4.4.1 Perform Traceability Analysis

Evaluate the identified relationships for correctness, consistency, and completeness.

Task:	Trace the ERA contractor(s) design execution
Methods	Assess traceability from the detailed design descriptions to the executed product and from the executed product to the detailed design descriptions. Verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	System/Subsystem and Component Detailed Design Descriptions, product "as-built" documentation, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Implementation Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within 10 business days of receipt of artifacts.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Timeliness of the delivery of the "as-built" documentation is the primary concern. The IV&V evaluation cannot be produced in a timely manner if the ERA contractor delays delivery of these documents. IV&V recommends that their analysis be considered a mandatory input for the System Test TRR as a way of mitigating any technical risk associated with a delay in the delivery of as-built documentation.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4.2 Evaluate "As-Built" Documentation

Evaluate "as-built" documentation for correctness, consistency, completeness, accuracy, readability, and testability.

Task:	Evaluate ERA contractor(s) "as-built" documentation
Methods	Evaluate the completed components and documentation for correctness, consistency, completeness, accuracy, readability, and testability, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Completed components, "as-built" documentation, IEEE Std. 1012-1998
Outputs:	IV&V Task Report, input to End of Implementation Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within 10 business days of receipt or availability of artifacts
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Timeliness of the delivery of the "as-built" documentation is the primary concern. The IV&V evaluation cannot be produced in a timely manner if the ERA contractor delays delivery of these documents.

	IV&V recommends that their analysis be considered a mandatory input for the System Test TRR as a way of mitigating any technical risk associated with a delay in the delivery of as-built documentation.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4.3 Perform Interface Analysis

Verify and validate that the interfaces with hardware, user, operator, software, and other systems, subsystems and components have been correctly identified and described.

Task:	Perform Interface Analysis
Methods	Assess the interfaces for correctness, consistency, completeness, accuracy, and testability, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Concept documentation (e.g., mission needs, concept of operation), system requirements, system/subsystem architecture and detailed design descriptions, interface design descriptions, "as-built" documentation, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Implementation Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within ten business days of receipt or availability of artifacts
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Timeliness of the delivery of the "as-built" documentation is the primary concern. The IV&V evaluation cannot be produced in a timely manner if the ERA contractor delays delivery of these documents. IV&V recommends that their analysis be considered a mandatory input for the System Test TRR as a way of mitigating any technical risk associated with a delay in the delivery of as-built documentation.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4.4 Verify ERA System Test Case Specifications

Verify that the test cases conform to the applicable standard in purpose, format, and content. Verify that the test cases trace to the test plan.

Task:	Verify ERA System Test Case Specifications
Methods:	Verify that the test cases correctly emanate from the test plan and conform to IEEE Std 829-1998 in format, content, and purpose; verify the criteria described in IEEE Std 1012-1998 are satisfied
Inputs:	ERA system test case specifications, IEEE Std 829-1998; IEEE Std 1012-1998, Table 1

Outputs:	IV&V Task Report; input to End of Design Activity Summary Report
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Timeliness of the delivery of the test case specifications is the primary concern. The IV&V evaluation cannot be produced in a timely manner if the ERA contractor delays delivery of these documents. IV&V recommends that their analysis be considered a mandatory input for the System Test TRR as a way of mitigating any technical risk associated with a delay in the delivery of test documentation.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4.5 Verify ERA System Test Procedure Specifications

Verify that the test procedure specifications conform to the applicable standard in purpose, format, and content. The system test procedures may be a stand-alone document or it may be part of the test case document.

Task:	Verify ERA System Test Procedure Specifications
Methods:	Verify that the test procedures correctly implement the test cases and conform to IEEE Std 829-1998 in format, content, and purpose; verify the criteria described in IEEE Std 1012-1998 are satisfied
Inputs:	ERA system test procedure specifications, IEEE Std 829-1998; IEEE Std 1012-1998, Table 1
Outputs:	IV&V Task Report; input to End of Design Activity Summary Report
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Timeliness of the delivery of the test documentation is the primary concern. The IV&V evaluation cannot be produced in a timely manner if the ERA contractor delays delivery of these documents. IV&V recommends that their analysis be considered a mandatory input for the System Test TRR as a way of mitigating any technical risk associated with a delay in the delivery of test documentation.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4.6 Verify ERA PMO Acceptance Test Case Specifications

Verify that the test case specifications conform to the applicable standard in purpose, format, and content.

Task:	Verify ERA PMO Acceptance Test Case Specifications
Methods:	Verify that the test cases correctly emanate from the test plan and conform to IEEE Std 829-1998 in format, content, and purpose; verify the criteria described in IEEE Std 1012-1998 are satisfied
Inputs:	ERA acceptance test case specifications, IEEE Std 829-1998; IEEE Std 1012-1998, Table 1
Outputs:	IV&V Task Report; input to End of Design Activity Summary Report
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to section 4.4
Risks and Assumptions:	Timeliness of the delivery of the test case specifications is the primary concern. The IV&V evaluation cannot be produced in a timely manner if the ERA PMO delays delivery of these documents.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4.7 Generate IV&V System and Acceptance Test Case Specifications

Generate test cases and verify that the test cases comply with IEEE Std. 829-1998 for document purpose, format, and content. IV&V will be performing statistics-based testing for both System and Acceptance Testing. The IV&V test cases will be based on contractor and Government produced test cases. For each, IV&V will randomly select a sample of test cases and adapt them to IV&V use. The adaptation will usually consist of additional preparation steps to establish suitable initial conditions since the IV&V tests will be performed outside of the context that would be built in a sequential series of tests. **NOTE:** *The scope of IV&V testing will be determined by the ERA PD or his designated representative.*

Task:	Generate IV&V Test Case Specifications
Methods	Ensure test case specifications (system, acceptance) conform to IEEE Std. 829-1998; ensure adequacy based on IV&V Test Designs (system, acceptance), verify criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	System requirements, use cases, ERA contractor(s) test cases, ERA program-level acceptance test cases, Std. 829-1998, Std. 1012-1998, Table 1
Outputs:	IV&V (system, acceptance) test case specifications, input to End of Implementation Activity Summary Report
Schedule:	TBD Test cases will be delivered to the Government upon completion
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	The timeliness of IV&V performance for this task depends on the timeliness of the delivery of ERA contractor(s) system test case

	specifications and ERA PMO acceptance test case specifications.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4.8 Generate IV&V System Test Procedure Specifications

Generate test procedures and verify that the test procedures comply with IEEE Std. 829-1998 for document purpose, format, and content. Test Procedures are not usually published as stand-alone documents rather, they are included with their respective test case specifications. IV&V will be performing statistics-based testing for both System and Acceptance Testing. The IV&V test procedures will be based on contractor and Government produced test procedures. For each, IV&V will randomly select a sample of test cases together with their procedures and adapt them to IV&V use. The adaptation will usually consist of additional preparation steps to establish suitable initial conditions since the IV&V tests will be performed outside of the context that would be built in a sequential series of tests. **NOTE:** *The scope of IV&V testing will be determined by the ERA PD or his designated representative.*

Task:	Generate IV&V System Test Procedure Specifications
Methods	Ensure system test procedures conform to IEEE Std. 829-1998; ensure adequacy based on IV&V test cases, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	IV&V Test Cases, Std. 829-1998, Std. 1012-1998, Table 1
Outputs:	IV&V system test procedure specifications, input to End of Implementation Activity Summary Report
Schedule:	TBD Test Procedures will be delivered to the Government upon completion
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Timeliness of the delivery of IV&V System Test Procedure Specifications depends on the timeliness of the delivery of ERA contractor developed system test procedures.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.4.9 Perform criticality Analysis

Determine whether or not correct integrity levels are established for requirements, modules, subsystems, or other system partitions.

Task:	Re-assess ERA Integrity Level.
Methods	Verify that the assigned integrity level(s) are correct. Verify that the most critical level assigned to an individual element is assigned to the entire system.
Inputs:	Prior IV&V Task Reports, Anomaly Reports, Criticality Analysis.
Outputs:	Identification of revised ERA Integrity Level, IV&V Task Report, Updated IV&V Plan, input to End of Implementation Activity Summary

	Report.
Schedule:	TBD Report submitted to the Government upon completion of the task.
Resources:	ERA PD, ERA COR, ERA POST Team Leads, IV&V Director, IV&V SMEs.
Risks and Assumptions:	Delay in identifying integrity level has negative impact on the scoping of the IV&V effort and the overall IV&V schedule. IV&V will support the Government decision making process. The assumption is that the Government will make a criticality decision in a timely manner.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.4.4.10 Perform Risk Analysis

Determine that technical, budget, and schedule risks identified by IV&V are correctly reviewed and tracked.

Task:	Identify technical and management risk.
Methods	Documents being reviewed for conformance to user needs and applicable standards also will be reviewed for risk to program, budget and schedule. Other risks will be noted during assessments of processes (CM Assessment, RM Assessment) or during technical interchange meetings, reviews, and audits. All identified risks will be entered in the ERA Risk Management data base through the process described in the ERA Risk Management Plan.
Inputs:	IV&V task reports on ERA contractor(s) deliverables, ERA PMO process documents, and other artifacts.
Outputs:	Input to ERA Risk Management Program, IV&V Task Report, input to End of Implementation Activity Summary Report, Anomaly Reports.
Schedule:	TBD
Resources:	Refer to **Section 4.4**.
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Risk Management Team. Should this occur IV&V will maintain its own risk database and will issue its own risk reports. The assumption is that risks identified by IV&V will be accepted and managed by the ERA Risk Management Team.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.4.5 Test Activity

The Test activity covers component and subsystem testing, component and subsystem integration testing, system integration testing, system testing, and acceptance testing. The objectives of IV&V are to ensure that the component, subsystem, and system requirements are satisfied by execution of integration and system test; and that the system satisfies the needs of the users as

demonstrated by the execution of acceptance test. IV&V will not be executing IV&V integration test. IV&V will execute statistics-based IV&V System and Acceptance tests. For each, a random sample of ERA contractor or PMO generated test cases will be adapted for IV&V use. The results of the IV&V testing will be analyzed and projected on the population for comparison.

The specific IV&V test activity tasks include:

- Perform traceability (test documentation) analysis,
- Verify ERA contractor(s) integration test execution,
- Verify ERA contractor(s) system test execution,
- Verify ERA contractor(s) integration and system test reports,
- Execute IV&V system test,
- Verify ERA PMO Acceptance Test Procedure Specifications,
- Generate IV&V Acceptance Test Procedure Specifications,
- Verify ERA PMO acceptance test execution,
- Verify ERA PMO acceptance test report,
- Execute IV&V acceptance test, and
- Perform risk analysis.

5.4.5.1 Perform Traceability Analysis

Analyze the from/to relationships in the ERA contractor(s) integration and system test plans, test designs, test cases and procedures for correctness, consistency, and completeness.

Task:	Perform Traceability (Test Documentation) Analysis
Methods	Assess traceability from the test plans and test designs to the test cases and procedures and back again to verify the correctness, consistency, and completeness of the test documentation, verify that the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Test plan(s), test designs, test cases, test procedures, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Test Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within 10 business days of receipt of documentation
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.2 Verify ERA Contractor(s) Integration Test Execution

Witness the ERA contractor(s) integration test execution to verify that the software and/or hardware integration satisfies the test acceptance criteria.

Task:	Verify ERA contractor(s) integration test execution
Methods	Witness the integration test execution and use the ERA contractor(s) test results to verify that the subsystem or component satisfies the test acceptance criteria, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA contractor(s) integration test plan, test design, test cases, test procedures, anomaly reports, test logs, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Test Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.3 Verify ERA Contractor(s) System Test Execution

Witness the ERA contractor(s) system test to verify that the system satisfies the test acceptance criteria.

Task:	Verify ERA contractor(s) system test execution
Methods	Witness the system test execution and use the ERA contractor(s) test results to verify that the system satisfies the test acceptance criteria, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA contractor(s) system test plan, test cases, test procedures, anomaly reports, test logs, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Test Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.4 Verify ERA Contractor(s) Integration and System Test Reports

Verify that the test report complies with IEEE Std. 829-1998 in purpose, format, and content.

Task:	Verify the ERA contractor(s) integration and system test reports
Methods	Verify conformance to IEEE Std. 829-1998 and that testing (integration, system) is accurately described, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	ERA contractor(s) test reports, plans, test cases, test procedures, anomaly reports, test logs, IV&V Task Reports—Test Witness, IEEE Std. 1012, 1998, Table 1
Outputs:	IV&V Task Report, input to End of Test Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within seven (7) business days after receipt of documentation
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.5 Execute IV&V System Tests

Execute IV&V system test to verify the system satisfies the IV&V acceptance criteria. IV&V will execute statistics-based IV&V System tests. For each test, a random sample of ERA contractor generated test cases will be adapted for IV&V use. The results of the IV&V testing will be analyzed and projected on the population for comparison. Statistical analysis techniques will be used to validate the accuracy of ERA Test results. **NOTE:** *The scope of IV&V testing will be determined by the ERA PD or his designated representative.*

Task:	Execute IV&V system testing
Methods	Validate that the IV&V acceptance criteria are met, verify criteria described in IEEE Std. 1012-1998, Table 1 are satisfied.
Inputs:	IV&V test cases, test procedures, test data, ERA System Test results, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V test log, anomaly reports, IV&V test report, V&V Task Report, input to End of Test Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government upon completion of activity
Resources:	Refer to Section 4.4
Risks and Assumptions:	None
Roles and	Refer to Section 4.5

Responsibilities:	

5.4.5.6 Verify ERA PMO Acceptance Test Procedure Specifications

Verify that the test procedures conform to the applicable standard in purpose, format and content. The acceptance test procedures may be a stand-alone document or may be part of the test case document.

Task:	Verify ERA PMO Acceptance Test Procedure Specifications
Methods	Verify that the test procedures correctly implement the test cases and conform to IEEE Std. 829-1998 in format, content, and purpose; verify the criteria described in IEEE Std. 1012-1998 are satisfied
Inputs:	ERA acceptance test procedures, IEEE Std. 829-1998, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report; Input to End of Test Activity Summary Report
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of document
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.7 Generate IV&V Acceptance Test Procedure Specifications

Generate test procedures and verify that the test procedures comply with IEEE Std. 829-1998 for document purpose, format, and content. Test procedures are not usually published as stand-alone documents rather; they are included with their respective test case specifications. IV&V will be performing statistics-based testing for both System and Acceptance Testing. The IV&V test procedures will be based on contractor and Government produced test procedures. For each test, IV&V will randomly select a sample of test cases together with their procedures and adapt them to IV&V use. The adaptation will usually consist of additional preparation steps to establish suitable initial conditions since the IV&V tests will be performed outside of the context that would be built in a sequential series of tests. **NOTE:** *The scope of IV&V testing will be determined by the ERA PD or his designated representative.*

Task:	Generate IV&V Acceptance Test Procedure Specifications
Methods	Ensure acceptance test procedures conform to IEEE Std. 829-1998; ensure adequacy based on IV&V test cases, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	IV&V Test Cases, Std. 829-1998, Std. 1012-1998, Table 1
Outputs:	IV&V acceptance test procedure specifications, input to End of Implementation Activity Summary Report
Schedule:	TBD

	Test Procedures will be delivered to the Government upon completion
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Timeliness of the delivery of IV&V Acceptance Test Procedure Specifications depends on the timeliness of the delivery of ERA PMO developed acceptance test procedures.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.8 Verify ERA PMO Acceptance Test Execution

Witness the acceptance test execution to verify that the system satisfies the acceptance criteria.

Task:	Verify ERA PMO acceptance test execution
Methods	Witness ERA acceptance test execution and use the ERA acceptance test results to verify that the system satisfies the test acceptance criteria, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	*ERA Acceptance Test Plan* document, test cases, test procedures, anomaly reports, test logs, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to End of Test Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government upon completion of activity
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.9 Verify ERA PMO Acceptance Test Report

Verify that the Acceptance Test Report complies with the applicable standard in purpose, format, and content.

Task:	Verify *ERA Acceptance Test Report*
Methods	Ensure conformance to IEEE Std. 829-1998 in format, content, and purpose and verify correct representation of ERA acceptance test execution
Inputs:	*ERA Acceptance Test Report*, IEEE Std. 829-1998, IV&V Task Report—ERA acceptance testing, ERA anomaly reports, and test logs
Outputs:	IV&V Task Report, input to End of Test Activity Summary Report, Anomaly Reports
Schedule:	TBD

	Report submitted to the Government within seven (7) business days after receipt of documentation
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.10 Execute IV&V Acceptance Testing

Execute IV&V acceptance test to verify the system satisfies the IV&V acceptance criteria. IV&V will execute statistics-based IV&V Acceptance tests. For each, a random sample of ERA PMO generated test cases will be adapted for IV&V use. The results of the IV&V testing will be analyzed and projected on the population for comparison. Statistical analysis techniques will be used to validate the accuracy of the ERA Acceptance Test results. **NOTE:** *The scope of IV&V testing will be determined by the ERA PD or his designated representative.*

Task:	Execute IV&V acceptance testing
Methods	Validate that the IV&V acceptance criteria are met, verify criteria described in IEEE Std. 1012-1998, Table 1 are satisfied.
Inputs:	IV&V test cases, test procedures, test data, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V test log, anomaly reports, IV&V test report, V&V Task Report, input to End of Test Activity Summary Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government upon completion of activity
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.5.11 Perform Risk Analysis

Determine that technical, budget, and schedule risks identified by IV&V are correctly reviewed and tracked.

Task:	Identify technical and management risk.
Methods	Documents being reviewed for conformance to user needs and applicable standards also are being reviewed for risk to program, budget and schedule. Other risks will be noted during assessments of processes (CM Assessment, RM Assessment) or during technical interchange meetings, reviews, and audits. All identified risks will be entered in the ERA Risk Management data base through the process described in the ERA Risk Management Plan.

Inputs:	IV&V task reports on ERA contractor(s) and ERA development process documents and other artifacts.
Outputs:	Input to ERA Risk Management Program, IV&V Task Report, input to End of Test Activity Summary Report.
Schedule:	TBD
Resources:	Refer to **Section 4.4**.
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Management Team. Should this occur IV&V will maintain its own risk database and will issue its own risk reports. The assumption is that risks identified by IV&V will be accepted and managed by the ERA Risk Management Team.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.4.6 Installation and Checkout IV&V Activity

The ERA installation and checkout activity addresses the installation of the system in the operational environment. The installation and checkout activity addresses installation and acceptance support. During this activity, the objective of IV&V is to verify and validate the correctness of the installation in the operational environment. The first instance of the ERA installation and checkout is at the end of Increment #1 (IOC) and is repeated at the end of each increment. The last instance of the ERA installation and checkout is at FOC. The installation and checkout IV&V activity also occurs for each release within an increment. If a particular release is identified as non-operational, IV&V will not perform the installation and checkout tasks.

The specific installation and checkout IV&V activities include:

- Perform Installation Configuration Audit,
- Verify ERA Installation Checkout (Test),
- Perform Installation Checkout (Test),
- Verify ERA Installation Test Report,
- Perform Risk Analysis, and
- Generate IV&V Final Report.

5.4.6.1 Perform Installation Configuration Audit

Verify that all products required to correctly install and operate ERA are present in the installation package. This task will be performed for each installation of each release and/or iteration.

Task:	Perform Installation Configuration Audit
Methods	Verify that required products are present in the installation package, verify supplied values for all components are correct, validate that all site-dependent parameters or conditions are correct, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied

Inputs:	Installation package, listing of required products, listing of supplied values for individual components, site-dependent parameters or conditions, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to the IV&V Final Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government upon completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.6.2 Verify ERA Installation Checkout (Test)

Witness the ERA Installation Checkout (Test) to verify the system satisfies the installation acceptance criteria. This task will be performed for each installation of each release and/or increment.

Task:	Verify ERA Installation Test
Methods	Use the ERA installation test results to verify that the system satisfies the installation acceptance criteria, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Installation package, user documentation, ERA installation test plan, test design, test cases, test procedures, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V Task Report, input to the IV&V Final Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government upon completion of the of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Checkout will be incorrect if the assumption that input documents are accurate and complete is not met
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.6.3 Perform Installation Checkout (Test)

Verify that the installed system corresponds to the system subjected to IV&V Acceptance Test. This task will be performed for each installation of each release and/or increment.

Task:	Perform IV&V Installation Test

Methods	Verify that all components operate as specified, for transition from one version to another, validate that the new or updated components can be removed from the system without affecting the functionality of the remaining system components, for transition from one version to another, verify requirements for continuous operation and service including user notification, verify the criteria described in IEEE Std. 1012-1998, Table 1 are satisfied
Inputs:	Installation Package, user documentation, installation test documentation, IEEE Std. 1012-1998, Table 1
Outputs:	IV&V test log, IV&V test report, input to the IV&V Final Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Checkout will be incorrect if the assumption that input documentation and artifacts are accurate and complete is not met.
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.6.4 Verify ERA Installation Test Report

Verify that the test report complies with the applicable standard in purpose, format and content.

Task:	Verify ERA Installation Test Report
Methods	Verify the test report complies to the requirements of IEEE Std. 829-1998 and correct reflection of the ERA installation test execution
Inputs:	ERA Installation Test Report, IEEE 829-1998
Outputs:	IV&V Task Report, input to IV&V Final Report, Anomaly Reports
Schedule:	TBD Report submitted to the Government within seven (7) business days of the receipt of the documentation.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Review will be incorrect if the assumption that input documents are accurate and complete is not met
Roles and Responsibilities:	Refer to **Section 4.5**

5.4.6.5 Perform Risk Analysis

Determine that technical, budget, and schedule risks identified by IV&V are correctly reviewed and tracked.

Task:	Identify technical and management risk.
Methods	Documents being reviewed for conformance to user needs and

	applicable standards also are reviewed for risk to program, budget and schedule. Other risks are noted during assessments of processes (CM Assessment, RM Assessment) or during technical interchange meetings, reviews, and audits. All identified risks will be entered in the ERA Risk Management data base through the process described in the ERA Risk Management Plan.
Inputs:	IV&V task reports on contractor and ERA development process documents and other artifacts.
Outputs:	Input to ERA Risk Management Program, IV&V Task Report, input to IV&V Final Report.
Schedule:	TBD Identified risks submitted to ERA Risk Management Program for reporting and tracking.
Resources:	Refer to **Section 4.4**.
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Risk Management Team. Should this occur IV&V will maintain its own database and will issue its own risk report. The assumption is that the ERA Risk Management Team will accept and manage IV&V identified risks.
Roles and Responsibilities:	Refer to **Section 4.5**.

5.4.6.6 Generate IV&V Final Report

The IV&V Final Report summarizes the IV&V activities, tasks, and results, including status and disposition of anomalies. It provides an assessment of the overall system quality and provides recommendations regarding product and process.

Task:	Generate IV&V Final Report
Methods	Ensure that the IV&V Final Report complies with IEEE Std. 1012-1998 in format, content, and purpose
Inputs:	IV&V End of Activity Summary Reports, IV&V Task Reports, Anomaly Reports, all other IV&V deliverables, IEEE Std. 1012-1998
Outputs:	IV&V Final Report
Schedule:	TBD Report submitted to the Government upon completion of the task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	No risks are expected
Roles and Responsibilities:	Refer to **Section 4.5**

5.5 Operation Process

The operation process covers the operation of the system and operational support to users. Operation IV&V activities evaluate the impact of any proposed changes to the operating environment, evaluate operating procedures for compliance with the intended use, analyze risks, and assess the effect on the system of any proposed changes.

5.5.1 Operation IV&V Activity

The operation IV&V activity addresses operational testing, system operation, and user support. During this activity the objectives of IV&V are to evaluate new constraints in the system, assess proposed changes and their impact, and evaluate operating procedures for correctness and usability.

The specific operation IV&V activities include:

- Verify ERA Operational Acceptance Test,
- Evaluate new constraints,
- Assess proposed changes,
- Evaluate operating procedures, and
- Perform risk analysis.

5.5.1.1 Verify ERA Operational Acceptance Test

Witness ERA operating on an ongoing basis to verify that the system satisfies the acceptance criteria.

Task:	Verify ERA Operational Acceptance Test
Methods:	TBD
Inputs:	TBD
Outputs:	IV&V Task Report
Schedule:	TBD Report will be submitted to the Government upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Review will be incorrect if the assumption that input documentation is accurate and complete is not met.
Roles and Responsibilities:	Refer to **Section 4.5**

5.5.1.2 Evaluate New Constraints

Evaluate new constraints (e.g., operational requirements, platform characteristics, operating environment) on the system or the requirements to verify the potential impact on the IV&V Plan.

Task:	Evaluate new constraints

Methods:	New constraints will be evaluated for impact on the IV&V Plan and a determination will be made concerning the need to update the IV&V Plan
Inputs:	IV&V Plan, new constraints
Outputs:	IV&V Task Report
Schedule:	TBD Report submitted to the Government upon completion of task
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.5.1.3 Assess Proposed Changes

Assess proposed changes (e.g., modifications, enhancements, or additions) to determine the effect of the proposed changes to ERA.

Task:	Assess Proposed changes
Methods:	Proposed changes will be evaluated for impact to ERA. A determination will be made as to the extent IV&V tasks need to be iterated.
Inputs:	Proposed changes
Outputs:	IV&V Task Report
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of documentation
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.5.1.4 Evaluate Operating Procedures

Verify that the operating procedures are consistent with the user documentation and conform to the system requirements.

Task:	Evaluate operating procedures
Methods:	Verify that the operating procedures are consistent with the user documentation and conform to the system requirements
Inputs:	Operating procedures, user documentation, system requirements
Outputs:	IV&V Task Report

Schedule:	TBD Report submitted to the Government within ten business days of receipt of documentation
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.5.1.5 Perform Risk Analysis

Review and update risk analysis using prior task reports. Provide recommendations to eliminate, reduce, or mitigate the risk.

Task:	Identify technical and management risks
Methods:	Documents being reviewed for conformance to user needs and applicable standards also will be reviewed for risk to program, budget, and schedule. Other risks will be noted during assessments of processes (CM Assessment, RM Assessment) or during technical interchange meetings, reviews, and audits and proposed changes. All identified risks will be entered in the ERA Risk Management database through the process described in the ERA Risk Management Plan.
Inputs:	Proposed changes, development contractor(s) program management plan, IV&V Task Reports
Outputs:	IV&V Task Report
Schedule:	TBD Identified risks submitted to ERA Risk Management Program for reporting and tracking.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Risk Management Team. Should this occur IV&V will maintain its own risk database and will issue is own risk reports.
Roles and Responsibilities:	Refer to **Section 4.5**

5.6 Maintenance Process

The maintenance process is activated when the system undergoes modifications caused by a problem or a need for improvement. The Maintenance IV&V activity addresses those IV&V tasks required for modifications, migration, or retirement of the system during the operation process.

Modifications of the system shall be treated as development processes and shall be verified and validated as described in **Section 5.1, Management Process**, and **Section 5.4, Development Process**. The assigned integrity level shall be revised as appropriate to reflect the requirements of the maintenance process.

5.6.1 Maintenance IV&V Activity

The maintenance activity covers modifications (e.g., corrective, adaptive, and perfective), migration, and retirement of the system. The maintenance IV&V activity addresses problem and modification analysis, modification implementation, maintenance review/acceptance, migration, and system retirement. The objectives of IV&V are to assess proposed changes and their impacts, evaluate anomalies discovered during operation, assess migration requirements, assess retirement requirements, and re-perform IV&V tasks. The incremental and iterative development life cycle of ERA may result in early deliverables being in maintenance at the same time that later deliverables are undergoing integration test.

The specific IV&V activities include:

- Revise IV&V Plan,
- Assess proposed changes,
- Evaluate anomalies,
- Perform task iteration,
- Perform migration assessment,
- Perform retirement assessment,
- Perform risk analysis, and
- Perform criticality analysis.

5.6.1.1 Revise IV&V Plan

Revise the IV&V Plan to include approved changes and ensure that the revised IV&V Plan conforms to IEEE Std. 1012-1998.

Task:	Revise the *ERA Independent Verification and Validation Plan (IVVP).*
Methods:	Material upon which the revision is to be based will be collected and relevant information compiled, proposed approach changes agreed to, and the document generated and released for review.
Inputs:	*ERA IVVP* document, approved changes, IEEE Std. 1012-1998,
Outputs:	Revised IV&V Plan
Schedule:	TBD The revised IV&V Plan will be submitted to the Government upon completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and	Refer to **Section 4.5**

Responsibilities:	

5.6.1.2 Assess Proposed Changes

Assess proposed changes (e.g., modifications, enhancements, or additions) to determine the effect of the proposed changes to ERA.

Task:	Assess proposed changes
Methods:	Proposed changes will be evaluated for impact to ERA and to validate that changes do not cause unacceptable or unintended system behavior. A determination will be made as to the extent IV&V tasks need to be iterated
Inputs:	Proposed changes, IV&V Plan
Outputs:	IV&V Task Report, modified IV&V Plan
Schedule:	TBD Report submitted to the Government within seven (7) business days of receipt of documents and modified IV&V Plan submitted to the Government upon completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.6.1.3 Evaluate Anomalies

Evaluate the effect of system operation anomalies on ERA.

Task:	Evaluate anomalies
Methods:	Assess the effect on ERA of anomalies detected during operation
Inputs:	Anomaly reports
Outputs:	IV&V Task Report
Schedule:	TBD Report submitted to the Government upon completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.6.1.4 Perform Task Iteration

Perform IV&V tasks, as needed, to ensure that planned changes are implemented correctly, documentation is complete and current, and changes do not cause unacceptable or unintended system behavior.

Task:	Perform task iteration
Methods:	Validate that planned changes are implemented correctly, documentation is complete and current, and changes do not cause unacceptable or unintended system behavior.
Inputs:	Approved changes, installation package
Outputs:	IV&V Task Report
Schedule:	TBD Report submitted to the Government upon completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.6.1.5 Perform Migration Assessment (this may not be required for ERA)

Assess whether system requirements and implementation address specific migration requirements, migration tools, conversion of products and data, archiving, support for the prior environment, and user notification.

Task:	Perform migration assessment
Methods:	Assess whether system requirements and implementation address specific migration requirements, migration tools, conversion of products and data, archiving, support for the prior environment, and user notification.
Inputs:	System requirements
Outputs:	IV&V Task Report
Schedule:	TBD Report submitted to the Government upon completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.6.1.6 Perform Retirement Assessment (this may not be required for ERA)

Assess whether the installation package addresses support, impact on existing systems and databases, archiving, transition to new products, and user notification.

Task:	Perform retirement assessment
Methods:	Assess whether the installation package addresses support, impact on existing systems and databases, archiving, transition to new products, and user notification
Inputs:	Installation package
Outputs:	IV&V Task Report
Schedule:	TBD Report submitted to the Government upon completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	None
Roles and Responsibilities:	Refer to **Section 4.5**

5.6.1.7 Perform Risk Analysis

Review and update risk analysis using prior task reports. Provide recommendations to eliminate, reduce, or mitigate the risk.

Task:	Identify technical and management risks
Methods:	Documents being reviewed for conformance to user needs and applicable standards will also be reviewed for risk to program, budget and schedule. Other risks noted during assessments of processes (CM Assessment, RM Assessment) or during technical interchange meetings, reviews and audits and proposed changes. All identified risks will be entered in the ERA Risk Management database through the process described in the ERA Risk Management Plan
Inputs:	Proposed changes, development contractor(s) program management plan, IV&V Task Reports
Outputs:	IV&V Task Report
Schedule:	TBD Identified risks submitted to ERA Risk Management Program for reporting and tracking
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Risks identified by IV&V may not be accepted or managed expeditiously by the ERA Risk Management Team. Should this occur IV&V will maintain its own risk database and will issue its own risk reports. The assumption is that the ERA Risk Management Team will accept and manage IV&V identified risks.

Roles and Responsibilities:	Refer to **Section 4.5**

5.6.1.8 Perform Criticality Analysis

Determine whether or not correct integrity levels are established for requirements, modules, subsystems, or other system partitions.

Task:	Re-assess ERA Integrity Level
Methods:	Verify that the assigned integrity level(s) are correct. Verify that the most critical level assigned to an individual element is assigned to the entire system
Inputs:	Prior IV&V Task Reports—Criticality Analysis
Outputs:	Identification of revised ERA Integrity Level, IV&V Task Report, Updated IV&V Plan
Schedule:	TBD Report submitted to the Government completion of task.
Resources:	Refer to **Section 4.4**
Risks and Assumptions:	Delay in identifying integrity level has negative impact on the scoping of the IV&V effort. IV&V will support Government decision making process. The assumption is that the Government will make a criticality decision in a timely manner.
Roles and Responsibilities:	Refer to **Section 4.5**

6.0 IV&V Reporting Requirements

The paragraphs in this section describe how the results of performing the IV&V activities and tasks described in this IVVP will be documented. IV&V reporting will occur throughout the program life cycle. Reporting will communicate the status of the IV&V effort and its findings. The reports provide visibility into the progress of development and an assessment of the products, and risks associated with the identified deficiencies. All IV&V tasks are reported upon the completion of the task.

6.1 Required Reports

All IV&V reports are delivered to the ERA PD for delivery to the ERA COR. Reports will convey the results of IV&V activities as well as provide a summary of the programmatic status of the overall IV&V activities. The purpose and a brief description of the contents of each type of report are provided in the following subparagraphs.

6.1.1 Progress and Status Reports

Progress and Status Reports detail the IV&V activities conducted during the current reporting period, the planned activities to be conducted during the next reporting period and the current

contract financial status (if appropriate). IV&V will deliver Weekly Progress Reports and Monthly Status Reports. **Appendix B, IV&V Templates** contains templates for these reports.

6.1.2 Task Reports

Task Reports are generated as a result of completing an evaluation of an ERA-related product, process, or activity. The purpose of these reports is to document any deficiencies in the product and to assist in resolving the deficiencies as quickly as possible. **Appendix B** contains a template that shall be used for generating Task Reports. All evaluations will be undertaken with an evaluation form appropriate for that product or activity. The evaluation form may be integrated into the report.

Whenever the ERA-related product is a document, it shall be evaluated using the appropriate standard(s) and the document review checklist template contained in **Appendix C**. Early identification of problems provides management with the maximum opportunity for remedial action. The timeliness of these reports is paramount to maintaining both the cost and schedule of implementing ERA. IV&V will provide these reports to the ERA PD for delivery to the ERA COR within seven (7) business days of the receipt of the document or within ten business days for more complex tasks such as requirements traceability. IV&V reports for non-document evaluations (e.g., criticality analysis or risk analysis) will be provided to the ERA PD for delivery to the ERA COR upon completion of the task.

6.1.3 End of Activity Summary Report

The End of Activity Summary Report (e.g., End of Acquisition Support Summary Report) will provide an independent assessment of the overall technical state of the ERA implementation at that milestone. This report will provide a recap of tasks conducted during the Activity, discrepancies identified and their disposition, unresolved issues and the risks associated with them, and recommendations. The report will carry a cumulative effect of outstanding issues to provide NARA with a view of the technical and program risks. **Appendix B** contains a template that shall be used for generating each End of Activity Summary Report.

6.1.4 IV&V Final Report

The IV&V Final Report provides the independent assessment of the overall ERA suitability to support the system's mission as specified in the Mission Needs Statement and the ConOps document. This report will include the following information: a summary of life cycle IV&V activities, a summary of IV&V analyses results, a summary of anomalies with proposed resolutions and dispositions, outstanding issues and concerns, an overall assessment of the system, and final conclusions and recommendations. **Appendix B** contains a template that shall be used for generating the IV&V Final Report.

6.2 Optional Reports

Additional reports, as identified, may be provided to inform the ERA PD of an activity's results. The delivery of these reports will vary with the activities performed. Reports will convey the results of IV&V activities and issues of significant value. Optional reports may consist of

engineering white papers, meeting summary reports, and red flag reports. The purpose and a brief description of the contents of these reports are provided in **Sections 6.2.1** to **6.2.3**.

6.2.1 Engineering White Papers

Engineering white papers are optional reports that may be initiated to: document results of trade-off analyses; identify and recommend solutions for system issues, or ERA-related special studies. These white papers include a statement of the issue, analysis methodology, results, conclusions, and recommendations. White papers also may be requested to provide the results of an independent analysis or trade study.

6.2.2 Meeting Summary Reports

After each authorized meeting, the IV&V representative will prepare a Meeting Summary Report indicating the meeting purpose, accomplishments, issues, and concerns. This report is provided to the ERA PMO PD for delivery to the ERA COR.

6.2.3 Red Flag Reports

Red Flag Reports identifying a detected anomaly that has the potential of significant cost, schedule, or mission impact will be provided as necessary. These reports will provide a description of the issue, program impact, cause (if known), criticality, and recommendation. Red Flag Reports are provided to the ERA PD for delivery to the ERA COR.

6.3 Report Management Procedures

All reports will be routed through ERA Program Configuration Management (CM) by the ERA PD for official delivery to the ERA COR as follows:

- IV&V Peer Review Draft - The first draft will be named appropriately and will be designated as Version 0.01 for IV&V Peer review. At the completion of Peer Review, comments will be resolved by the IV&V Technical Director. After revision, the document will be incremented to Version 0.02 and will be forwarded by the IV&V Technical Director through the POST Technical Editor and QM Specialist to the ERA PD for the Director's review
- ERA Program Director's Review and Final Disposition – The ERA PD will forward comments to the IV&V Technical Director. The IV&V Technical Director will resolve any comments or issues, revise the document as appropriate, increment the version number to 1.0 and release the document to ERA Configuration Management, the ERA COR and the ERA PD through the POST Technical Editor and QM Specialist.

7.0 ADMINISTRATIVE REQUIREMENTS

This section describes the IV&V administrative procedures for anomaly reporting and resolution; task iteration policy; deviation policy; control procedures; and standards, practices, and conventions. These procedures are established to ensure a smooth flow of information from

IV&V to, the ERA POST Program Manager, the ERA COR, the ERA PD, and the ERA contractor(s).

7.1 Anomaly Resolution And Reporting

An anomaly is anything observed in the documentation or operation of the system that deviates from expectations based on requirements, specifications, design, user documents, standards, or from someone's perceptions or experiences. Anomalies are reported as they are discovered. **Appendix B** contains a template that shall be used for generating the Anomaly Report. Anomalies shall be documented and managed by IV&V in a tracking tool in a format to be described in an Appendix to this document.

This section describes the method of reporting and resolving anomalies including the methodology for reporting an anomaly, the anomaly report distribution list, and the authority and time lines for resolving anomalies. The classification schema for anomalies will follow the schema described in IEEE Std 1044-1993[B9].

7.1.1 Methodology

The specific methodology to be employed will be contained in the next release of the IVVP.

7.1.2 Distribution

The specific methodology to be employed will be contained in the next release of the IVVP.

7.1.3 Authority (this section needs to include the timeline for resolution)

The specific methodology to be employed will be contained in the next release of the IVVP.

7.2 Task Iteration Policy

IV&V task iteration depends on changes, correction of identified defects, and the life cycle phases. Both the ERA life cycle phase and IV&V are iterative processes. An iteration of an activity may be driven by the correction of a defect, a change to a requirement specification or the incremental development of a document and/or product that is phase or contractually driven. These will be referred to generically as a "change."

When a change is identified, an analysis will be performed to determine which aspects of each completed life cycle phase will need to be repeated to maintain the integrity of the product. The results of this analysis will be used to generate an impact statement for the change.

The ERA life cycle will require IV&V to execute multiple life cycle activities concurrently. For example, IV&V may be performing system test support activities on Increment #1 capability while at the same time performing design analysis support activities on a release within Increment #2. Thus, the IV&V activities will be repeated for each release.

7.3 Deviation Policy

Project changes or external factors may make it necessary to deviate from this plan. Any such deviations will be documented for approval before they occur. A memorandum will be prepared that identifies the task, deviation rationale, and the effect on the overall IV&V effort. This memorandum will first be delivered to the ERA PD who will then deliver it to the ERA COR prior to IV&V initiating the deviated process. If the deviation is approved, this re-direction will be documented in memo form. Deviations in the execution of this plan will be documented in the Progress and Status Report, as well as in the End of Activity Summary Report.

7.4 Control Procedures

This paragraph identifies IV&V products and tasking results, how they are controlled, and where they are stored. IV&V deliverable products consist of Task Reports, End of Activity Summary Reports, Weekly Progress Reports, Monthly Status Reports, memoranda, white papers, and the IV&V Final Report. The official copies of these products are maintained by the ERA PMO CM. IV&V maintains file and backup copies of all deliverables.

7.5 Standards, Practices, And Conventions

ERA follows Government laws, rules, and regulations, and NARA internal standards for system acquisition. ERA IV&V will follow those Standards identified in **Section 2.2.1** of this plan. The standards, along with internal procedures and checklists, are used in the review of documents. IV&V maintains and updates internal procedures and checklists to incorporate new ideas or to reflect changes in direction required by NARA.

8.0 IV&V DOCUMENTATION REQUIREMENTS

In this section of the IVVP the purpose, format and content of the IV&V test documentation is defined. The purpose, format, and content of the IV&V test documentation will be in accordance with IEEE Std-829-1998, except as noted below. IV&V expects to plan, execute, and report on IV&V testing for system and acceptance testing for each release within the various increments, and then again at IOC and FOC. **NOTE:** IV&V tests will be conducted, or not, at the direction of the ERA PD.

8.1 Test Plan

Test plans will be generated for each release within each increment. The test plan(s) will describe the system-level test and the acceptance-level effort for that specific release. System-level test will test the requirements associated with that release while acceptance-level test will validate the user functionality of the release. Test plans will reflect the IV&V test strategy of statistical sampling. This requires that a statistically determined sub-set of test cases be identified and executed. Additionally, test plans will be generated, if appropriate, for IOC and for FOC. These also will reflect the strategy of statistical sampling.

8.2 Test Design

The test design documents will not be separate documents as identified in IEEE Std-829-1998 but will be the first section of the respective test case document.

8.3 Test Cases

For each test plan there will be a test case document. The test cases will be traceable to the test plan and will implement the test design.

8.4 Test Procedures

Test procedures will provide the information required to execute test cases. These will not be separate documents, as identified in IEEE Std. 829-1998 but rather will be specified within the respective test case.

8.5 Test Results

All test results will be documented in a test results report and in a test results summary report for the respective test. Test discrepancies will be entered in the IV&V database maintained in Microsoft Access.

8.6 Test Log

A test log will be maintained during test execution. The test log will contain such information as test executed, time started, time stopped, problems encountered, and anomaly reports entered.

Appendix A: IV&V Work Breakdown Structure (WBS) and Schedule

The IV&V WBS will be integrated into the master program WBS.

IV&V Milestones will be integrated into the program master schedule.

The IV&V schedule will be integrated into the program master schedule.

Cost and Basis of Estimate data is supplied under separate cover.

Appendix B: IV&V Templates

IV&V Task Report Template:

IV&V TASK REPORT	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	

1. Description
Describe, here, the IV&V task that is the subject of this report. Include a listing of standards or other documents consulted.

2. Summary of Results
Provide an executive-level summary of the task results.

3. Summary of Anomalies and Resolutions
Provide a listing of anomaly reports produced as a result of this task and include their current status.

4. Assessment of Quality
Provide a detailed description of the task and methods employed followed by a detailed description of the task results and conclusions. Detailed results may be provided as an attachment.

5. Identification and Assessment of Technical and Management Risks
Provide a full description of specific technical and management risks detected and reported as a result of this task. Include disposition.

6. Recommendations
Describe, here, any IV&V recommendations related to the task described in this report.

IV&V Quick Look Report Template:

IV&V QUICK LOOK REPORT	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	

1. Description of Task
Describe, here, the IV&V task that is the subject of this report. Include a listing of standards or other documents consulted.

2. Summary of Task Results
Provide an executive-level summary of the task results.

3. Summary of Anomalies and Resolutions
Provide a listing of anomaly reports produced as a result of this task and include their current status.

4. Assessment of Quality
Provide a summary description of the task and methods employed followed by a summary description of the task results and conclusions. Detailed results may be provided as an attachment.

5. Identification and Assessment of Technical and Management Risks
Provide a summary description of technical and management risks detected and reported as a result of this task. Include disposition.

6. Recommendations
Describe, here, any IV&V recommendations related to the task described in this report.

IV&V Special Report Template:

IV&V SPECIAL REPORT	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	

1. Description
Describe, here, the subject of this report (special task or study). Include a listing of standards or other reference materials consulted.

2. Summary of Results
Provide an executive-level summary of the task or study results.

3. Summary of Anomalies and Resolutions
Provide a listing of anomaly reports produced as a result of this task or study and include their current status.

4. Assessment of Quality
Provide a detailed description of the task or study that is the subject of this report and the methods employed followed by a detailed description of the results and conclusions. Supporting information may be provided as an attachment.

5. Identification and Assessment of Technical and Management Risks
Provide a full description of specific technical and management risks detected and reported as a result of this task or study. Include disposition.

6. Recommendations
Describe, here, any IV&V recommendations related to the task or study described in this report.

IV&V End of Activity Summary Report Template:

IV&V ACTIVITY SUMMARY REPORT	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	

1. Description of IV&V Tasks Performed
Describe, at a high level, the IV&V tasks that were performed during this activity. Provide references to delivered IV&V Task Reports.

2. Summary of Task Results
Provide an executive-level summary of the task results, including an overall assessment of the results of the activity as a whole.

3. Summary of Anomalies and Resolutions
Provide a listing of anomaly reports produced as a result of all tasks performed in support of this activity and include their current status.

4. Assessment of Quality
Provide a description of the objectives of the activity followed by an assessment of how well those objectives were achieved. Detailed results and analyses may be provided as an attachment.

5. Identification and Assessment of Technical and Management Risks
Provide a description of specific technical and management risks detected and reported by IV&V while performing tasks in support of this activity. Include disposition.

6. Recommendations
IV&V will recommend that the PMO proceed to the next activity, proceed conditionally, or not proceed. Include full justification.

IV&V Final Report Template:

IV&V FINAL REPORT	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	

1. Summary of IV&V Life Cycle Activities
Provide an executive-level summary of all IV&V activities performed in support of this release or increment.

2. Summary of Task Results
Provide an executive-level summary of all tasks performed in support of this release or increment.

3. Summary of Anomalies and Resolutions
Provide a categorical summary of anomalies discovered during tasking performed in support of this release or increment. Include an enumeration of any anomalies that remain outstanding or unresolved.

4. Assessment of Release/Increment Quality
Provide an overall assessment of the quality of the products delivered as a part of this increment or release. Include justification for the assessment.

5. Lessons Learned/Best Practices
Describe any lessons learned and resulting changes in practice that were discovered during the conduct of IV&V for this release or increment.

6. Recommendations
Describe IV&V's recommendations concerning Government acceptance of the product delivered as a result of this release or increment. Provide full justification for these recommendations.

Product Evaluation Criteria:

Specific product evaluation criteria will be supplied after ERA contract negotiations yield a final list of contract deliverables.

IV&V Anomaly Report Template:

IV&V ANOMALY REPORT		
TO:		
THRU:		
FROM:		
SUBJECT:		
IV&V OF:		
DATE:		Control Number: 2003 - 000
CC:		

1. Project and Phase

State the long name of the project being evaluated. Include a brief description of the project and a reference to the life cycle process effected by this anomaly (ref. IEEE/EIA 12207.0-1996, §5, §6 & §7). Indicate the equivalent IV&V activity in progress when this anomaly was discovered (ref. IEEE Std 1012-1998, §5).

2. Description and Location in Document or Code

Enter a detailed description of the anomaly.

3. Impact on Project Success

Red - Critical, if this anomaly is not corrected, the project will certainly fail.
Yellow - Moderate, though the anomaly may be moderate to serious in nature, the impact to the successful completion of the project can be mitigated by work-arounds or relatively minor adjustments to the process.
Green - The anomaly is trivial to moderate in nature and the impact to overall project success is negligible.

4. Cause of the Anomaly and Description of the Error Scenario

Describe the conditions under which the anomalous event occurred and identify the root cause.

5. Urgency of Corrective Action (Project)

Enter an assessment of the urgency of the project level corrective action required.
High - Corrective action must be taken immediately to avoid certain project failure.
Medium - Corrective action is required, however, overall project success is moderately affected and the corrective action must be taken prior to customer acceptance.
Low - Corrective action has little or no immediate impact on the success of the project and need not be implemented prior to customer acceptance.

6. Urgency of Corrective Action (Enterprise)

Enter an assessment of the urgency of the enterprise level corrective action which must be taken to correct the anomalous condition in this report.
High - Corrective action must be taken immediately to avoid certain, critical failure at the enterprise level.
Medium - Corrective action is required, however, moderate to high risk to enterprise operations exists.

Low - Corrective action is required, however, the risk to enterprise level operations is low to medium.

7. Recommendations

State all recommendations in term of management actions.

IV&V Meeting Summary Report Template:

IV&V MEETING ATTENDANCE MEMORANDUM	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	

1. **IV&V Personnel in Attendance**

2. **Summary of Meeting Objectives**

3. **Summary of Meeting Results**

4. **Summary of IV&V Participation**

5. **IV&V Action Items**

6. **General Observations**

IV&V Weekly Progress Report Template:

IV&V WEEKLY PROGRESS REPORT	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	
IV&V MEETING ATTENDANCE MEMORANDUM	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	

As of:

Products Due Within 60 days of Report

Pi

Baselined Delivery Date	Planned Delivery Date

Key Activities In-Process / Activities Completed This Week

A1.

Issue to be Resolved

R1

Criticality	Issue to be Resolved By	Latest Date for Resolution

---

Contracting Action Required

C1.

Criticality	Action to be Resolved By	Latest Date for Action

Other Comments

D1.

Report Author:	Lou Pinto	**Position Title:**	Technical Director, IV&V

IV&V Monthly Status Report Template:

IV&V MONTHLY STATUS REPORT	
TO:	
THRU:	
FROM:	
IV&V OF:	
SUBJECT:	
DATE:	
CC:	

As of:

IV&V Milestones in this Reporting Period

Baselined Completion Date	Actual Completion Date	Planned Completion Date

IV&V Product Deliveries this Reporting Period

Baselined Completion Date	Actual Completion Date	Planned Completion Date

Exception Analysis

A1.

Issue to be Resolved

R1

Criticality	Issue to be Resolved By	Latest Date for Resolution

Contracting Action Required

C1.

Criticality	Action to be Resolved By	Latest Date for Action

Other Comments

D1

Report Author: Lou Pinto **Position Title:** Technical Director, IV&V

IV&V Test Plan Template:


IV&V Test Plan.doc

IV&V Test Case Specification Template:


IV&V Test Case Specification.doc

IV&V Test Results Report Template:


IV&V Test Results Report.doc

IV&V Test Summary Report Template:


IV&V Test Summary Report.doc

Appendix C: Document Assessment Checklist (sample)

Actual content of TOPIC AREA, CONTENT ITEM, and CONTENT REQUIREMENT is based on the requirements of the applicable standard.

Data Items:	Content:
ID	Section Number as identified in the appropriate Standard
TOPIC AREA	Primary area (e.g. Introduction)
CONTENT AREA	Secondary area (e.g. Summary of System)
CONTENT REQUIREMENT	Textual description extracted from the appropriate Standard
LOCATION IN DOCUMENT	Section number of the document under review that contains the required information; if not then "Not included"
ASSESSMENT	"Satisfied"; "Partially Satisfied"; "Not Satisfied"; indicates the degree to which the document under review satisfies the required information
COMMENTS	Textual comment by the reviewer