



**Seaport**  
**Quality Assurance/Risk Mitigation**  
**Plan**

**Version 4.0**  
**September 21, 2012**

<b>1.</b>	<b>Introduction .....</b>	<b>1</b>
1.1.	Overview .....	1
1.2.	Purpose .....	1
1.3.	Policy Statement.....	2
1.4.	Plan Management .....	2
1.5.	Scope.....	2
<b>2.</b>	<b>Acronyms an Abbreviations .....</b>	<b>2</b>
<b>3.</b>	<b>Management .....</b>	<b>3</b>
3.1.	Organizational Structure .....	3
3.2.	Roles and Responsibilities .....	3
3.2.1.	Senior Management .....	3
3.2.2.	Project Management.....	3
3.2.3.	Quality Assurance Team.....	4
3.2.4.	Technical Staff.....	4
<b>4.</b>	<b>Required Documentation .....</b>	<b>4</b>
<b>5.</b>	<b>Quality Assurance Procedures .....</b>	<b>5</b>
5.1.	Walkthrough Procedure.....	5
5.2.	Review Process.....	6
5.3.	Review Procedures .....	6
5.4.	Audit Process .....	7
5.5.	Audit Procedures .....	7
5.6.	Evaluation Process.....	8
<b>6.</b>	<b>Reporting Procedures for Non-compliances.....</b>	<b>8</b>
<b>7.</b>	<b>Risk Management and Mitigation .....</b>	<b>9</b>
<b>8.</b>	<b>Resource Estimates .....</b>	<b>9</b>
<b>9.</b>	<b>Quality Assurance Metrics.....</b>	<b>9</b>
<b>10.</b>	<b>Appendix A: Quality Assurance Work Product Audit Checklist.....</b>	<b>1</b>
<b>11.</b>	<b>Appendix B: Quality Assurance Process Audit Forms .....</b>	<b>1</b>

# 1. Introduction

## 1.1. Overview

This SEAPORT Quality Assurance Plan (QAP) describes the standards, processes and procedures used to support the consistent delivery of high-quality, professional products. The Quality Assurance (QA) process is concerned with establishing the authority of the QA function, quality assurance standards, procedures, policies, monitoring, and evaluation processes to determine quality in relation to established standards.

QA provides standards against which the quality of the product/service being provided and the progress toward completion can be measured. It is used to monitor and evaluate the adherence to processes, procedures, and standards to determine potential product and service quality. QA activities concentrate on the prevention of problems through the continuous monitoring and feedback of project activities as compared with established standards.

The QA function reviews processes and procedures; reviews and audit the products/activities and verifies that they comply with the applicable procedures and standards; and assures the appropriate visibility for the results of the reviews and audits.

Quality Assurance will work to foster constructive communication, provide feedback to detect and prevent development problems, control risks, discuss alternative solutions, and ensure quality is built-in to all products.

## 1.2. Purpose

The purpose of this QAP is to describe the quality assurance activities required to support the SEAPORT-e contract. The QA activities in this plan are in alignment with ManTech's Quality Framework. The framework is largely based upon and is compliant with the Software Engineering Institute (SEI) Capability Maturity Model Integration (CMMI) for Development Maturity Level 3 v1.3.

The purpose of the SEAPORT Quality Assurance Plan is to establish the basic *approach* to QA and the QA processes and procedures used in support of product and services delivery on this contract. By adhering to this plan, ManTech ensures that SEAPORT products are developed and delivered according to established processes and are of the highest quality.

QA activities will be an integral part of all SEAPORT tasking, however their extent will vary depending upon the type of work and performance standards required. This QA plan is a notional plan meant as a framework; specific QA activities will be identified at the task level. In some cases they will be documented in a separate QA Plan or QA Surveillance Plan (QASP).

The plan defines the quality policy, the organizational structure of the QA group, responsibilities of the QA group, responsibilities of affected groups, and identifies necessary reviews and audits.

### **1.3. Policy Statement**

ManTech adheres to established Organizational Policies for Project Management. ManTech's quality policy states

ManTech International Corporation (MIC) delivers best value to customers through excellence in program execution using an established, systems-oriented, and adaptive Quality Framework.

ManTech's culture fosters shared employee responsibility for continual improvement, increased efficiency, and systems thinking. To realize these objectives, we leverage the following:

- Defined, industry-standard best practices
- On-going review and improvement of business processes
- Tools to analyze customer need and work flow to drive out waste
- Philosophy that promotes information sharing, communication, and education

Providing maximum customer value as a trusted partner is fundamental to our business.

### **1.4. Plan Management**

The SEAPORT Quality Assurance Plan will be base lined and placed under Configuration Management control. It is a living document which will be reviewed annually and updated as needed.

### **1.5. Scope**

The scope of this plan covers the SEAPORT activity for general tasking issued under this contract. In some cases, the tasking is of such a specific nature that warrants detailed performance standards. In these situations, ManTech will work with the customer to establish a QA plan and performance measures specific to the task.

SEAPORT activities are varied and tasking varies considerably. Some examples of work issued on the contract that would be within scope are and reviewed by the QA team are:

- Project Planning
- Network Administration/Operations
- Desktop Support for the development team
- Problem Tracking and Reporting
- Hardware/Software Development
- Configuration Management

## **2. Acronyms an Abbreviations**

CMMI            Capability Maturity Model Integration

MIC	ManTech International Corporation
QA	Quality Assurance
QAP	Quality Assurance Plan
QF	Quality Framework
SEI	Software Engineering Institute
WBS	Work Breakdown Structure

## 3. Management

### 3.1. Organizational Structure

The SEAPORT Quality Team consists primarily of a Project Quality Assurance Lead working closely with Project Management. The Project Quality Assurance Lead is part of the SEAPORT team and works closely with contract personnel to ensure applicable processes are followed.

### 3.2. Roles and Responsibilities

The role of the SEAPORT QA team is to assist the technical staff to continually improve the quality of their work products and services. The QA team is responsible for establishing processes and procedures that accurately verify and validate the adherence of assigned tasking and related activities to applicable standards, guidelines, and procedures.

In most cases, the SEAPORT QA team will be involved at the start of each project. They will participate in the development of the Task Management Plan (Project Plan or Software Development Plan) and will provide input into the project's schedule and/or work breakdown structure (WBS) to ensure that QA activities are identified and that time is allotted for QA activities. Funding for the QA team members will be planned within the task hours and cost structure.

The organizational responsibilities as they relate to QA are:

#### 3.2.1. Senior Management

- Provides management support for the QA function
- Makes available staff and other resources as needed to support QA
- Ensures resolution of problem and concern issues
- Reviews QA audits and reports

#### 3.2.2. Project Management

- Provides management oversight and support for the QA function
- Manages overall SEAPORT performance.
- Ensures QA activities are conducted

- Ensures compliance with the QA program
- Ensures responses to deficiency reports from QA reviews and audits

### **3.2.3. Quality Assurance Team**

- Develops and maintains the Quality Assurance Plan
- Conducts audits and reviews
- Ensures work products adhere to the appropriate standard
- Develops audit and review procedures
- Ensures the QA processes and procedures adequately control project quality
- Ensures the QA activities accurately measure the product, service and process quality
- Reviews and approves specified deliverables for release to customer
- Promptly reports results of audits to the project task leader
- Reports unresolved noncompliant items to senior management
- Maintains an on-going dialogue with the project management and support staff
- Ensures that the expectations of QA activities are identified and understood between the project management, task leader, and the team members
- Assist Project Management as necessary with metrics
- Collects and analyzes metrics produced from the results of the QA process
- Recommends any needed changes in procedures to Project Management

### **3.2.4. Technical Staff**

The effectiveness of the QA team's effort depends on the support and commitment of the technical staff and all levels of management. All affected groups should be trained in the principles of quality assurance and be committed to the proper inclusion and performance of QA activities within their work efforts.

- Implements task level quality control based on QA standards, policies, and procedures
- Participates in reviews and audits
- Performs corrective actions in response to QA findings
- Manages and controls defects/errors and corrections
- Tracks the status of defects/errors until closed

## **4. Required Documentation**

Documentation requirements will vary by SEAPORT tasking. All required documents for SEAPORT projects will follow the appropriate standards concerning content and format. Industry wide standards for SEAPORT management are frequently unavailable. When industry standards are not available, the QA team, along with input from the project team, must develop the standards or adapt documents developed by other groups to use as standards within the project.

The SEAPORT software activities are to be implemented according to customer requirements. The required documentation is necessary to ensure SEAPORT activities are planned, monitored and controlled and will be used to verify the adequacy of the actual processes and procedures used to develop and/or deliver products/services. Representative required documentation, as applicable, may include but is not limited to:

- Project Plan / Software Development Plan
- Project Architecture
- Project Planning Baseline
- System Requirements
- Software Design Requirements (Allocated)
- Software Development Plan
- Project Configuration Management Plan

Documentation will be identified specific to the tasking.

## 5. Quality Assurance Procedures

Different methods and techniques will be utilized depending on the specific quality assurance activity. The techniques, tools, and procedures that may be used are as follows:

- **Walkthroughs and Peer Reviews** - Formal or informal, structured walkthroughs are used for orientation, examining promising ideas, identifying defects or errors, and improving products at any stage in the process.
- **Reviews** - An independent evaluation of an activity or process to assess compliance with the project plan; or to examine products or processes against quality factors through the use of checklists, interviews, and meetings.
- **Audits** - An independent examination of a work product or process to determine compliance with specifications, standards, contractual agreements, or other established criteria.
- **Evaluations** - An evaluation activity that examines products/services to determine compliance to customer requirements.

SEAPORT Quality Assurance will provide an independent review of the processes used at key checkpoints. These activities support early risk identification, provide insight into performance, and enable higher quality results by monitoring and managing problem areas throughout the project. Due to the dynamic nature of SEAPORT activities and the need to provide quick response requests, the QA team and the project management will identify the sign-off points at key check points of an activity to ensure that expressed goals and requirements are met.

### 5.1. Walkthrough Procedure

Walkthroughs are beneficial for evaluating plans, documentation and other deliverables and serve to orient staff members to new technology products and services. Walkthroughs are

commonly used on software development tasking and will be conducted internally on an as-needed basis. They will be used to:

- Present plans, documentation, or other deliverables for review and approval
- Review material in the draft or preliminary design stage
- Critique and report quality deficiencies of plans, processes, and procedures

Walkthroughs will be scheduled early enough to allow for revisions if problems are identified. Records of these walkthroughs will be maintained, along with issues that were identified and resulting action to be taken. Issues can be accepted “as is” or may require more work. If further discussion on the issue is required, additional walkthroughs can be scheduled.

## 5.2. Review Process

Reviews are important to assess compliance with a project plan. Specifically, the review process examines products/services from the context of quality factors. Quality factors are categories of product/service attributes. Examples of quality factors include:

- **Correctness** - The extent to which a product/service satisfies the customer requirements and the stated objectives
- **Timeliness** - The product/service is provided as required by the customer
- **Reliability** - The extent to which a product functions accurately or service is provided on a consistent basis
- **Productivity** - The amount of resources to correctly produce the product or deliver the service, including the relationship between the amounts of time needed to accomplish work and the effort expended

## 5.3. Review Procedures

The QA team will plan and conduct a review according to accepted practices and standards. A typical review procedure includes these steps:

1. Identify reviews in the WBS and project schedule
2. Verify correct review procedures are in place
3. Document review results against quality factors
  - 3.1 Verify product/service against contractual requirements
  - 3.2 Verify product/service against standards and procedures
4. Identify corrective actions
5. Validate corrections by scheduling follow-up actions and reviews
6. Verify that defects or errors are tracked to closure
7. Document review results against product validation information
8. Summarize review findings and communicate results to relevant stakeholders



9. Periodically review processes and procedures; identify and implement process improvements

## 5.4. Audit Process

The QA team is responsible for conducting product/service audits. The purpose of audits is to identify noncompliance items that cannot be resolved at the technical support or project management level, to validate corrective action achievements, and to provide relevant reports to all management levels.

A product audit is an independent examination of work product(s) to assess compliance with specifications, standards, customer requirements, or other criteria. Product audits are used to verify that the product was evaluated before it was delivered to the customer, that it was evaluated against applicable standards, procedures, or other requirements, that deviations are identified, documented, and tracked to closure, and to verify corrections.

The QA team will perform the following activities when conducting an audit:

- Define the scope and purpose of the audit
- Adhere to audit processes, procedures, and checklists per the ManTech Quality Framework
- Amend procedures and processes as is warranted by tasking
- Examine evidence of implementation and controls
- Interview personnel to learn the status and implementations of the processes and the status of the products
- Discuss findings with the technical staff and task leader
- Prepare and submit an audit report to project management, project team members, senior management, and other relevant stakeholders
- Escalate unresolved deviations to senior management for resolution

## 5.5. Audit Procedures

A typical audit would include the following steps:

- Clearly understand and adhere to the audit scope
- Define areas to be reviewed.
- Define review criteria.
- Understand the tasking, work products, and processes.
- Conduct the planned meetings, interviews, demonstrations, etc.
- Review the preliminary findings internally with the audit team.
- Verify and classify findings from the audit.

- Validate audit findings with the audit recipient.
- Prepare the audit report for the audit client.
- Provide recommendations on request only.
- Follow-up on corrective action/process improvement.
- Periodically review and improve the audit process, as needed.

An audit is considered complete when:

- Each element within the scope of the audit has been examined.
- Findings have been presented to the audited organization.
- Response to draft findings have been received and evaluated.
- Final findings have been formally presented to the audited organization and initiating entity.
- The audit report has been prepared and submitted to recipients designated in the audit plan.
- Audit findings are documented and recommendations, report to Project Management.
- The recommendation report, if required, has been prepared and submitted to recipients
- Audit results are uploaded to the appropriate repository

## **5.6. Evaluation Process**

Evaluations examine the activities used to develop/deliver products and services, ultimately determining if the activity is fulfilling requirements. The QA function establishes criteria for an evaluation, verifies the process has been performed, and collects the metrics to describe the actual results of those activities.

## **6. Reporting Procedures for Non-compliances**

Errors, defects, issues, deviations and noncompliance items identified in the SEAPORT activities must be itemized, documented, tracked to closure, and reported by the QA team. The QA team must verify all problems were tracked to closure and must provide continuing feedback to management and the technical support team concerning the status of the problem.

Reporting and escalation follows these basic steps:

- SEAPORT defect reporting and tracking, for software as well as documentation, will be tracked in the appropriate log within the project's environment. Corrective action requests (CARs) will be tracked in the project repository and /or organizational CAR log.

- Problems are resolved with the direct producer or the appropriate task leader, when possible.
- Problems that cannot be resolved with the technical team or task leader are elevated to the project management.
- Problems that have been referred to the project management are reviewed regularly until they are resolved.
- Items that cannot be resolved by the project management within six weeks are escalated to senior management for resolution.

## **7. Risk Management and Mitigation**

ManTech follows an established risk management process. Our approach to risk management and mitigation implements best practices in a continuous, forward-looking manner. Risks are identified, analyzed, prioritized, contingencies planned, and monitored through closure. Early and aggressive detection of risk is important, as it is typically easier, less costly, and less disruptive to make changes early on in the life cycle, rather than revise or modify project elements at the middle or end of the developmental cycle.

## **8. Resource Estimates**

ManTech provides access to the Quality Framework Director at no additional cost to the Customer. Dependent upon the complexity, duration, and performance requirements of the tasking, the project will enlist the support of a full or part time Quality Assurance Lead. The task-level Quality Assurance Lead coordinates closely with the QF Director.

## **9. Quality Assurance Metrics**

As part of the ManTech QF, projects adhere to the measurement requirements as outlined in the Organizational Metrics Plan. The QA team will work with the Program Management and technical support staff to identify any additional indicators and their associated measures (Metrics) that are needed to control performance and predict future status of processes used to produce products and services. The metrics will be used to help determine when and where a problem is occurring and what type of impact it will have on the product or service. The metrics will be used to base decisions concerning the selection of best practices to implement in the project.

Metrics to monitor the effectiveness of QA processes and procedures are:

- Number of QA process audits conducted
- Number of QA work product audits conducted
- Number of corrective action requests (non-conformance items) identified
- Status of corrective action requests (non-conformance items) identified
- Customer satisfaction levels relating to product and service quality

## 10. Appendix A: Quality Assurance Work Product Audit Checklist

Note: To open this embedded object, double click the icon ; ignore any warning message in the dialog box and simply select OK.



Work Product  
Audit Checklist - F

## 11. Appendix B: Quality Assurance Process Audit Forms

Note: To open these embedded objects, double click the icon; ignore any warning message in the dialog box and simply select OK.



Audit Form -  
Configuration and



Audit Form -  
Measurement and



Audit Form -  
Procurement and



Audit Form -  
Product and Proce



Audit Form -  
Requirements Dev



Audit Form - Risk  
Management Proc



Audit Form -  
Verificaiton and Vi



Audit Form -  
Product Design an

