Chapter 9 – Contract Administration Quality Assurance Program (CAQAP)

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References

(a) Federal Acquisition Regulations (FAR), Part 46 – Quality Assurance

(b) International Standards Organization ISO 9001, Quality Management Systems

(c) Naval Ships Technical Manual (NSTM) S9086-VD-STM-030/CH-631V3, Preservation of Ships in Service, Surface Ships/Submarine Applications

(d) Submarine Maintenance Standard MS 6310-081-015, Submarine Preservation

(e) NAVSEAINST 9210.31B, Government Procurement Quality Source Inspection Actions for Shipyard Procured Material Under Cognizance of SEA 08

(f) DCMA Product Data Reporting and Evaluation Program (PDREP) Letter of Instruction/Letter of Delegation (QALI/LOD) User Guide

(g) NAVSEAINST 9304.1E, Shipboard Electrical Cable and Cableway Inspection and Reporting Procedures

(h) MIL-STD-1330D(1), Precision Cleaning and Testing of Shipboard Oxygen, Helium, Helium-Oxygen, Nitrogen and Hydrogen Systems

(i) NAVSEA Technical Publication S9074-AQ-GIB-010/248 (TP248), Requirements for Welding and Brazing Procedure and Performance Qualification

(j) NAVSEA Technical Publication T9074-AS-GIB-010/271, Requirements for Nondestructive Testing Methods

(k) 0900-LP-001-7000, Fabrication and Inspection of Brazed Piping Systems

(l) NAVSEAINST 4355.7D, Nondestructive Test (NDT) Examiner Qualification and Requalification

(m) NAVSEA 250-1500-1, Welding Standard

(n) NSTR-99, Qualification Examination Requirements for Nondestructive Test Personnel

(o) MIL-STD 791, Certification for UT/VT of Lead Bond

(p) SECNAV M-5210.1, Records Management Manual

(q) NAVSEAINST 4700.17C, Preparation and Submission of Trouble Reports

Chapter 9 – Contract Administration Quality Assurance Program (CAQAP)

9.1 Introduction

This chapter establishes the CAQAP provisions for hardware and technical data in accordance with DoD and NAVSEA policy. It includes provisions for tailoring program implementation to the needs of each SUPSHIP based on contractual requirements.

CAQAP establishes confidence in our shipbuilders' ability to deliver quality products to the Navy by providing a comprehensive program for oversight of the contractors' quality systems. It addresses oversight requirements for all Navy contracts administered by SUPSHIP and applies to nuclear and non-nuclear work except as otherwise indicated.

SUPSHIP CAQAP planning must identify the most effective use of Government Quality Assurance (QA) resources. SUPSHIPs must develop and implement risk-based oversight plans that focus on shipbuilding activities posing the greatest risk to program cost, schedule, and performance. These plans must be guided by the shipbuilder's performance and not altered to meet non-statutory requirements.

A SUPSHIP presented with a non-statutory requirement (one that would cause sub-optimizing CAQAP process and increase risk to the shipbuilding program) must contact NAVSEA 04Z for resolution.

Note: In accordance with Federal Acquisition Regulations (FAR), reference (a), Part 46.105 and the terms of the applicable contract, the shipbuilder is responsible for controlling quality, conducting testing, and for delivering products and services that conform to contractual requirements. It is imperative, therefore, that SUPSHIP personnel ensure contractor compliance with contractual quality assurance requirements [FAR 42.302(38)] but do not serve as replacements for any aspect of the contractor's quality assurance program or be used by the contractor as a source for progressive inspections to determine end product acceptability.

SUPSHIPs must develop, apply, and maintain an effective program for performing Government Contract Quality Assurance (GCQA) actions consistent with the CAQAP. Coordination and cooperation among SUPSHIP departments is essential to ensure effective oversight of all aspects of contractor performance. The engineering department plays a particularly important role in determining technical adequacy and compliance with technical standards. Certain new construction programs require that the CAQAP consider the role of American Bureau of Shipping (ABS), United States Coast Guard (USCG) and other agencies involved in contracts under SUPSHIP administration.

The CAQAP consists of seven elements designed to provide a systematic program for ensuring compliance with contract requirements. Specific guidance for each of the elements can be found in sections 9.3.1.1 thru 9.3.1.7. SUPSHIPs must develop operating procedures that provide SUPSHIP personnel with specific direction in applying these elements to the local shipbuilding environment.

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The seven elements of the CAQAP are:

1. Planning (§9.3.1.1)
2. Document Review (§9.3.1.2)
3. Surveillance (§9.3.1.3)
4. Quality Audits (§9.3.1.4)
5. Corrective Action (§9.3.1.5)
6. Quality Data Evaluation (QDE) (§9.3.1.6)
7. Government Contract Quality Assurance (GCQA) (§9.3.1.7)

Refer to Appendix 9-A for a glossary of the terminology used in this chapter.

9.1.1 Scope

FAR Part 46 (Quality Assurance) prescribes policies and procedures to ensure that supplies and services acquired under Government contract conform to the contract's quality and quantity requirements. CAQAP ensures the contractor is meeting these requirements and applies to all SUPSHIP departments performing GCQA to ensure the contractor is meeting the requirements of FAR 46.

The policy described in this chapter encompasses the requirements established by FAR 46 and NAVSEA instructions. Program-unique QA requirements not included in this chapter must be incorporated by the SUPSHIP into each program's CAQAP.

9.1.2 NAVSEA Evaluations

NAVSEA conducts an onsite CAQAP audit of each SUPSHIP and each detachment every two years. The purpose of these audits is to ensure SUPSHIP conformance with CAQAP requirements and responsibilities. CAQAP audits at SUPSHIP Groton and SUPSHIP Newport News are held in conjunction with NAVSEA 07Q functional audits, and all required corrective actions and responses must conform to the functional audit requirements. For SUPSHIP detachments, a portion of the audit will be conducted at the respective SUPSHIP headquarters. Remaining items will be conducted onsite at the detachment. NAVSEA 04 (or 07 when in conjunction with an 07Q functional audit) will issue a report of findings following the audit.

9.1.2.1 Documentation of Findings

The CAQAP audit is documented in the web-based eAudits** system and all audit card responses are submitted and reviewed via this system. Each finding is categorized as a "noncompliance," or an "operational improvement" as defined below:

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a. **Noncompliance**: A violation of documented requirements (e.g., local, NAVSEA, or higher-tier instructions, procedures, specifications, or contracts).

b. **Operational Improvement**: An observation generated because of a condition that, while not a specific requirement violation, may cause degradation in the effectiveness of the program, or an observation expected to yield improvements in the effectiveness of the program.

9.1.2.2 Resolution of Findings

A response for each audit card finding must be submitted to NAVSEA 04Z by the due date specified in eAudits. NAVSEA 04Z will review responses for acceptability. The activity should submit and recommend closure of an audit card once it is properly adjudicated. If corrective actions for an audit item will not be completed prior to the due date, the SUPSHIP must request an extension of the due date by entering the proposed corrective action plan with an Estimated Completion Date (ECD) in the eAudits Corrective Action block and submitting to NAVSEA 04Z for review. To close an audit card, the activity must normally address the following:

a. Immediate action to correct the deficiency.

b. Full scope of the deficiency, including identification of the ship classes, hulls, shops, codes, or processes affected and a determination of whether the deficiency is isolated or pervasive in nature.

c. Root cause(s) of the deficiency. This must be an explanation of the activity's root cause analysis (e.g., 5 Whys, Fishbone/Ishikawa Diagram, Fault Tree, etc.), not simply a statement of a root cause category.

d. Corrective action. Corrective action consists of the actions taken to eliminate the root cause of the deficiency.

e. Preventive action. Preventive action consists of the actions taken to prevent occurrence of identical or similar deficiencies based on an analysis of related processes.

f. An item classified as a noncompliance will not be closed until all actions necessary to resolve the deficiency are complete. To ensure there is sufficient runtime for corrective actions prior to evaluation during the next audit, ECDs should not exceed 18 months.

g. To close findings, objective quality evidence (OQE) must be provided for each finding (i.e., updated procedures, training classes & rosters, etc.). The OQE must be included in eAudits when requesting closure and included in internal records for self-assessments. This requirement applies to NAVSEA evaluations and activity self-assessments. Findings will not be closed based on plans to correct in the future.

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9.2 Contractor Responsibilities

Contractor quality responsibilities are established by the terms of the contract. In all cases, the contractor is responsible for controlling product quality and offering for Government acceptance only those products and services that conform to contract specifications.

Per FAR 46.202-4, higher-level quality requirements are specified in contracts for complex or critical items or when the technical requirements of the contract require:

- control of work operations, in-process controls, and inspection
- attention to factors such as organization, planning, work instructions, documentation control, and advanced metrology

Construction contracts for U.S. Navy ships and submarines meet these criteria and will require these higher-level quality requirements.

9.2.1 Quality Management System (QMS) / ISO 9001

A QMS is a collection of business processes aimed at establishing a quality policy and achieving quality objectives. It is based on an organization's structure, policies, procedures, and the resources needed to implement quality management. Although a variety of industry quality standards require a QMS, International Standards Organization ISO 9001, Quality Management Systems, reference (b), is the one most widely recognized.

The QMS requirements of ISO 9001 are generic and intended to be applicable to organizations of any size or type and without regard to the products and services provided.

Because ISO 9001 is routinely called out in contracts administered by SUPSHIPs, all personnel performing QA-related functions must have training in the requirements of this standard (see §9.3.2).

9.3 SUPSHIP Responsibilities

When assigned to administer a Government contract, SUPSHIP must accomplish the following in accordance with FAR 46.104, Contract Administration Office responsibilities:

a. Develop and apply efficient procedures for performing GCQA actions in accordance with the written direction of the contracting office.

b. Perform all actions necessary to verify whether the supplies or services conform to contract quality requirements.

c. Maintain, as part of the performance records of the contract, suitable records reflecting:

   (1) The nature of GCQA actions, including, when appropriate, the number of observations made and the number and types of defects.

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(2) Decisions regarding the acceptability of the products, the processes, and the requirements, as well as action to correct defects.

d. Implement any specific written instructions from the contracting office.

e. Report to the contracting office any defects observed in design or technical requirements, including contract quality requirements.

f. Recommend any changes necessary to the contract, specifications, instructions, or other requirements that will provide more effective operations or eliminate unnecessary costs.

In addition to these FAR requirements, each SUPSHIP is also responsible for:

g. Developing written Standard Operating Procedures (SOP) for each element of the CAQAP and executing the requirements of this program in accordance with §9.3.1.

h. Maintaining the SUPSHIP Quality Assurance competency by ensuring the adequacy of the staffing and training of personnel performing QA-related functions (§9.3.2). For the SUPSHIP QA Department, this shall include:

(1) Maintaining a QA organization chart and personnel training matrix that identifies training requirements and status for each billet.

(2) Reviewing the SUPSHIP Workforce Forecasting Tool (SWFT) model annually to ensure QA functions are adequately represented and advising the SUPSHIP's SWFT representative of any disparities in requirements.

i. Retaining and disposing of inspection records (§9.3.3).

j. Establishing an effective quality assurance interface with Ship's Force (§9.3.4).

SUPSHIP responsibilities for complying with these requirements are discussed in detail in the following section.

9.3.1 CAQAP Responsibilities

9.3.1.1 Planning

QA planning is the CAQAP element that provides for the efficient and economical application of QA resources to ensure effective oversight of the shipbuilder's quality program. The goal is to identify deficiencies in the shipbuilder's quality program before they can affect the quality of the end product.

The QA department must develop and maintain a Contract Quality Assurance Plan (CQAP) that will adequately monitor the shipbuilder's QA program and facilities for each contract. The plan must consider contract requirements, the shipbuilder's quality history and results of risk assessments, Quality Data Evaluations (QDE), and previous customer complaints. The

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QA plan must be reviewed on a regular basis and, if necessary, modified to accommodate changes in contract language or the results of QDE data or other quality indicators. The review and any changes to the QA plan must be documented. QA planning is used to adjust SUPSHIP resources in the most efficient manner to ensure appropriate QA coverage of the shipbuilder.

QA planning must be systematic and include all SUPSHIP required CAQAP actions. At a minimum, the QA plan must include documented procedures for:

a. Appropriate distribution (determined locally) of SUPSHIP effort between surveillances - Product Verification Inspection (PVI) and Procedure Evaluation (PE).

b. Review of contract packages and related documents to determine completeness, continuity, and responsibilities for ensuring contractor's performance of technical and quality requirements.

c. Procedure Review (PR) to verify and/or approve the contractor's written procedures and technical data to ensure technical adequacy and timely release of the procedures.

d. Procedure Evaluation (PE) to ensure the contractor accomplishes work to the requirements of their established procedures. Checklists must be developed to accomplish PEs.

e. Product Verification Inspections (PVI) on a sample basis to determine conformance to contract requirements. Checklists must be developed to accomplish PVIs.

f. Application of corrective action when a breakdown or other inadequacy is noted in the contractor's quality program.

g. GCQA actions at subcontractor’s facilities, i.e., Government Source Inspection (GSI)

h. Collection, evaluation, and use of quality data.

i. Accomplishing quality audits.

j. Review of the contractor’s quality history.

9.3.1.1.1 Surveillance Plans

The QA plan has to include surveillance plans that must be reviewed on a regular basis and, if necessary, modified to accommodate changes in contract language or the results of QDE data or other quality indicators.

Surveillance plans must be:

a. Hull-specific – the plan must address each hull under construction separately.

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b. Adjustable – the plan must be flexible enough to accommodate changes in workload, identified high risk areas, etc.

c. Based on ship construction phases – planning must consider the phases of ship construction and the ability to access areas necessary to complete the QA plan.

d. Time phased – the plan must be calendar based.

e. Based on a measurable Level of Effort (LOE) – the plan must include quantifiable measures of effort, such as checklist observations, allocation of hours by percentage on critical areas or other such measures as appropriate. During the QA plan review, the planned LOE must be compared to the actual LOE. Any significant deviation and associated cause must be documented.

f. Related to and measured by QDE – the effectiveness of the surveillance plan must be evaluated and adjusted based on the results of the QDE.

9.3.1.2 Document Review

Document Review is the CAQAP element for verifying that the contractor's documented procedures and technical data comply with contractual requirements. To ensure compliance with all contract data requirements, SUPSHIPs must establish processes to:

a. Prepare listings of all contractually required procedures and technical data that identify if Government review and/or approval is required.

   Note: The term "technical data" as it applies to this paragraph is defined as all technical information and data produced or prepared for the performance of a contract, or for the manufacture, operation, maintenance, evaluation, or testing of any contract item, whether or not the information and data were specified to be delivered under the contract. This data may include, but is not limited to, blueprints, plans, diagrams, tables, engineering designs and specifications, manuals, instructions, procedures and test and inspection results. Technical data does not include computer software or financial, administrative, cost or pricing, or management data or other information incidental to contract administration.

b. Review a sampling of documents that may impact quality but do not require Government approval.

c. Document all reviews and approvals, including those that do not contractually require Government approval.

d. Notify the contractor of disapproved procedures and technical data.

e. Adjudicate disapproved items to ensure satisfactory correction.

9.3.1.2.1 Procedure Review (PR) Criteria

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When a requirement exists for a contractor to develop formal procedures, SUPSHIP must identify those procedures necessary for review based on the degree of risk. Each identified procedure must be reviewed for conformance to the contract's administrative and technical requirements. SUPSHIP must review the contractor's procedures in a timely manner and not delay the contractor's contract performance. Procedures are categorized as follows:

Category 1: Procedures for which NAVSEA approval is required by specification

Category 2: Procedures for which SUPSHIP approval is required

Category 3: Procedures for which Government approval is not required, but copies are to be furnished to the SUPSHIP for information and review

All Category 1 procedures must be submitted to NAVSEA for technical concurrence. This review includes newly developed procedures and subsequent revisions and changes.

SUPSHIP must maintain a list of all contractor procedures that may impact product quality. The list, as determined by the local SUPSHIP, will identify the category, and track the status of approvals and reviews.

When a contractor does not develop required written procedures or fails to correct inadequate procedures, SUPSHIP must initiate a Corrective Action Request (CAR) (see 9.3.1.5).

9.3.1.2.2 Technical Data Review Criteria

Data review and evaluation must be performed on all deliverable technical data. Review of technical data includes a detailed examination to determine if the content and format conforms to contract requirements. Technical data not requiring Government approval must be reviewed on a selected or sampling basis. SUPSHIP may use any local means of selecting characteristics or attributes. Technical deficiencies identified in issued contractor products that violate contract requirements must be adjudicated by issuing a CAR. All other identified technical deficiencies must be adjudicated in accordance with the Engineering Quality Assurance (EQA) process described in Chapter 8. A CAR must be initiated if systemic adverse quality trends or egregious product defects are identified during the Government technical review prior to product approval.

9.3.1.2.3 Documentation

For all procedures and technical data reviewed, SUPSHIP must maintain documentation that includes the identification number and title of the document, revision date, date reviewed, approval status (approved/disapproved), results of the review including all comments, and the name of the individuals performing the review.

9.3.1.3 Surveillance

Surveillance is the CAQAP element that verifies the contractor is complying with quality procedures and that products conform to requirements. Surveillance is comprised of two

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distinct parts, Procedure Evaluation (PE) and Product Verification Inspection (PVI). PE verifies that the contractor is complying with written procedures and that the procedures are accomplishing the intended purpose of controlling product quality. PVI verifies that the product conforms to contract requirements. PEs are associated with process oversight whereas PVIs are associated with product inspections.

Surveillance must be conducted utilizing a checklist and attribute system. Adjustments in the frequency of inspections will depend on defect rates and problem areas that warrant greater scrutiny.

9.3.1.3.1 Procedure Evaluation (PE)

PE verifies that the contractor is complying with the written quality procedures and that the procedures are accomplishing the intended purpose of controlling product quality. PEs must be conducted by witnessing the contractor performing the associated process. They are to be accomplished as early as possible and periodically throughout the performance of work to confirm the sufficiency and adequacy of the quality procedures in operation.

9.3.1.3.1.1 Initial Evaluation

Evaluation of new or revised contractor quality procedures requiring Government approval (Categories 1 & 2) and other procedures as identified by the SUPSHIP should be conducted at the time of the contractor's initial use of the procedure. If unable to perform at initial use, the reason or situation must be documented along with a plan for future evaluation. Evaluations must include sufficient observations of the contractor’s performance of the procedure to ensure compliance with contract requirements.

9.3.1.3.1.2 Continued Evaluation

When the length of the contract permits, continuing procedure evaluations after the initial evaluation should be scheduled and conducted on a risk basis. When continued evaluation of a procedure indicates that the contractor is maintaining satisfactory control of quality, the frequency of evaluation may be reduced. When continued evaluation of a procedure indicates the contractor is not maintaining control of quality, a CAR must be issued and the frequency of evaluation increased.

9.3.1.3.2 Product Verification Inspection (PVI)

PVI verifies that the product conforms to contract requirements. PVIs are accomplished by physical examination, verification, testing, and through concurrent inspection of all aspects of ship construction or modernization.

9.3.1.3.3 Surveillance Prerequisites

As a prerequisite to SUPSHIP surveillance actions, the following steps must be taken at a minimum:

1. Determine the availability and currency of the contractor's written procedures.

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2. Determine the contract technical requirements.

3. Determine the currency of the calibration of the contractor's measuring and test equipment, if applicable.

4. Determine the adequacy of the contractor's documentation.

9.3.1.3.3.1 Concurrent Verification

Concurrent verification of contractor inspection or test actions should be conducted as follows:

a. As the contractor performs the product inspection, verify results of the examination or test.

b. Independent of the contractor, read or use appropriate measuring and test equipment to determine if the product conforms to the technical requirements.

c. Validate that the contractor’s product inspections results concur with the Government’s product inspection results.

9.3.1.3.3.2 SUPSHIP as a Third-Party Inspector

When Naval Ships Technical Manual (NSTM) S9086-VD-STM-030/CH-631V3, Preservation of Ships in Service, Surface Ships/Submarine Applications, reference (c), and/or Submarine Maintenance Standard MS 6310-081-015, Submarine Preservation, reference (d), or similar directives are invoked in a contract, the SUPSHIP is considered to be the third-party inspector for preservation oversight of critical coated areas. As a third-party inspector, SUPSHIP provides a qualified coating inspector responsible for ensuring contractor compliance with the requirements of references (c) and (d). The third-party inspector may either perform the inspection or witness qualified contractor personnel performing the required measurements.

9.3.1.3.4 Documentation

Surveillance documentation includes:

a. Checklists and the attribute system employed, including:

   (1) Mandatory inspection points, callouts, critical inspection points, and identification of those areas that may be concealed from further inspection during the development of checklists and attribute lists.

   (2) Periodic review and update of checklists to account for specification or procedure changes.

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(3) Historical records of checklist revisions. The TSM checklist revision system must be used to ensure historical observation records are not modified because of checklist updates.

b. Schedules for the conduct of PEs and PVIs

c. Reports identifying the results of observations, inspections and any nonconformances.

9.3.1.4 Quality Audits

A quality audit is the CAQAP element for the systematic examination of an organization's quality function or system. It serves as an essential management tool for:

- verifying and assessing processes
- determining the effectiveness of achieving defined target levels
- providing evidence concerning the reduction and elimination of problem areas
- examining compliance with higher-level directives

9.3.1.4.1 Quality Audit Procedure

SUPSHIPs must have a written procedure for planning and conducting internal and external quality audits. As a minimum, this procedure must address:

- Identifying the scope of the audit and any areas of special emphasis
- Preparing an audit schedule
- Selecting audit team members with the requisite knowledge and experience
- Assigning audit team responsibilities
- Establishing documentation requirements for reporting, collecting, and compiling audit findings into a final report
- Handling and distributing the final report
- Follow-up actions

9.3.1.4.2 Internal Quality Audit

Internal quality audits are conducted to determine compliance by all SUPSHIP departments with quality-related directives and SUPSHIP CAQAP operating procedures.

SUPSHIPs must conduct a biennial self-assessment using the current CAQAP audit guide. This self-assessment must be conducted in the off year between the normally scheduled NAVSEA CAQAP audits. Results must be forwarded to NAVSEA 04Z at least 30 days prior to the scheduled CAQAP audit. This self-assessment should be documented by the activity in accordance with section 9.1.2.

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Additional internal quality audits may be scheduled to determine compliance with quality-related directives and SUPSHIP operating procedures. These audits are conducted when authorized by SUPSHIP management or higher authority.

Examples of additional internal audits include, but are not limited to:

a. Review of Quality Assurance Specialist (QAS) training to ensure each is qualified to perform the technical oversight assigned

b. Analysis of checklist utilization and attributes recorded and review of trends to ensure all attributes are being covered as necessary

c. Review of the CAR process, including:

   (1) completeness of deficiency description

   (2) correct assignment of CAR types, appropriate responses from contractor for cause or defect correction

   (3) proper adjudication of CARs

d. QA planning and execution, ensuring planning is effective and current

e. Quality Data Evaluation, reviewing how data is collected, analyzed, and reported

9.3.1.4.3 External Quality Audits

External quality audits examine and evaluate the contractor's products, processes, services, and systems. Such audits are referred to as "process quality audits" or "product quality audits."

Process quality audits and product quality audits may be performed to examine and evaluate any process, function or entity based on local needs and conditions. These audits may be routine or prompted by significant changes in the contractor's quality assurance program, process, product quality, or by a need for follow-up corrective action.

Pulse audits are a specific type of external audit during which SUPSHIP and the contractor concurrently conduct the audit. Pulse audits provide an opportunity to align QA metrics and findings.

External audits are scheduled in addition to normal execution of CAQAP. The breadth and depth of the external audit program depends upon local conditions.

9.3.1.4.4 Contractor's Quality Program Audit (QPA)

The objective of the QPA is to ensure the contractor has an effective quality assurance program that enables them to build, modernize and deliver Navy ships in accordance with contractual requirements. While the SUPSHIP continuously observes and records contractor

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performance based on PE, PVI, and other focused audits, the QPA should ensure that the following contractor QA elements (or their equivalent programs and procedures) are in place and effective:

a. QA Planning – the application of QA resources to ensure all critical shipbuilding processes are effective in meeting contractual requirements.

b. Document Review - verifying the contractor's documented procedures and technical data comply with contractual requirements.

c. Procedure Evaluation (PE) – verifying the contractor is complying with the written quality procedures and that the procedures are accomplishing the intended purpose of controlling product quality.

d. Product Verification Inspection (PVI) – verifying the product conforms to contract requirements. PVIs are accomplished through physical examination, verification, testing, concurrent witnessing, or the monitoring of all aspects of ship construction and modernization processes.

e. Quality Audits – contractor's internal audits conducted to determine the effectiveness of their quality assurance program, analysis of processes, or assessment of product conformance.

f. Corrective Action – the contractor's method for ensuring that nonconformities are corrected prior to Government inspection or acceptance.

g. Quality Data Evaluation – the contractor's process for the collection, evaluation, and use of quality data by both the contractor and SUPSHIP.

h. Training – the contractor's process for determining needed personnel requirements, initiating action necessary to obtain the required personnel, and providing training necessary to ensure the skills are available for the performance of QA functions.

i. Effectiveness of Corrective Actions – an assessment of the contractor's effort to determine and correct the cause of deficiencies.

9.3.1.4.4.1 QPA Procedure

Each element of the contractor's quality assurance program must be evaluated at least once every 24 months. The execution of the QPA audit may be completed concurrently with the normal execution of SUPSHIP's oversight responsibilities, but the results must be discretely recorded and adjudicated. Separate checklists, attributes and CARs should be developed to support the QPA. The actual observations, however, can be recorded when routine PEs and PVIs are accomplished. This does not preclude the SUPSHIP from conducting an independent QPA; rather, it allows for the efficiencies of a concurrent process.

QPA checklists should be developed utilizing the contractor's local QA procedures. These procedures should be reviewed for directives which most appropriately cover the CAQAP items listed in 9.3.1.4.4. Contractor compliance with their own directives should be verified during the QPA. Note that because contractor directives may not align directly with the

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SUPSHIP Operations Manual (SOM) CAQAP elements, a subjective assessment must be made to determine if the contractor has an effective quality assurance program

Note: The QPA for SUBSAFE shipbuilding activities must be completed concurrently with the SUBSAFE Functional Audits of the shipbuilder.

9.3.1.4.5 Audit Documentation Requirements

Documentation for quality audits include:

a. Audit schedules

b. Audit Reports, which must include:

1. Executive Summary
2. Purpose of Audit
3. Scope of Audit
4. Methodology
5. Audit Checklist
6. Findings
7. Corrective actions taken

9.3.1.5 Corrective Action

Corrective Action is the CAQAP element that defines the SUPSHIP process of requesting action by a contractor to correct product or process deficiencies. It also identifies the requirement for SUPSHIP to monitor the contractor's efforts to correct such deficiencies, as well as the contractor's efforts to determine and correct the cause of deficiencies. Any breakdown in the contractor's QMS requires action by SUPSHIP to ensure that product quality is not compromised. The extent of this action depends on the frequency and significance of the deficiency and the contractor's quality history.

Corrective action as described in this section employs the "closed loop" concept, i.e., appropriate measures must be taken to identify the cause and prevent the recurrence of deficiencies. The contractor is responsible for identifying and correcting deficiencies and initiating preventive action to eliminate the causes of the deficiencies. SUPSHIP must determine the effectiveness of the contractor's action and determine the necessity for increased level of surveillance to ensure satisfactory contractor corrective action.

Documenting all identified deficiencies is an essential aspect of the overall CAQAP program. It ensures that accurate deficiency rates can be determined as a means of assessing the overall adequacy of the contractor's quality assurance program.

9.3.1.5.1 Corrective Action Request (CAR)

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The Government employs CARs to inform the contractor of conditions that do not conform with contractual requirements. The condition may be a deficient product or a process that may result in a deficient product. The CAR must also be used for conditions that are not quality-related, such as safety and environmental deficiencies, provided the CARs can be readily segregated (see 12.3.4.5 and 12.4.4.4).

The following paragraphs describe the classification of defects, the types of CARs and how they are used.

9.3.1.5.2 Classification of Defects

9.3.1.5.2.1 Minor Defect

A minor defect is a product or process deficiency, defect or a departure from established standards that is not likely to materially reduce the usability of the unit of product for its intended purpose.

9.3.1.5.2.2 Major Defect

A major defect is a defect or a departure from established standards that is **likely to result in failure of the unit of product, or to materially reduce the usability** of the unit of product for its intended purpose, or when hazardous or unsafe conditions may exist.

9.3.1.5.2.3 Critical Defect

A critical defect is a defect or a departure from established standards that is **likely to result in hazardous or unsafe conditions** for individuals using, maintaining, or depending upon the unit of product, or a defect that is likely to prevent performance of the function of a major end item such as a ship or ship system

9.3.1.5.3 Types and Uses of CARs

9.3.1.5.3.1 Type A

Type A CARs are issued for all minor defects. When the minor deficiency is corrected on the spot, a Type A CAR will be initiated and forwarded to the contractor for information. No contractor response is required for Type A CARs when the condition is corrected on the spot. Type A CARs are not issued for defects requiring Correction to Cause (see 9.3.1.5.3.6).

When a contractor fails to respond to a Type A CAR in the required timeframe, a Type B CAR may be issued for failure to respond in a timely manner. A Type A CAR will not be elevated to a Type B CAR or a Type B CAR will not be issued for minor deficiencies simply because the contractor failed to respond or correct the deficiency in a timely manner.

9.3.1.5.3.2 Type B

Type B CARs are issued for all major deficiencies or when a trend of recurring minor deficiencies is detected.

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9.3.1.5.3.3 Type C

Type C CARs are issued in the form of formal correspondence to the contractor. A Type C CAR will be issued when:

- Critical defects are identified
- Previous methods fail to obtain satisfactory results
- Severity of the situation warrants

Type C CARs must be issued by the QA officer/director/manager, or delegated authority, notifying the contractor's appropriate level of management that a serious quality problem exists and immediate management action must be taken to comply with the provisions of the contract. A copy of each Type C CAR must be furnished to the applicable project offices, the SUPSHIP Contracts Department and to SEA 04Z.

9.3.1.5.3.4 Type D

Type D CARs are issued in the form of formal correspondence to the contractor. They are be issued when:

- A Type C CAR fails to obtain satisfactory results
- Severity of the situation warrants

Type D CARs must be issued by the Supervisor or the contracting officer notifying the contractor's top-level management that a serious quality problem exists and immediate management action must be taken to comply with the provisions of the contract. A copy of each Type D CAR must be furnished to the applicable project offices, the SUPSHIP Contracts Department and to SEA 04Z.

9.3.1.5.3.5 Correction to Defect

Correction to Defect is the term used on a CAR to request that a contractor correct a specific nonconformance and provide a response as to the specific actions taken to correct such defect.

9.3.1.5.3.6 Correction to Cause

Correction to Cause is the term used on a CAR to request that a contractor provide a specific response as to the root cause of the nonconformance and the specific actions taken to prevent recurrence.

a. Correction to Cause will not be used for Type A CARs.

b. Correction to Cause may be used on Type B CARs where SUPSHIP determines that it is warranted. Correction to Cause shall be requested when the defect is a result of a systemic problem in the contractor’s process, a result of a deficiency in a contractor’s procedure, or the defect is determined to be of a recurring nature.

c. Correction to Cause must be requested for all Type C & D CARs.

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9.3.1.5.3.7 CAR Issuance

A CAR issued to a contractor will include, at a minimum:

- ship designation
- unique serial number
- CAR type
- appropriate references
- statement of nonconformance and if not submitted electronically, the originator's signature.

The CAR must also indicate if SUPSHIP is requesting Correction to Defect or Correction to Cause, or both. Each defect must be described clearly and in sufficient detail for the contractor to readily identify the problem and the specification or contract violation.

For Type A CARs that have been corrected on the spot, SUPSHIP will enter the name of the contractor representative contacted prior to forwarding the CAR to the contractor for information. SUPSHIP representatives should not require a contractor's written response for Type A CARs. The SUPSHIP process must ensure that all minor defects are documented in TSM with identification of the defect, corrective action taken, and the date closed.

Appendix 9-B provides an example of a CAR form that is used in the Technical Support Management (TSM) system.

9.3.1.5.3.8 Alteration Installation Team (AIT) CARs

If a CAR is generated for an AIT work item, SUPSHIP will notify and provide a copy of the CAR to the AIT coordinator.

9.3.1.5.4 Contractor Response Time

SUPSHIP procedures must clearly identify the timeframe in which the contractor has to respond to each CAR type based on individual contract requirements. Lacking contractual guidance, as a general rule, the contractor should provide initial response to Type A CARs within seven calendar days, Type B CARs within 21 calendar days, and Type C and D CARs within 30 calendar days. If the situation dictates that continuing work without correcting the deficiency will hide the deficiency or impair or prevent the correction in any way, SUPSHIP will request an appropriate response time to prevent this from occurring. SUPSHIP procedures will document the process in which the contractor may request an extension of time to either provide a response or correct the deficiency.

The actual timeframe for completion of contractor corrective action may vary, but prompt response to CARs is required. An interim reply may be acceptable pending the contractor's completion of corrective actions.

9.3.1.5.5 Contractor's Response

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The contractor's response must clearly document the actions taken to correct the nonconformance and/or to correct the cause of the nonconformance as requested by the SUPSHIP.

9.3.1.5.6 CAR Closeout

When a CAR is returned by the contractor, SUPSHIP must evaluate the contractor's corrective action response (including elimination of causes to prevent recurrence when appropriate) and verify the acceptability of the corrective action taken. If the actions taken by the contractor are determined to be acceptable, SUPSHIP must indicate this on the CAR and close the CAR. If the contractor's actions are determined to be unacceptable, SUPSHIP must return the CAR to the contractor for further action.

9.3.1.5.7 Documentation

Corrective Action documentation includes:

a. Status of CARs

b. Records of CARs

The Technical Support Management (TSM) System (see 9.3.3.1) provides the principal database for maintaining CAR documentation.

9.3.1.6 Quality Data Evaluation (QDE)

QDE is the CAQAP element that provides for the collection, evaluation, and use of SUPSHIP, contractor and customer quality data. SUPSHIP operating procedures must be established to describe the process to be used for collecting, evaluating, maintaining, and using this data.

9.3.1.6.1 Quality Data

At a minimum, the data to be evaluated must include:

a. Results of all observations (PR, PE & PVIs) to include a defect rate analysis

b. Corrective Action Requests

c. Results of audits and surveys

d. Critiques

e. Available contractor data relating to the above data

Examples of other quality data may include:

f. Customer feedback

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g. Inspection and test results

h. Reports

i. CASREPS

j. Product Quality Deficiency Reports

k. Trouble Reports

9.3.1.6.2 Data Evaluation

SUPSHIP must evaluate quality data individually or collectively at established, periodic intervals (minimum of quarterly) in order to:

a. Adjust the intensity and frequency for applying CAQAP elements

b. Determine effectiveness of contractor's quality assurance program

c. Provide a basis for recommending process improvement initiatives to the contractor

9.3.1.6.3 Documentation

Documentation will include a quarterly report indicating quality data evaluation results.

9.3.1.6.4 Common Critical Process Metrics

In addition to other metrics and measurements developed locally, SUPSHIP must include Common Critical Process Metrics as a component of QDE. Common Critical Processes are those operations common to all shipbuilding programs which have been determined to be critical for assessing the effectiveness of the shipbuilder’s quality assurance program and the quality of the ships being constructed. The Common Critical Processes are:

a. Pipe Welding

b. Structural Welding

c. Electrical Installation

d. Pipe Installation

e. Mechanical Installation

f. Structural Installation

g. Coatings

h. System Cleanliness

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PE and PVI observation data for these processes serve as the data source for Common Critical Process Metrics. SUPSHIPs must map their checklist and attribute data to each Critical Common Process area to ensure all relevant observations are included in the metric.

SUPSHIPs must provide this data to NAVSEA 04Z3 no later than the last day of the first full week of each month, or as otherwise approved, using the format below:

Ship Class	Pipe Welding		Structural Welding		Electrical Installation		Pipe Installation		Mechanical Installation		Structural Installation		Coatings		System Cleanliness	
	Obs	Def	Obs	Def	Obs	Def	Obs	Def	Obs	Def	Obs	Def	Obs	Def	Obs	Def

Upon receipt, NAVSEA 04Z3 compiles all data into the SUPSHIP Quality Metrics, Common Critical Process report. This report is used as part of NAVSEA's quarterly SUPSHIP Command Brief. See Appendix 9-C for samples of the community-wide report as well as individual SUPSHIP input.

Calculation: For each ship class with hulls under construction, record the reject rates for both PE and PVI Common Critical Process observations. The reject rate is expressed as a percentage and calculated as follows:

$$\text{Reject Rate \%} = \frac{\#\ \text{Rejected Obs}}{(\#\ \text{of Rejected Obs}) + (\#\ \text{of Accepted Obs})} (*100)$$

Defect rates less than 1% are rated as GREEN; rates between 1% and 2.5% are rated as YELLOW; and rates greater than 2.5% are rated at RED. In-process areas where the number of observations is less than 100 for the calendar quarter, SUPSHIP will determine if the available data is sufficient to include in the Quarterly Common Critical Metrics report. If SUPSHIP determines there is insufficient data to include, they will notify SEA 04Z. That process area will then be grayed out on the SUPSHIP Command Brief.

All process areas that have a defect rate greater than 2.5% must include backup information to indicate the general nature of the findings that drove the defect rate and the actions taken or to be taken by SUPSHIP to adjust surveillance in this area. For the process areas that are grayed out, SUPSHIP must include backup information indicating the cause for insufficient data.

9.3.1.6.4.1 Periodicity and Analysis

SUPSHIPs produce the Common Critical Process Metrics quarterly based on compiled observation data that is parsed by individual shipbuilding programs. The report displays a three-month running average with an arrow indicating a past six-month trend as positive, negative, or neutral.

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Note: The Common Critical Process Metrics are intended to assist in measuring the efficacy of the common critical shipbuilding processes and are used by SUPSHIP as one part of the overall quality assurance planning effort.

The standards for red/yellow/green are not intended to imply that any defect is acceptable. All defects noted are assumed to be corrected by the shipbuilder and verified via the SUPSHIP Quality Management System.

- Green – indicates that the common critical process is performing to expected standards with low risk of process/product failure. No changes to surveillance or oversight are required. (Consider reevaluating surveillance/oversight after 6 months of rejects rates below 0.5%).

- Yellow – Indicates that the common critical process is performing below expected standards with elevated risk of process/product failure. Evaluate process for adverse trends and/or increased surveillance/oversight.

- Red – indicates that the common critical process is performing significantly below expected standards with high risk of process/product failure. In the absence of mitigating factors, increased surveillance or oversight is warranted.

9.3.1.7 Government Contract Quality Assurance (GCQA) Actions at Source

9.3.1.7.1 Purpose

The prime contractor is responsible for controlling the quality of materials, items and services provided by its subcontractors. GCQA on subcontracted supplies or services must be performed only when required in the Government's interest. The primary purpose is to assist SUPSHIP in determining if the prime contractor is ensuring the conformance of subcontracted supplies or services with contract requirements. GCQA at source, previously referred to as Government Source Inspection, does not relieve the prime contractor of any contractual responsibilities and GCQA does not establish a contractual relationship between the Government and the subcontractor. SUPSHIP requests for GCQA must be held to a minimum based on quality performance history maintained in the Product Data Reporting and Evaluation Program (PDREP) and the GCQA criteria, paragraph 9.3.1.7.4 below.

9.3.1.7.2 Exception

This paragraph does not apply to procurements under the technical cognizance of the Deputy Commander, Nuclear Power Directorate, NAVSEA 08. NAVSEAINST 9210.31B**, Government Procurement Quality Source Inspection Actions for Shipyard Procured Material Under Cognizance of SEA 08, reference (e), provides guidance for procurement of products under NAVSEA 08 cognizance.

9.3.1.7.3 Requesting GCQA at Source

SUPSHIP must establish a process for invoking GCQA on subcontracted supplies and for preparing and issuing GCQA instructions. The process should include providing the formal

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Quality Assurance Letter of Instruction (QALI) as well as contacting the onsite or cognizant Defense Contract Management Agency (DCMA) Quality Assurance Representative (QAR).

9.3.1.7.4 GCQA Criteria

Per FAR 46.4 and DFARS 246.402, Government inspection, during contract performance is essential. Complex items have quality characteristics, not wholly visible in the end item, for which contractual conformance must be established progressively through precise measurements, tests and controls applied during purchasing, manufacturing, performance, assembly, and functional operation either as an individual item or in conjunction with other items. GCQA is to be invoked based on the following criteria:

a. Mandatory GCQA actions imposed on the SUPSHIP that can be accomplished only at the subcontractor's location.

b. Performance at any other place would require uneconomical disassembly, destructive testing or special required instruments, gauges, or facilities that are available only at the subcontractor location.

c. Performance at any other place would destroy or require the replacement of costly special packing and packaging.

d. Considerable loss would result from the manufacture and shipment of unacceptable supplies, or from the delay in making necessary corrections.

e. Government inspection during contract performance is essential.

f. Contract specifies that certain quality assurance functions, which can be performed only at the subcontractor’s plant, are to be performed by the Government.

g. Items requiring DD 250 for acceptance by the Government.

h. It is determined for other reasons to be in the Government’s interest.

i. Supplies or services for which certificates, records, reports, or similar evidence of quality must be at the subcontractor location.

j. Item is to be shipped from the subcontractor’s plant to the using activity and inspection at source is required.

k. Repeated failures.

9.3.1.7.5 Purchase Order Clause

When GCQA actions are determined to be necessary, the prime contractor will be requested to add the following or similar Government notification and access clause to the purchase order:

“Government inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify and furnish a copy of this and all pertinent data/documents to the Government representative who normally services your plant so that appropriate planning for Government inspection can be accomplished. In the event the Government representative or office cannot be located, our purchasing agent shall be notified immediately.”

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9.3.1.7.6 Quality Assurance Letter of Instruction (QALI)

When invoking GCQA, a Quality Assurance Letter of Instruction (QALI) will be prepared and processed per the DCMA Product Data Reporting and Evaluation Program (PDREP) Letter of Instruction/Letter of Delegation (QALI/LOD) User Guide, reference (f).

The SUPSHIP representative will define the necessary GCQA actions to be taken and the documentation to be provided by the Government representative at the subcontractor's plant. Defined actions should indicate specific quality characteristics, processes, or procedures to be verified, tests to be witnessed, sampling plans to be used, or records, reports, and certifications to be evaluated.

All written statements, contract terms and conditions relating to GCQA actions at the subcontractor level must be worded so as not to:

a. Affect the contractual relationship between the prime contractor and the Government, or between the prime contractor and the subcontractor
b. Establish a contractual relationship between the Government and the subcontractor
c. Constitute a waiver of the Government's right to accept or reject the supplies or services

9.3.2 Maintaining SUPSHIP Quality Assurance Competency

For projects as complex as the construction of U.S. Navy ships, verifying conformance to contract specifications is a particularly demanding responsibility. It requires that SUPSHIP personnel performing QA-related functions be knowledgeable in a variety of technical disciplines and possess a thorough understanding of the CAQAP and the requirements, specifications and industrial standards imposed by each contract. It is imperative, therefore, that SUPSHIPs maintain a robust program for staffing and training personnel performing these functions.

The QA department must develop and maintain a training plan for all personnel performing QA-related functions. The plan should identify the training and qualification requirements for each billet and lay out a schedule for satisfying both one-time and recurring requirements.

Although a SUPSHIP's total manning is largely determined by SWFT (SOM 4.5.1), it is important that a senior QA representative participate in the command's input to the annual SWFT model review to help ensure that SWFT accurately reflects QA requirements. Note that in order to optimize mission performance for local conditions, the Supervisor may depart from the SWFT-determined departmental manning as long as the total manning authorization is not exceeded.

9.3.2.1 ISO 9001 Training Requirements

9.3.2.1.1 Personnel Performing Quality-Related Functions

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Personnel performing quality-related functions must satisfactorily complete introductory/overview training in ISO 9001. Training may be prepared and given locally, but must include the following topics relating to the elements of the ISO 9001 series QMS:

- Core Standards
- ISO 9001 Clauses
- Implementing an ISO 9001 QMS

9.3.2.1.2 Personnel Performing Quality Audits

Personnel performing quality audits of the contractor must satisfactorily complete training by a Lead Auditor in ISO 9001 Internal Auditor (or equivalent). This training may be prepared and given locally, but must include the following topics:

- Quality Management Systems objectives
- Overview of auditing
- Types of audits
- Auditing as a management tool
- Overview of ISO 9001 series
- Quality system documentation
- Preaudit planning activities
- Preaudit meeting, audit plan and resources
- Preparation of checklists and sampling
- Onsite audit activities
- Opening meeting planning and notification
- Listening and questioning techniques
- Report writing
- Follow-up and corrective action
- Audit

This training is optional for Lead Auditors.

9.3.2.1.3 Personnel Assigned as Lead Auditor/Audit Team Leader

Personnel assigned as Lead Auditor/Audit Team Leader must satisfactorily complete formal training in ISO 9001 series Lead Auditor training or equivalent by a certified instructor.

Auditor and Lead Auditor ISO training developed in support of SUBSAFE audits, including the requirements listed above, and found to be sufficient for SUBSAFE functional audits, meet the SOM requirement for ISO training.

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9.3.2.2 Coating Training Requirements

Specialized training and certification in coating inspection is required for everyone performing verification of contractor coating processes on critical surfaces. Training and certification must be accomplished through a NAVSEA approved course (e.g., National Association of Corrosion Engineering (NACE) Session 1 or NAVSEA Basic Paint Inspector (NBPI)). Recertification requirement is three years for NACE and four years for NBPI. Requirements for critical surfaces are defined in NSTM S9086-VD-STM-030-CHAPTER 631.

9.3.2.3 Electrical Cableway Training Requirements

Personnel performing inspection or acceptance of electrical cableway work must be trained and qualified to NAVSEAINST 9304.1E**, Shipboard Cable and Cableway Inspection and Reporting Procedures, reference (g).

9.3.2.4 Oxygen Cleanliness Training Requirements

Specialized training and certification in oxygen cleanliness is required for everyone performing verification of contractor cleaning, assembly or packaging of certified oxygen clean systems and components. Training and certification must be administered by a NAVSEA approved Certified Oxygen Clean Instructor per MIL-STD-1330D(1), Precision Cleaning and Testing of Shipboard Oxygen, Helium, Helium-Oxygen, Nitrogen and Hydrogen Systems, reference (h). Recertification of personnel is required every three years.

9.3.2.5 Welding/Brazing Workmanship Training Requirements

Personnel performing oversight of contractor-performed welding or brazing workmanship must satisfactorily complete training in welding/brazing workmanship and associated in-process work practices per NAVSEA Technical Publication S9074-AQ-GIB-010/248 (TP248), Requirements for Welding and Brazing Procedure and Performance Qualification, reference (i).

9.3.2.6 Nondestructive Testing (NDT) Personnel Requirements

9.3.2.6.1 Non-Nuclear NDT Requirements

Specialized training, experience and certification in applicable NDT methods is required for SUPSHIP personnel performing Procedure Reviews, Procedure Evaluations, Product Verification Inspections, and Process Quality Audits (PQA). Unless otherwise specified, NDT personnel must be certified per reference (j), NAVSEA Technical Publication T9074-AS-GIB-010/271, Requirements for Nondestructive Testing Methods, and/or reference (k), NAVSEA 0900-LP-001-7000, Fabrication and Inspection of Brazed Piping Systems, as applicable.

Training and Qualification. Training programs may be developed by the SUPSHIP or obtained from Portsmouth Naval Shipyard, other Naval activities, Navy technical schools, chapters of the American Society for Nondestructive Testing, or from private industry. Work-time-experience (WTE) required as a qualification prerequisite for NDT Inspector candidates

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must be obtained by hands-on experience and by performance of PR, PE, PVI, and PQA of a contractor's inspection functions in the applicable NDT method under the guidance of an NDT Inspector or NDT Examiner as defined in the activity's written practice. Formal classroom training and qualification examinations must be per T9074-AS-GIB-010/271 or 0900-LP-001-7000, as applicable.

NDT qualifications are:

- **NDT Inspector**: An individual qualified to set up and calibrate equipment and to interpret and evaluate results with respect to applicable codes, standards, and specifications. The inspector must be thoroughly familiar with the scope and limitations of the methods for which the individual is qualified, exercise assigned responsibility for on-the-job training (i.e., WTE) and guidance of trainees, and prepare written instructions, document, and report NDT results.

- **NDT Examiner**: An NDT Examiner must be capable of establishing techniques and procedures; interpreting codes, standards, specifications, and procedures; and designing the particular test methods, techniques and procedures to be used. The NDT Examiner must be responsible for the NDT operations for which qualified and assigned and be capable of interpreting and evaluating NDT results in terms of existing codes, standards, and specifications. The NDT Examiner must have sufficient practical background in applicable materials, fabrication, and product technology to establish techniques and to assist in establishing acceptance criteria where none are otherwise available. The NDT Examiner must have general familiarity with other appropriate NDT methods and will be qualified to train and examine inspector personnel for certification.

Certification. SUPSHIP CAQAP inspector personnel must be certified and recertified at their activity under a program administered by an NDT Examiner certified per NAVSEAINST 4355.7D**, Nondestructive Test (NDT) Examiner Qualification and Requalification, reference (l). This document provides the NDT Examiner qualification and certification requirements for all Government employed civilian and military personnel attached to Naval activities. NDT Inspector certification is restricted to the oversight of contractor-performed NDT and not for product acceptance inspections. NDT Examiner personnel must recertify at the intervals specified in NAVSEAINST 4355.7D**. NDT Inspector personnel must recertify at the intervals specified in NAVSEA Technical Publication T9074-AS-GIB-010/271. Portsmouth Naval Shipyard is authorized to administer NDT Inspector (Level II) qualification examinations to CAQAP personnel in any of the following methods:

a. Visual Testing (VT)

b. VT of Special Purpose Lead (Inspector certification only)

c. Magnetic Particle Testing (MT)

d. Liquid Penetrant Testing (PT)

e. Radiographic Testing (RT) (Structural, Castings and Piping)

f. Ultrasonic Testing (UT) of Welds, Thickness and Silver Braze (individual inspector certifications may be obtained)

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g. UT of Special Purpose Lead (inspector certification only)

h. Eddy Current Testing (ET) of Welds and Base Material

Certification Maintenance. NDT Inspector personnel must maintain certification in accordance with NAVSEA 0900-LP-001-7000 or NAVSEA Technical Publication T9074-AS-GIB-010/271, as applicable.

9.3.2.6.2 Nuclear NDT Requirements

SUPSHIP personnel performing Nuclear NDT Level III (Examiner) duties must be certified and recertified as specified in NAVSEAINST 4355.7D**. Nuclear NDT Level II (inspector) personnel must be certified and recertified by the SUPSHIP activity's Nuclear NDT Level III (Examiner) in accordance with NAVSEA 250-1500-1 (Welding Standard), reference (m), NSTR-99 (Qualification Examination Requirements for Nondestructive Test Personnel), reference (n), and for UT/VT of lead bond certification, per the classified MIL-STD 791 (Certification for UT/VT of Lead Bond), reference (o).

9.3.2.7 Additional Training

In addition to the training listed above, SUPSHIP should determine specific training needs to ensure personnel have the skills, techniques, and knowledge necessary for the processes/products being evaluated or inspected. Some examples include TEMPEST, composites, shock, fiber optics, propellers/propulsors, radar cross section reduction, SUBSAFE, DSS, and other emerging technologies.

9.3.2.8 Defense Workforce Improvement Act (DAWIA) Requirements

DAWIA established a process through which personnel in the acquisition workforce would be recognized as having achieved professional status. Certification is the procedure through which a military service or DoD component determines that an employee meets the education, training and experience standards required for a career level in any acquisition, technology, and logistics career.

Historically, SUPSHIP Quality Assurance Specialists (series 1910) followed the requirements of the Production, Quality, and Manufacturing (PQM) career field for certification under DAWIA. Recently, however, the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)) announced a plan to dissolve the PQM career field and re-assess existing PQM positions for possible transition to either the Engineering and Technical Management (ETM) or Program Management (PM) career fields using a two-tier certification framework. Once this new plan is approved and implemented, SEA 04Z and the SUPSHIPs will reevaluate QAS certification requirements under the new framework.

9.3.2.9 Training Records

At a minimum, SUPSHIPs must maintain the following training documentation:

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a. A listing of all training requirements deemed necessary for each type of billet performing quality assurance functions. (i.e., hull/NDT, paint, combat systems, electrical, etc.).

b. A listing of specific curriculums, courses, or lesson plans, etc., that are utilized to satisfy the training requirements identified for each functional billet.

c. Individual training records for each person in the QA department fulfilling a billet which requires training.

d. Departmental training schedules.

9.3.3 Records

9.3.3.1 Technical Support Management (TSM) System

TSM is the SUPSHIP enterprise solution for document and content management of ship construction and repair data. It is used by the SUPSHIP community, PEO's, the Navy Board of Inspection and Survey, and in some cases, by shipbuilders.

For quality assurance records, TSM is used to document and track:

- Observation data
- Corrective Actions Requests
- Procedure Reviews
- Procedure Evaluations
- Quality Audits
- Checklist management

TSM may also be used to document and track:

- Test procedures
- Department operating instructions
- Ship Specification Reviews
- Electronic Trial Cards

9.3.3.2 Retention and Disposal of Inspection Records

Unless otherwise stated in applicable directives, quality inspection records must be retained and disposed of per SECNAV M-5210.1, Records Management Manual, reference (p). The policy for retention of past performance information (i.e., quality records) for the Contract Performance Appraisal Reporting System (CPARS) is three years after completion of contract performance per FAR Part 42 - Contract Administration and Audit Services. The performance period is not complete until the end of the warranty period. In general, the following should occur:

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a. Retain all quality inspection records for a period of three years after the delivery of each ship or craft in the contract. Following the three-year retention period, quality inspection records under Standard Subject Identification Code (SSIC) 4855 may be destroyed unless legal action is pending with contractors for which these records pertain.

b. Submarine Safety (SUBSAFE) quality records under SSIC 9077 and Naval Nuclear Propulsion quality records under SSIC 9210 will be retained and disposed of per SECNAV M-5210.1 unless legal action is pending with contractors for which these records pertain.

9.3.4 Establishing an Effective Quality Assurance Interface with Ship's Force (SF)

Although SUPSHIP is the authority for acceptance of work accomplished per the contract, the ship's commanding officer, or prospective commanding officer (PCO), must be satisfied that the work performed is acceptable. The PCO will normally assign members of Ship's Force (SF) to review the technical specifications and observe production work performed on the ship. If a SF observer is dissatisfied with the quality of the contractor's work, the observer will not attempt to require contractor personnel to redo or otherwise amend the work performed. Rather, the SF observer will relay the findings to the appropriate SUPSHIP representative who will then take appropriate action. The commanding officer/PCO and any SF observers should participate in conferences to determine the progress of work. The pre-commissioning crew should discuss any observed problems with the quality of work or services provided with the SUPSHIP project management team prior to any conferences where the contractor's representatives will be in attendance.

In addition, SF personnel may be provided an opportunity for training on QA functions under the cognizance of SUPSHIP. Should the commanding officer/PCO elect to receive training, it should be performed in accordance with a Memorandum of Understanding (MOU).

9.3.5 Trouble Reports

Trouble Reports identify significant problems encountered in the construction, repair, and maintenance of Naval ships. SUPSHIP must have a process in place to comply with the requirements of reference (q), NAVSEAINST 4700.17C**, Preparation and Submission of Trouble Reports.

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Appendix 9-A: Quality Assurance Glossary

Attribute: A characteristic or property which is used to determine acceptability or unacceptability with respect to a given requirement.

Certification: The procedure and action by a duly authorized body for determining, verifying, and attesting in writing to the qualifications of personnel, processes, procedures, or items in accordance with applicable requirements.

Characteristic: A physical, chemical, visual, functional, or any other identifiable property that helps differentiate between items of a given sample or population. The difference may be either quantitative (by variables) or qualitative (by attributes).

Corrective Action: An action taken to correct a specific nonconformance by repair, rework, replacement, or a change in requirements and the elimination of the causes to prevent recurrence.

Corrective Action Request (CAR): Any request to the contractor for the correction of a nonconformance. (See 9.3.1.5.1 for a description of the types of CARs)

Critical Defects (Type C or D): A nonconformance related to system failures that requires a high or highest level of management action.

Defect: A departure of a quality characteristic from its intended level or state that occurs with a severity sufficient to cause an associated product or service not to meet a specification requirement. Used interchangeably with the term “nonconformance.”

Deviation: Written authorization, granted prior to the manufacture of an item, to depart from a particular performance or design requirement of a specification or referenced document, for a specific number of units or specific period of time.

Document: Information that may be recorded in various mediums that generally has permanence and can be read by a person or machine.

Inspection: The act of measuring, examining, testing, gauging or otherwise comparing of supplies or services with requirements to determine conformity.

International Organization for Standardization (ISO): A worldwide federation of national standards bodies.

Lead Auditor: A person who is qualified to perform and designated to lead and manage a quality audit.

Major Defect (Type B): A defect that could impair the performance or life of the product and/or result in hazardous or unsafe conditions for the user.

Minor Defect (Type A): A defect or flaw that will probably not impair the performance or life of a product, nor result in unsafe conditions for the user.

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Noncompliance: A NAVSEA evaluation finding of a violation of documented requirements (e.g., local, NAVSEA, or higher-tier instructions, procedures, specifications, or contracts).

Observation: An action that occurs when one attribute is verified to one unit of product.

Operational Improvement: A NAVSEA evaluation finding of a condition that, while not a specific requirement violation, may cause degradation in the effectiveness of a program, or an observation expected to yield improvements in the effectiveness of a program.

Preventive Action: An action taken to eliminate the causes of a potential nonconformity, or other undesirable situation, to prevent occurrence.

Process: A set of interrelated resources and activities that transform inputs into outputs with the aim of adding value.

Process Quality Audit: An analysis of elements of a process and appraisal of completeness, correctness of conditions, and probable effectiveness.

Products: The results of activities or services; a generic term that denotes goods or services.

Product Quality Audit: A quantitative assessment of conformance to required product characteristics.

Quality: The composite of all features and characteristics of a product or service that bear on its ability to satisfy given needs.

Quality Assurance (QA): A planned and systematic pattern of all actions necessary to provide adequate confidence that the product or service conforms to established technical requirements.

Quality Audit: A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.

Quality Management System (QMS): ISO 9001 term used for the collective policies, plans, practices, and the supporting infrastructure by which an organization aims to reduce and eventually eliminate nonconformance to specifications, standards, and customer expectations in the most cost effective and efficient manner.

Quality Program Audit (QPA): A documented activity performed to verify, by examination and evaluation of objective evidence, that applicable elements of the quality assurance program are suitable and have been developed, documented, and effectively implemented in accordance with specified requirements.

Record: A document that contains objective evidence that shows activities performed or results achieved.

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Specification: The document that prescribes the requirements for which a product or service has to conform.

Surveillance: The continuing monitoring and verification of the status of procedures, methods, conditions, products, processes, services, and analysis of records to ensure that specified requirements are being fulfilled.

Technical Data: Data consisting of specifications and drawings.

Testing: A means of determining the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operational actions and conditions.

Unit of Product: An entity that can be inspected or verified, expressed in distinct or quantitative terms (e.g., five linear feet of weld).

Verification: The process of confirming by examination and provision of objective evidence that specified requirements have been fulfilled.

Waiver: A written authorization to use or release a quantity of material, components or stores already manufactured, but not conforming to the specified requirements.

Other terms and definitions are as listed in ANSI/ASQC A8402-1994.

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Appendix 9-B: Corrective Action Request (CAR)

TSM | CAR-

Header					
Document:		Document Date:			
Aliases:					
Title:					
Class:					
Hulls:					
Compartments:					
Originator Name:		Originator Phone:		Originator Org Node:	

Document Status							
Task	Workflow	State	State Owner	Start Date	Date Completed	Workflow Due Date	Task Owner

Hulls			
Hull	Contractor Hull	Name	Applicability

General CAR Information					
CAR Type:		Status:		CPARS:	
Issuer Name:		Issue Date:		Complete Date:	
Reply Date:		Recycle Date:		Recycle Reply Date:	
Check List:					
Unit of Product:		Unit of Product Type:		Unit of Product Title:	
Vendor:					
Shipbuilder Cage Code:					
Yard Location:					
Category:					
Area of Concern:		Functional Area:		Impact:	
Problem Origin:					
Spec Item:		Equipment Noun Name:			
Days to Correct:		INSURV Decks:		Key Event:	
Contractor POC:		Contractor Phone:			
Correction to Cause:		Correction to Defect:		Affects Production:	

Contractor Tracking					
Received Date:		ECD Date:		Answer Date:	
Submit Date:		Contractor Actionee:		Contr Assigned:	
Contr Department:		Contractor Charge No:		Contr Dept Issued Date:	

Compartments
None

SWBS
None

References
None

FOR OFI

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Comments	
CAR Subject:	
CAR Detail:	
Contract Requirement:	
Contractor Response:	
Government Response:	
Recycle Remarks:	

Government Only Comments	
Government Notes:	
Inspector Notes:	

Official Documents
None

Flags Information
None

Related Documents
None

Audit Info			
Created by Name:		Created On:	
Last Edited By:		Last Edited On:	

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Appendix 9-C: Samples of Common Critical Process Metric Reporting

SUPSHIP QUALITY METRIC
COMMON CRITICAL PROCESSES
July - September 2016

	Pipe Welding		Structural Welding		Electrical Installation		Pipe Installation		Mechanical Installation		Structural Installation		Coatings		System Cleanliness	
	3 MOS AVG	Trend	3 MOS AVG	Trend	3 MOS AVG	Trend	3 MOS AVG	Trend	3 MOS AVG	Trend	3 MOS AVG	Trend	3 MOS AVG	Trend	3 MOS AVG	Trend
SUPSHIP BATH																
DDG 51 (BIW)	0.7%	↓	1.7%		2%		0.7%		4.3%	↑	8.6%		4.9%		1.4%	↑
DDG1000 (BIW)	0.5%		2.4%				0.3%		0.0%		3.7%	↑	1.3%	↓	4.5%	↑
LCS 1 (MARINETTE)	0.9%		8.6	↑	2	↑	1.8%	↓	0.3%		6.7%		2.3%	↑	0.3%	
T - ESB			0.2										0.0%		7.7%	
SUPSHIP GULF COAST																
DDG 51 (HII-IS)	4.7%		1.5%		6.7%		2.5%	↑	4.5%	↑	0.4%		4.3%		2.4%	
LPD 17 (HII-IS)	6.2%		0.5%		1.8%		6.6%		0.3%		0.9%	↓	3.4%		3.4%	↑
LHA 6 (HII-IS)	9.0%		1.0%	↓	5.4%		1.8%	↑	4.0%	↑	0.4%		6.9%		0.9%	
LCS 2 (AUSTAL)	2.9%		4.8%		0.6%	↓	1.1%	↑	3.2%		1.5%				0.3%	↓
JHSV (AUSTAL)	0.9%	↓	0.2%	↓	0.2%		0.0%		1.3%	↓	0.1%				0.3%	
SSC (TEXTRON)			3.3%	↑	3.0%	↑			2.7%		0.0%	↓			1.8%	
SUPSHIP GROTON																
SSN 774 (EB)	0.3%	↓	1.8%		0.9%		1.0%		2.1%	↑	1.6%	↓	0.0%	↓	2.5%	
SUPSHIP NEWPORT NEWS																
CVN 78 (HII-NNS)	0.0%		0.0%		2.8%		2.7%	↑	0.0%		0.5%		0.2%		5.1%	
SSN 774 (HII-NNS)	0.0%		0.0%		0.4%		0.6%	↓	0.1%		0.2%		0.5%		13.7%	

≤1.0% Defect Rate	> 1.0% Defect Rate	> 2.5% Defect Rate
Grey box indicates insufficient observations		
Up arrow indicates an increase in defect rate from previous quarter		

Information is not to be used to compare Shipbuilders or Ship Programs

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Common Critical Process Metric Explanations

SHIPBUILDER	PROGRAM	CRITICAL PROCESS	DEFECT RATE	NATURE OF FINDINGS	SUPSHIP ACTION
GULF COAST					
HII-IS	LPD 17	Pipe Welding		Joint Fit-up End gap h… pip… fitti… final joi… up p… to w… P13,1… 15 jo… design… eed acceptа… c… ia of contract …ed s… ard. B… Joint … p In… eq… cleaning and deburring of …ri… brazing	Joint Fit-up HII has revised procedure SSG M5310 eliminating note that end gap measurements are to be checked prior to tack welding. A Procedure Review (PR) followed by Procedure Evaluation(PE) was conducted by SSGC QA with no noncompliances observed. Brazed Joint Fit-up Last reporting period this category was at 0% reject rate. SSGC does not see a negitive trend and feels this is an isolated issue. SSGC will continue to monitor processes through regularly schedule in-process surveillance and take appropriate corrective action.
GROTON					
EB	SSN 774	Structural Insta…		The Structural Installation CARs issued during this period of performance were for predominantly for joints marked with incorrect information. The Supervisor performed 237 Observations resulting in 3 Method B CAR defects and 6 Method A CAR defects.	The Supervisor is monitoring EB action to address systemic issues with trade performance in response to recent Naval Reactor A Items. No further corrective action is required at this time.
BATH					
BIW	DDG 51	Stuctural Welding		Significant missing weld was found concerning DDG 116 on overlapped flatbars and 2 foundations (Method Bs issued). Missing weld raps, spatter and lack of fusion were the drivers on DDG 116 and 118.	SSBA continues to monitor the process and discrepancies are documented in appropriate CARsThough most deficiencies are minor in nature, the increase in total amount has been brought to senior management attention.SSBA continue to request the contractor address surface preparation processes for Coatings and Structure.
NEWPORT NEWS					
HII-IS	SSN 774	System Cleanliness		66% of the defects were associated with improper/damaged/ missing caps.	The System Cleanliness deficiencies were identified on Method B CARs and a Method C letter to the contractor.Continued findings resulted in issuance of a Method D letter. The effectiveness of the initiated corrective actions will be evaluated via the performance of cleanliness audit.

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Appendix 9-D: Acronyms

ABS	American Bureau of Shipping
ACO	Administrative Contracting Officer
AIT	Alteration Installation Team
CAQAP	Contract Administration Quality Assurance Program
CQAP	Contract Quality Assurance Plan
CAD	Contract Award and Delivery
CAR	Corrective Action Request
CAS	Contract Administration Services
CASREP	Casualty Report
CFM	Contractor-Furnished Material
CMO	Contract Management Office
CPARS	Contract Performance Appraisal Reporting System
DAWIA	Defense Acquisition Workforce Improvement Act
DCMA	Defense Contract Management Agency
DSS	Deep Submergence Systems
ECD	Estimated Completion Date
EQA	Engineering Quality Assurance
ET	Electromagnetic Testing
ETM	Engineering and Technical Management
FAR	Federal Acquisition Regulations
GCQA	Government Contract Quality Assurance
GFM	Government-Furnished Material
GSI	Government Source Inspection

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ISO	International Organization for Standardization
JFMM	Joint Fleet Maintenance Manual
LOD	Letter of Delegation
LOE	Level of Effort
MIL-STD	Military Standard
MOU	Memorandum of Understanding
MT	Magnetic Particle Testing
NACE	National Association of Corrosion Engineering
NAVSEA	Naval Sea Systems Command
NAVSEAINST	Naval Sea Systems Command Instruction
NAVSEALOGCEN	Naval Sea Systems Command Logistics Center
NBPI	NAVSEA Basic Paint Inspector
NDT	Nondestructive Testing
NSEO	Navy Special Emphasis Organization
NSTM	Naval Ships Technical Manual
NSTR	Naval Sea Systems Command Technical Representative
OQE	Objective Quality Evidence
PCO	Prospective Commanding Officer
PDREP	Product Data Reporting and Evaluation Program
PE	Procedure Evaluation
PM	Program Manager
PNS	Portsmouth Naval Shipyard
PQA	Process Quality Audits
PQM	Production, Quality, and Manufacturing
PR	Procedure Review

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PT	Liquid Penetrant Testing
PVI	Product Verification Report
QA	Quality Assurance
QAS	Quality Assurance Specialist
QALI	Quality Assurance Letter of Instruction
QAR	Quality Assurance Representative
QDE	Quality Data Evaluation
QMS	Quality Management System
QPA	Quality Program Audit
RT	Radiographic Testing
SAP	Supplier Audit Program
SECNAVINST	Secretary of Navy Instruction
SF	Ship's Force
SOM	SUPSHIP Operations Manual
SOP	Standard Operating Procedure
SPD	Ship Project Directive
SSIC	Standard Subject Identification Code
SUBSAFE	Submarine Safety Certification Program
SWFT	SUPSHIP Workforce Forecasting Tool
TEMPEST	Telecommunications Electronics Material Protected from Emanating Spurious Transmissions
TSM	Technical Support Management
USCG	United States Coast Guard
UT	Ultrasonic Testing
VT	Visual Inspection Testing

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WTE	Work-Time-Experience

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