NNSA POLICY

NAP 401.1A

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WEAPON QUALITY POLICY

National Nuclear Security Administration

NATIONAL NUCLEAR SECURITY ADMINISTRATION
Office of Defense Programs

CONTROLLED DOCUMENT
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OFFICE OF PRIMARY INTEREST (OPI):
Weapon Quality Division

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WEAPON QUALITY POLICY

1. PURPOSE. To identify the elements of a Weapon Quality Management System (WQMS) that are required for the National Nuclear Security Administration (NNSA) and for each nuclear security enterprise (NSE) site that performs the work associated with maintaining and improving the safety, reliability, and performance of the United States (U.S.) nuclear weapons stockpile. This policy also includes the quality requirements that ensure the early and continuous application of quality principles when realizing Mark Quality products throughout all lifecycle phases of a nuclear weapon system.

2. AUTHORITY. This NNSA Policy (NAP) is written under the Administrator's authority to set policy under Section 3212(d) of 50 United States Code (U.S.C.) 2401 et seq., *National Nuclear Security Administration Act.* NNSA also receives its authority for the responsibility for all weapon and weapon-related functions from 50 U.S.C. 2402, Chapter 41.

3. CANCELLATIONS.

   a. NNSA Policy (NAP) 401.1, *Weapon Quality Policy*, Attachment 1 and Attachment 2, dated 11-24-15

   b. Six Weapon Quality Assurance (WQA) Guidance and Clarification (G&C) Messages:

      (1) 2017-001 – Improvements to NAP 24A, Attachment 3, Section 3.3, Stamping and Marking Policy

      (2) 2017-002 – Conditional QER for Product, Overlap of PPI and QE, and Converting Development to War Reserve

      (3) 2018-001 – Applying Post Acceptance Diversion Indicators on Weapon Product Diverted for Mark Quality Non-WR and Non-Mark Quality Applications

      (4) 2018-002 – Guidance for Application of the Mark Quality Diverted (MQD) Stamp on Parent Unit Parts

      (5) 2019-001 – Clarification for Product and Package Stamping

      (6) 2020-001 – Clarification for Conditional Acceptance of Product (Circle T Stamp Application)

Cancellation of a directive does not, by itself, modify or otherwise affect any contractual obligation to comply with the directive. Contractor Requirements Documents (CRDs) that have been incorporated into a contract remain in effect throughout the term of the contract unless and until the contract is modified to either eliminate requirements that are no longer applicable or to substitute a new set of requirements.

4. APPLICABILITY.

a. Federal. This NAP, including Attachment 2, applies to NNSA federal personnel who are responsible for maintaining and improving the safety, reliability, and performance of the U.S. nuclear weapons stockpile and who maintain the capabilities to design, develop, produce, and test nuclear weapons to meet National Security requirements as stated in DOE O 452.3, *Management of the Department of Energy Nuclear Weapon Complex* (approved 6-8-05).

b. Contractors. The CRD, including Attachments 1 and 2, apply to contractor personnel who are responsible for maintaining and improving the safety, reliability, and performance of the U.S. nuclear weapons stockpile and who maintain the capabilities to design, develop, produce, and test nuclear weapons to meet National Security requirements as stated in DOE O 452.3, *Management of the Department of Energy Nuclear Weapon Complex* (approved 6-8-05).

c. Equivalencies/Exemptions. The Director of the Weapon Quality Division (NA-121.3) has the approval authority for equivalencies and exemptions to the *Weapon Quality Policy*. NNSA Supplemental Directive (SD) 251.1, *Directives Management*, current version, must be followed to request an equivalency or an exemption.

5. SUMMARY OF CHANGES.

NAP 401.1 included the following exception, "In accordance with the April 11, 2011, Memorandum from Donald L. Cook, Deputy Administrator for Defense Programs, subject: *Weapon Quality Assurance (WQA) Guidance and Clarification (G&C) Message 2011-01 – Application of WQA Requirements and Diamond Stamp for Fissile and Type B Transportation Containers Subject to 10 CFR 71 (Subpart H),* the requirements of NNSA's Weapon Quality Policy (NAP 24A) do not apply to Fissile and Type B transportation containers and associated packaging material as these containers are subject to the quality requirements specified in 10 CFR 71 (Subpart H)." This exception has been removed from NAP 401.1A because Fissile and Type B transportation containers and associated packaging material are not exempt from all of the requirements of NAP 401.1A. As specified in this policy, the Design Agency (DA) is responsible for developing requirements for protecting the integrity of weapon products during storage and shipment and those requirements are expected to be incorporated into the design of Fissile and Type B transportation containers and associated packaging material.

NAP 401.1A, Attachment 2: (Weapon Quality Requirements), reflects a Process Approach to implement an effective Weapon Quality Management System (WQMS) across the nuclear security enterprise, specifies the required elements of a contractor WQMS, and includes quality requirements that ensure the early and continuous application of quality principles when realizing Mark Quality products throughout all lifecycle phases of a nuclear weapon system.

The *Procurement* section in NAP 401.1A, Attachment 2, now only includes the parent requirements for purchased products and services and the type and extent of control applied to suppliers is determined by applying a graded approach that will be located in a Defense Programs Business Process System (DPBPS) federal requirements document.

NAP 401.1, Attachment 3: (Weapon Quality Process Requirements) is being removed from the *Weapon Quality Policy* and will be located in a DPBPS federal requirements document. NAP 401.1, Attachment 3 remains in effect until the DPBPS federal requirements document becomes effective.

NAP 401.1, Attachment 4: (Nuclear Enterprise Assurance) is being removed from the *Weapon Quality Policy* and will be located in an NNSA Supplemental Directive (SD) and in (DPBPS) federal requirements documents. NAP 401.1, Attachment 4 remains in effect until the NNSA SD and DPBPS federal requirements document become effective.

6. REQUIREMENTS.

a. Defense Programs must ensure the ongoing effectiveness and maintenance of an NSE WQMS by assuring that it is fully integrated with the Defense Programs Business Process System (DPBPS) along with meeting all applicable Directives and other formalized requirements (see Attachment 2).

b. Mark Quality products must be realized within a process that ensures early and continuous application of quality principles (see Attachment 2).

c. Mark Quality status must be achieved for weapon products (see Attachment 2).

d. Field Offices must perform quality assurance activities that result in NNSA Product Acceptance (see Attachment 2).

7. RESPONSIBILITIES.Deputy Administrator for Defense Programs (DP)(NA-10).

(1) Promotes quality principles and allocates resources needed for an effective and efficient NSE WQMS.

(2) Identifies the senior management position specifically assigned responsibility for developing and maintaining the NSE WQMS.

(3) Ensures DP federal program office personnel have a working-level knowledge of DPBPS content that supports the NSE WQMS.

b. Assistant Deputy Administrator for Stockpile Management (NA-12).

Champions improvement activities that are necessary to improve the effectiveness and efficiency of the NSE WQMS.

c. NNSA Federal Program Managers (NA-122 and NA-125).

(1) Maintain administrative control of NNSA-accepted products.

(2) Authorize the reallocation of NNSA-accepted products.

d. Assistant Deputy Administrator for Systems Engineering and Integration (NA-18).

(1) Manages the development, implementation, and improvement of the DPBPS content per NNSA SD 452.3-1: *Defense Programs Business Process System*, that support the NSE WQMS.

(2) Supports the efforts to resolve situations where other requirements conflict with the requirements of this NAP.

e. Director, Office of Stockpile Production Integration (NA-121).

Reviews the health of the NSE WQMS and recommends activities that are necessary to improve its effectiveness.

f. Director, Weapon Quality Division (WQD) (NA-121.3).

(1) Maintains and issues revisions of this NAP.

(2) Serves as the approval authority for equivalencies or exemptions to this NAP.

(3) Resolves situations where other requirements conflict with the requirements in this NAP.

(4) Provides interpretation, guidance, and clarification on this NAP.

(5) Supports the implementation of this NAP by federal program offices.

(6) Evaluates the effectiveness of the contractor WQMS at NNSA sites through the conduct of surveys and review of performance information.

(7) Evaluates the effectiveness of the DP Business Processes that support the NSE WQMS and reports performance information to DP leadership.

(8) Takes appropriate action to determine the cause(s) of recurring systemic issues within the NSE WQMS and ensures systemic problems are corrected.

(9) Uses the Primary Standards Laboratory (PSL) to certify standards for the nuclear security enterprise and to participate in the development of requirements and provide oversight for contractor metrology programs.

g. Field/Production Office (F/PO) Managers.

Assigns a management position specifically responsible for performing or delegating the following:

a. Reviewing and approving the contractor WQMS.

b. Performing Quality Assurance Surveys (QASs) of their contractor to evaluate the contractor WQMS and production processes and submitting the survey reports to the assessed contractor and to WQD.

c. Analyzing contractor WQMS performance information for the F/PO and providing analysis to WQD.

h. F/PO Weapon Quality Assurance Leads.

(1) Plan and conduct Weapon Quality Assurance (WQA) oversight activities to obtain the assurance that the contractor WQMS complies with this NAP.

(2) Ensure federal or contractor WQA engagement with Product Realization Teams (PRTs) for early and continuous application of quality principles throughout product realization.

(3) Provide oversight direction and cross-site integration necessary to resolve site-specific quality issues.

(4) Conduct quality assurance activities that result in NNSA Product Acceptance.

(5) Coordinate with WQD and F/PO Quality Assurance Leads at other sites to resolve cross-site quality issues.

8. DEFINITIONS.

Design for Excellence.	A philosophy that includes Design for Manufacturing, Design for Assembly, and Design for Inspection/Test that is implemented through parallel design and production process development wherein the Production Agency (PA) provides iterative inputs regarding process capability, limitations, and constraints informed from development production experience to enable the DA to implement design intent (informed through testing and analysis) with the goal of minimizing product realization issues while meeting design requirements.
Digital Product.	A digital product is a weapon product that is not physically tangible but exists in the digital realm. Digital product occurs as a functional component integrated into a larger cyber-physical system (i.e., weapon or weapon product) as a digital building block of that system or subsystem architecture. It provides data that will be translated in downstream processes or performs functions within the next-level assembly. Examples of digital product include software, firmware, and digital component(s) of a cyber-physical component.
Final Designs.	A final design is a product definition set that has been determined by the PRT to be complete, meet design requirements with appropriate margin, and is released and authorized by Complete Engineering Release (CER) for use in production.
Government Furnished Material.	Weapon product that is shipped from another federal agency to an NNSA site to be assembled into a weapon product. GFM is controlled and managed as NNSA-accepted product.

Key Characteristic.	An attribute or feature whose variation has a significant effect on form, fit, or function that requires specific actions for the purpose of controlling variation.
Mark Quality.	Weapon product that is realized within a process that ensures the early and continuous application of quality principles and has been certified by the PA to meet all applicable product requirements.
Measuring and Test Equipment (M&TE).	A broad collection of devices and systems used to control processes or acquire measurement data to verify conformance to specified requirements. M&TE includes gages, commercial instruments, metrology standards, testers, and complex automated test systems. M&TE measurements vary from electrical to physical or chemical in nature, and are used in applications including product development, calibration, metrology certification, process control, inspection, surveillance, product acceptance, and troubleshooting.
NNSA Accepted Product.	Weapon product that has been verified as Mark Quality by the F/PO Weapon Quality personnel through Verification Inspections, Quality Assurance Surveys (QASs), or the collection and analysis of performance information. NNSA stamps are used to indicate NNSA acceptance of products.
NNSA Product Acceptance.	The process by which the Mark Quality status of a weapon product is verified to be accepted for directive schedule use. The process is based on the high level of assurance that weapon products meet requirements. Assurance is obtained by the F/PO Weapon Quality personnel through a combination of Verification Inspections, Quality Assurance Surveys (QASs), and the collection and analysis of performance information, including analysis of delegated activities.
Weapon Product.	Any product that is realized to assemble into a war reserve (WR) nuclear weapon, Joint Test Assembly (JTA), TYPE weapon, ancillary equipment or assemblies provided for

use control. Weapon products are typically identified with an 8-character part number.

Additional definitions related to, but not defined in, this policy are documented and maintained in the DPBPS Glossary, which can be accessed at *https://dpbps.sandia.gov/pages/glossary.aspx*.

9. CONTACT. Weapon Quality Division (NA-121.3), Phone: 505-845-4081 Email: WQA@nnsa.doe.gov.

BY ORDER OF THE ADMINISTRATOR:

Charles P. Verdon
Acting Administrator

Attachments:
1. Contractor Requirements Document (CRD)
2. Weapon Quality Requirements
3. Applicability Diagram

ATTACHMENT 1: CONTRACTOR REQUIREMENTS DOCUMENT
NAP 401.1A, *Weapon Quality Policy*

This Contractor Requirements Document (CRD) establishes requirements for National Nuclear Security Administration (NNSA) contractors within the nuclear security enterprise (NSE) who are responsible for maintaining and improving the safety, reliability, and performance of the United States nuclear weapons stockpile, as well as maintaining the capabilities to design, develop, produce, and test weapons to meet National Security requirements as stated in Department of Energy (DOE) Order (O) 452.3, *Management of the Department of Energy Nuclear Weapon Complex* (approved 6-8-05). The contractor is responsible for complying with the requirements of this CRD.

1. REQUIREMENTS.

   The requirements of this CRD are in NNSA Policy (NAP) 401.1A, Attachment 2, (Weapon Quality Requirements).

2. RESPONSIBILITIES.

   a. Contractors.

      (1) Contractor senior management participates in the development, implementation, and improvement of the contractor Weapon Quality Management System (WQMS) (see Att. 2, Section 3.1).

      (2) Develop a contractor WQMS that includes the required elements (see Att. 2, Section 2.2).

      (3) Contractor senior management submits the contractor WQMS document and any significant changes to the Field/Production Office (F/PO) for approval (see Att. 2, Section 2.2).

      (4) Contractor senior management conducts management reviews to evaluate the contractor WQMS at planned intervals to ensure its continuing adequacy and effectiveness (see Att. 2, Section 3.2).

      (5) Ensure the early and continuous application of quality principles throughout product realization to yield Mark Quality products (see Att. 2, Section 6.1).

      (6) Design Agencies (DAs) establish and document a Design Process prior to participating in product realization (see Att. 2, Section 6.6.4.14).

(7) Verify that purchased weapon products and services conform to specified procurement requirements (see Att. 2, Section 6.5).

(8) Production Agencies (PAs) must establish a production environment by documenting and implementing an approach to plan and carry out production under controlled conditions prior to participating in product realization (see Att. 2, Section 6.6.1).

(9) Contractors responsible for surveillance must establish a production environment by documenting and implementing an approach to plan and carry out surveillance under controlled conditions prior to participating in surveillance (see Att. 2, Section 6.6.1).

(10) PAs establish and document the methods used to control nonconforming weapon product (see Att. 2, Section 6.6.10).

(11) DAs approve the use of nonconforming weapon products (see Att.2, Section 6.6.10).

b. Primary Standards Laboratory (PSL)

(1) Provide facilities, staff, equipment, and management to certify standards for the nuclear security enterprise and to participate in the development of requirements and provide oversight for contractor metrology programs.

(2) Conduct technical surveys and proficiency tests on contractor metrology programs to assess compliance with the NNSA Metrology Program.

(3) Maintain National Voluntary Laboratory Accreditation Program (NVLAP) accreditation.

ATTACHMENT 2: WEAPON QUALITY REQUIREMENTS

Note: This attachment applies to NNSA federal and contractor personnel as indicated.

1.0 INTRODUCTION

1.1 SCOPE

This National Nuclear Security Administration (NNSA) Policy (NAP) establishes the quality system requirements that apply to the Office of Defense Programs (DP), Field/Production Offices (F/POs), Design Agencies (DAs), and Production Agencies (PAs) as they execute nuclear weapon programs that maintain and improve the safety, reliability, and performance of the United States (U.S.) nuclear weapons stockpile, to include maintaining the capabilities to design, develop, produce, and test weapons to meet National Security requirements.

Note: In this policy, the term *product* applies to weapon products that result from product realization. The applicability diagram shown in Attachment 3 describes how the quality requirements apply to weapon products and how they apply to elements of the production environment.

2.0 DOCUMENTATION REQUIREMENTS

2.1 NUCLEAR SECURITY ENTERPRISE WEAPON QUALITY MANAGEMENT SYSTEM

A nuclear security enterprise (NSE) Weapon Quality Management System (WQMS) is the overarching weapon quality umbrella that coordinates and integrates with the following:

a. NNSA Weapon Quality Policy

b. DP Management Commitment

c. DP Management Review

d. DP Training and Qualification

e. DP Monitoring and Measurement of Processes

f. DP Continuous Improvement

g. DP Business Processes that enable the DP mission to be accomplished in a repeatable, consistent, and safe manner that reliably and efficiently results in meeting customer requirements

h. Contractor WQMSs at NNSA sites (see Section 2.2)

2.2 CONTRACTOR WEAPON QUALITY MANAGEMENT SYSTEM

Contractors must establish a contractor WQMS that includes the following elements:

a. Control of Documents (see Section 2.3)

b. Control of Records (see Section 2.4)

c. Management Commitment (see Section 3.1)

d. Management Review (see Section 3.2)

e. Training and Qualification (see Section 4.1)

f. Assessments (see Section 5.1)

g. Monitoring and Measurement of Processes (see Section 5.2)

h. Analysis of Data (see Section 5.3)

i. Continuous Improvement (see Section 5.4)

j. Preventive Action (see Section 5.5)

k. Metrology Program (see Section 5.6)

l. Product Realization

(1) Design Process (DA only) (see Section 6.4.1)

(2) Control of Production (PA only) (see Section 6.6.1)

(3) Control of Nonconforming Product (PA only) (see Section 6.6.10)

2.2.1 Contractor WQMS Documentation

Contractors must describe the implementation of the *Weapon Quality Policy* in a description of the contractor WQMS. The contractor WQMS description must include the following:

a. The elements of the contractor WQMS.

b. The organizational structure, including the management responsible for the effective implementation of the contractor WQMS that is applicable to their management scope and authority.

c. The documented procedures established for the contractor WQMS, or reference to the procedures.

2.2.2 Submittal, Approval, and Implementation of the Contractor WQMS Description

a. Contractors must submit a contractor WQMS description, and any significant changes, to their respective F/PO for approval.

b. The F/PO must approve or disapprove the contractor WQMS, or any significant changes, within 90 days of submittal.

c. The F/PO must submit a copy of their decision on the contractor WQMS to the Weapons Quality Division (WQD).

d. Contractors must implement the NNSA-approved contractor WQMS.

2.3 CONTROL OF DOCUMENTS

Documents comprising, or required by, the contractor WQMS must be controlled.

Contractors must document and maintain a process for the control of documents. The process must ensure controlled documents are

(1) identified.

(2) complete and correct.

(3) approved.

(4) available.

(5) under change control.

(6) under revision control.

(7) released with a point of effectivity.

2.4 CONTROL OF RECORDS

Contractors must establish and document a process for records management that complies with DOE O 243.1, *Records Management Program,* current version.

a. Records (as defined in 44 U.S.C. 3301) must be:

(1) Specified, prepared, reviewed, approved, and maintained to demonstrate achievement of quality requirements and an effective contractor WQMS.

(2) Stored such that they are retrievable and in a suitable environment to minimize deterioration or damage and to prevent loss.

(3) Maintained to furnish objective evidence that items or activities meet specified requirements.

(4) Identifiable as a record.

(5) Completely and accurately reflect the work accomplished or information required.

(6) Legible.

(7) Traceable to associated requirements, items, and activities.

(8) Authenticated and dated by authorized personnel.

3.0 MANAGEMENT RESPONSIBILITY

3.1 MANAGEMENT COMMITMENT

Contractor senior management must provide evidence of their commitment to the contractor WQMS by the following:

a. Documenting in the contractor WQMS description of the organizational structure, responsibilities, levels of authority, and lines of communication for implementing the contractor WQMS.

b. Establishing site-specific policies and procedures that ensure NNSA policy and requirements are met.

c. Assigning responsibility to a member of management with sufficient authority, responsibility, and unrestricted access to all levels of management and staff to ensure that:

(1) The contractor WQMS is implemented and effective.

(2) Improvement opportunities are identified, communicated, and incorporated (see Section 5.4).

(3) Contractor WQMS performance, at all organizational levels, is monitored and communicated.

(4) Quality Engineering support is available to Product Realization Teams (PRTs) to ensure the early and continuous application of quality principles throughout product realization.

(5) Site-specific quality issues are resolved.

3.2 MANAGEMENT REVIEW

3.2.1 General

Contractor management must review the contractor WQMS at planned intervals to ensure its continuing suitability, adequacy, and effectiveness. The documented review must include assessing opportunities for improvement and the need for changes to the contractor WQMS.

3.2.2 Review Input

The input to management reviews include the following information:

a. Results of assessments

b. Results of external assessments (e.g., Government Accountability Office [GAO], Inspector General [IG], Quality Assurance Survey [QAS])

c. Process performance

d. Product definition compliance (DA only)

e. Product conformity (PA only)

f. Status of preventive actions

g. Status of corrective actions

h. Follow-up actions from previous management reviews

i. Changes that could affect the contractor WQMS

j. Recommendations for improvement

3.2.3 Review Output

The output from management reviews include any decisions and actions related to the following:

a. Improvement of the effectiveness of the contractor WQMS and its processes

b. Improvement of product definition compliance (DA only)

c. Improvement of product related to product requirements (PA only)

d. Resource needs

4.0 RESOURCE MANAGEMENT

4.1 TRAINING AND QUALIFICATION

4.1.1 General

Personnel performing product realization work activities must have the appropriate education, training, skills, experience, or professional certification (as needed).

4.1.2 Competence, Qualification and Certification

Competence is a combination of knowledge achieved from education, experience, and training; applied judgement; and mental and physical skill necessary to successfully conduct an activity or task. Qualification is an assessment of competence based on education, experience, training, examination, and special requirements related to a given activity or task. Certification is a management assertion of qualification.

The contractor must:

a. Determine the competencies necessary for personnel performing product realization work activities.

b. Establish, document, and maintain methods (i.e., educational requirements, training examination, qualification, certification) that are necessary to ensure personnel are competent to perform the work prior to their assignment.

c. Ensure objectivity and impartiality of the training, qualification, and certification process (e.g., ensure that trainers do not qualify/certify themselves).

d. Apply national standards for training, qualification, and certification where appropriate (e.g., nondestructive testing).

e. Evaluate the effectiveness of the methodologies used.

f. Ensure personnel are provided continuing training and mentorship, as needed to maintain competence.

g. Ensure evidence of required training, qualification, or certification of assigned personnel is maintained as records and available for review (see Section 2.4).

5.0 MEASUREMENT, ANALYSIS, AND IMPROVEMENT

The contractors must plan and implement the monitoring, measurement, analysis, and improvement processes needed to complete the following:

a. Ensure conformity of the contractor WQMS to requirements of this NAP.

b. Demonstrate that product definition complies with applicable requirements (DA only).

c. Demonstrate product conformity to applicable requirements (PA only).

d. Continuously improve the effectiveness of the contractor WQMS.

5.1 ASSESSMENTS

a. The contractor must conduct assessments at planned intervals to determine whether the contractor WQMS

(1) complies with the requirements of this NAP.

(2) is effectively implemented and maintained.

b. The contractor must

(1) have a documented assessment program that defines the responsibilities and requirements for planning and conducting assessments, establishing records, and reporting results.

(2) have a documented assessment program that includes a combination of Independent Assessments, Management Assessments, and Self-Assessments.

(3) ensure personnel conducting assessments are technically qualified and knowledgeable in the areas being assessed.

(4) plan assessments taking into consideration the performance and the risk of the processes and areas to be assessed, as well as the results of previous assessments.

(5) define assessment criteria, scope, frequency, and methods.

(6) maintain records of assessments (see Section 2.4).

c. The contractor management responsible for the area being assessed must

(1) ensure that noncompliance with the requirements of this NAP or of the contractor WQMS are addressed without delay.

(2) make the necessary corrections to the detected noncompliant product definition, without delay, if the assessment identifies product definition that is noncompliant (DA only).

(3) control and disposition the detected nonconforming product expeditiously (see Section 6.6.10), if the assessment identifies a nonconforming product (PA only).

(4) take the necessary corrective actions to address the causes of the detected nonconforming product (see Section 6.6.11), if the assessment identifies a nonconforming product (PA only).

(5) conduct validation activities to ensure the effectiveness of the actions taken to address the issues identified by the assessment (see Section 6.6.11).

5.2 MONITORING AND MEASUREMENT OF PROCESSES

The contractor must apply methods for monitoring and measurement of the contractor WQMS processes to ensure planned results are achieved. When planned results are not achieved, the process must be corrected, and preventive measures must be applied as necessary to prevent recurrence.

In the event of process nonconformity, the contractor must:

a. Determine the cause(s) of the nonconformity.

b. Determine if the nonconformity is unique to the affected process or if the issue is systemic and impacts other processes or products.

c. Take appropriate action to correct the nonconforming condition(s).

d. Evaluate whether product has been adversely affected.

e. Identify and correct noncompliant product definition (DA only).

f. Identify and control suspect or nonconforming products (PA only) (see Section 6.6.10).

5.3 ANALYSIS OF DATA

The contractor must collect and analyze data to demonstrate the suitability and effectiveness of the contractor WQMS processes. This includes data generated as a result of monitoring, measurement, and other relevant sources.

The analysis of data should include as applicable characteristics and trends of designs, products, processes, and supplier performance trending data.

5.4 CONTINUOUS IMPROVEMENT

The contractor must use data sources (i.e., assessment results, lessons learned, performance data, corrective and preventative actions, management review, benchmarking of best practices) to continuously monitor and to drive actions to improve the effectiveness and efficiency of the contractor WQMS.

5.5 PREVENTIVE ACTION

The contractor must establish approaches to prevent defects that include:

a. Preventing the occurrence of noncompliant product definition (DA only).

b. Applying techniques to detect noncompliant product definition (DA only).

c. Preventing the occurrence of nonconforming products.

Note: Preventive action opportunities can result from identified nonconformances, risk management, mistake proofing, Failure Mode and Effect Analysis (FMEA), extent of condition reviews, responsive actions to lessons learned, and information sharing on product escapes.

d. Applying techniques to detect nonconforming product.

e. Determining and recording the causes of nonconforming product and implementing documented action(s) to correct faulty processes.

f. Reviewing the effectiveness of the preventive actions and taking necessary steps to address ineffective actions.

5.6 METROLOGY PROGRAM

a. The contractor must:

1. Establish, document, and maintain a metrology program in accordance with federal requirements document located in DPBPS.

2. Establish and document a program approved by the PSL for approval and oversight of metrology at Commercial Calibration Laboratories (CCLs), Commercial Testing Laboratories (CTLs) and Designated Calibration Source (DCSs).

3. Require certification, by the contractor's Contractor Standard Laboratories (CSL), of any measurement standard and M&TE used in activities affecting quality (i.e., obtaining reportable data, establishing specifications, evaluating or testing weapon product, evaluating or testing weapon systems, control of manufacturing environment, M&TE identified in the product definition, inspecting product monitoring of environmental test conditions, disassembly/disposal activities, weapon surveillance activities, stockpile evaluation, evaluation of critical nuclear safety parameters, executing non-weapons activities, and executing general operations activities.)

4. Control M&TE in the following manner:

1) Adhere to M&TE certified standards, processes, and procedures.

2) Ensure M&TE is calibrated and labeled with date of calibration and expiration criteria.

3) Ensure all reportable data including calibrations are traceable to the International System of Units (SI).

4) Ensure that the calibration method and expiration criteria of calibration for M&TE are defined based on equipment type and stability, required uncertainty, intended use, and other conditions affecting capability.

5) Ensure that a closeout calibration is performed prior to relocation, storage, or removal from service.

6) For M&TE found to be out of tolerance during recalibration or closeout calibration, a notification is sent to the equipment owner who must work with the appropriate stakeholders to determine the necessary disposition steps for both the M&TE and any product that was accepted with the M&TE.

7) Ensure M&TE records are maintained (see Section 2.4) to be able to demonstrate accuracy of the equipment, measurement uncertainty compared to the acceptance criteria, and traceability of the measurements for products that have been accepted.

6.0 PRODUCT REALIZATION

This section ensures that quality principles are integrated, coordinated, and incorporated into the processes associated with product realization.

6.1 EARLY AND CONTINUOUS APPLICATION OF QUALITY PRINCIPLES

DP, DAs, and PAs must ensure the early and continuous application of quality principles throughout product realization to enable weapon products to become Mark Quality. Quality principles are integrated, coordinated, and incorporated into (as appropriate) the existing management areas detailed below.

Note: The Path to Mark Quality diagram is available to show how the quality requirements of this NAP are implemented early and continuously throughout product realization to ensure that weapon products will become Mark Quality.

6.1.1 Project Management

DP, DAs, and PAs must plan and manage product realization in a structured and controlled manner to meet the established program management requirements throughout product realization. This allows for the early and continuous application of quality principles by ensuring that the appropriate resources are available to execute the project to meet all applicable requirements.

6.1.2 Risk Management

DP, DAs, and PAs must establish, implement, and maintain the process for managing risk throughout product realization. This process must ensure that the risks to quality are captured and managed.

6.1.3 Configuration Management

DP, DAs, and PAs must document, implement, and maintain processes for configuration management of product throughout product realization. The configuration management process must establish and maintain consistency of a product's performance, functional and physical attributes with its requirements, design, production, assembly, test, operational, sustainment, dismantlement and disposition information throughout its lifecycle.

6.1.4 Data Management

DAs and PAs must establish data management plans that provide the basis for establishing a digital thread for product realization, where digital thread is a framework for connected data that flows quality evidence from product definition (including design inputs) to accepted product.

a. The PA must lead the PRT in the production of a data management plan that demonstrates the digital thread for quality evidence throughout product realization.

b. The data management plan must:

(1) Provide evidence that design intent has been assured.

(2) Validate product acceptance determinations.

c. The DA must lead the PRT to accept the data management plan presented by the PA.

d. The DA must ensure that all elements of product acceptance are addressed and validate data processing algorithms used to transform measured production and inspection data into quality evidence.

e. The PA must ensure the confidentiality, integrity, and availability of data processing inherent in the digital thread, per the definitions in the Federal Information Processing Standards Publication FIPS-199.

6.1.5 Mission Assignments

DP must establish, implement, and maintain a process to assign and reassign mission work (e.g., from one DA to another or from one PA to another) and verify the capabilities of the DA or PA prior to assigning the mission work.

6.2 QUALITY PLANNING

Beginning in the first stage of production realization, the PRTs must consider the quality objectives and requirements for the product and should revisit these throughout product realization. At a minimum, the following aspects must be considered:

a. Customer performance requirements.

b. Suitability of parts and materials used in the product to prevent incompatibilities or aging impacts.

c. Selection and development of digital product.

d. The need to establish requirements for Record of Assembly (ROA) associated with the product.

e. The need to establish processes and requirements specific to surveillance of the product.

f. Required verification, qualification, monitoring, measurement, inspection, and test activities specific to the product and the criteria for product qualification and product acceptance.

g. PA or supplier capability to produce the components within the desired tolerances.

h. Records needed to provide evidence that the realization processes and resulting product meet requirements and to continually assess product throughout its lifecycle (see Section 2.4).

i. Configuration management appropriate to the product and associated data (e.g., product definition, product identification, production process, tools and gages, assembly configurations, change control, and lifecycle data).

j. Identification and traceability of the product throughout product realization (see Section 6.6.7).

6.3 ESTABLISHING AND VALIDATING REQUIREMENTS

DP, DAs, and PAs must ensure that quality principles are incorporated into the requirements management process to ensure that requirements are established, implemented, validated, and maintained throughout product realization. The process must establish an approach to requirement traceability that ensures that product requirements are met throughout product realization.

6.4 DESIGN

DAs must establish, implement, and maintain the process needed for the design of products. This ensures that quality principles are captured and incorporated into design processes..

6.4.1 Design Process

The DA must implement a Design Process that includes the following:

a. Design planning that results in the determination of:

(1) The design stages.

(2) The design reviews, design verification, and design qualification that are appropriate for the product (system, subassemblies, and components) at each design stage.

(3) The responsibilities and authorities for design.

b. Design maturation that ensures products are designed using sound engineering, scientific principles, and appropriate standards, including the following:

(1) Incorporate Design for Excellence (DFX) philosophy and interfaces into the design process (the ability to produce, inspect, test, and maintain the product).

(2) Digital product is developed using a software lifecycle management methodology based upon a consensus standard or an equivalently rigorous contractor-specific standard that addresses software development from beginning to end and the flow of activities and iterations for the software lifecycle.

a. The definition and management of entry/exit criteria including data for each incremental design cycle for digital product.

b. The verification and validation activities, methods, timing, and degree of independence for each incremental design cycle for digital product.

(3) The appropriate design, build, test iterations necessary to mature the design are estimated, planned and performed (it is best practice to use the PA for development builds as soon as practical).

(4) Usage of calculations, modeling, simulation, and testing to establish design parameters (that include appropriate margin and derating considerations) and product acceptance criteria.

(5) Test equipment and instrumentation used for the development and validation of design parameters as outlined in the qualification plan are considered M&TE and are calibrated.

c. Final designs that

(1) Provide a clear link between design inputs and design outputs, including critical performance parameters and production requirements.

(2) Minimize adversarial pathways and maximize the ability to detect compromise.

(3) Identify any key characteristics related to the product.

(4) Where possible, use technologies that are at an acceptable maturity level to allow for successful manufacture, assembly, and use.

(5) Are producible given sound production processes and techniques.

d. Design change process that

(1) Identifies requested changes to the design.

(2) Evaluates the impact of the change on design requirements, safety and security, design qualification, production, surveillance, and design and production interfaces.

(3) Rejects or incorporates the changes.

(4) Provides distribution of the changed product design.

(5) Ensures incorporation instructions necessary for product currently in production.

(6) Ensures configuration management of the product is maintained.

6.4.2 Design Inputs

Within the PRT, the DA must ensure that inputs relating to product requirements are placed into configuration management. These inputs include the following:

a. Health, safety, and environmental considerations at the PA.

b. Functional and performance requirements (e.g., military characteristics, stockpile-to-target sequence, and derived requirements).

c. DFX guidance from the PA as concurrent production process development occurs.

d. PA or supplier capability.

e. Applicable statutory and regulatory requirements.

f. Applicable lessons learned from similar designs.

g. Potential consequences of failure due to the nature of the product or process.

The DA must review all design inputs for adequacy. Design inputs determined to be requirements must be ensured to be complete, unambiguous, and documented when in conflict with each other.

6.4.3 Design Outputs

Within the PRT, the DA must lead the effort to ensure the outputs of design are in a form suitable for verification against the design input, acceptance criteria is established for production, and design outputs are approved prior to release.

Design outputs must:

a. Meet the design requirements for the product.

b. Balance DFX inputs with other requirements and constraints.

c. Be documented in product definition data sets that:

(1) Are configuration managed in the DA product definition management system accessible to the PA for authorized use, with record copies stored in the centralized NNSA product definition archive system.

(2) Provide information sufficient to enable procurement or production.

(3) Specify any key characteristics associated with the product.

(4) Specify, as applicable, any critical items and specific actions to be taken for these items.

(5) Define the information required to allow the product to be identified, manufactured, inspected, accepted, used, and maintained, including the following:

a. The drawings and models, part lists, and specifications necessary to define the product.

b. The unique part marking of the product for identification, traceability, and configuration control of the product by suitable means.

c. The Record of Assembly (ROA) information that is required for the product.

d. The requirements for ensuring the integrity of the product during storage and shipment (i.e., requirements that are incorporated into container and packaging designs).

6.4.4 Design Verification

a. Within the PRT, the DA must lead the performance of Design Verifications to ensure that the design outputs have met the design requirements.

b. Within the PRT, the DA must obtain concurrence from the PA that specifications that are in the product definition are complete, and the detail is understood.

c. Within the PRT, the DA must obtain concurrence from the PA that the producibility of the design is mutually acceptable.

d. Records of the results of the verification and any necessary actions must be maintained (see Section 2.4).

6.4.4.1 Design Review

a. Within the PRT, the DA must lead systematic Design Reviews at designated stages, in accordance with the established Design Process (see Section 6.4.1):

(1) To evaluate the ability of the design to meet requirements.

(2) To use input from the PA to evaluate the producibility, manufacturability, and inspectability of the design.

(3) To use input from the PA to evaluate the concurrent engineering design of production and assembly processes to provide the DFX feedback necessary to optimize the design for production.

(4) To ensure verification and validation activities are conducted to demonstrate products and processes meet the requirements and intended use.

(5) To ensure design qualification plans are adequate, including development, Process Prove-In (PPI) and qualification quantities, test quantities, dependencies and assumptions, and methods.

(6) To identify problems and propose necessary actions.

(7) To authorize progression to the next design process stage.

b. The DA and PA must use independent, technically competent individuals or groups who are knowledgeable of the subject matter to participate in technical reviews of the design. Records of the results of the design reviews and any necessary actions must be maintained (see Section 2.4).

c. Digital product cannot be fully verified or validated by inspection or testing. The type and extent of design reviews for digital product must be proportionate to the technical risk associated with that product. Design reviews for digital product must:

(1) Present the risk and consequences of design/development failures.

(2) Present documented differences between the test environment and the production/use environment to ensure repeatability.

6.4.5 Design Qualification

a. Within the PRT, the DA must specify when Design Qualification is required.

b. When required, the DA must perform Design Qualification in accordance with the established Design Process (see Section 6.4.1) to provide evidence that the designed product meets the product requirements.

c. When required, Design Qualification must be completed prior to authorizing the defined product for directive schedule use.

d. Records of the results of qualification and any necessary actions must be maintained (see Section 2.4).

6.4.6 Design Verification and Qualification Testing

Within the PRT, where tests are necessary for verification or qualification, the DA must ensure the tests are planned, executed, and recorded to ensure and prove the following:

a. Test plans or specifications identify the product being tested and the resources being used and define test objectives and conditions, parameters to be recorded, and relevant acceptance criteria.

b. Test procedures describe the method of operation, the performance of the test, and the recording of the results.

c. The correct configuration of the product is submitted for the test.

d. The requirements of the test plan and the test procedures must be verified to have been satisfied.

e. The acceptance criteria are met.

6.4.7 Design Verification and Qualification Documentation

Within the PRT, the DA must ensure that verification and qualification results (test results, calculations, modeling, etc.,) demonstrate that the defined product meets performance requirements for all identified operational conditions. If a gap exists, the design must be modified to close the gap, or it must be evaluated for a Major Assembly Release (MAR) exception.

6.4.8 Control of Design Changes

The PRT is responsible for identifying and controlling changes to the product definition.

a. The DA must review, approve, and document changes to product definition before implementation.

(1) The review of changes to product definition must include an evaluation of the impact to verification and qualification and to the impact on product already produced and in process.

(2) The DA must coordinate with the PA to ensure that the changed product definition is understood.

b. The DA and PA must identify an effective point for the change.

c. The change process for digital product must accommodate control of each design iteration based on categorization, risk, and consequence.

d. Digital product changes must be evaluated within their parent product for potential impact to that product's performance, safety, reliability, and maintainability.

e. Records of the results of the review of design changes and any necessary actions must be maintained (see Section 2.4).

f. Design changes must be controlled in accordance with the formal configuration management process.

6.5 PROCUREMENT

DAs and PAs must ensure that purchased product and services conform to specified procurement requirements. The type and extent of control applied to the supplier and the purchased product or service must reflect the effect of the purchased product or service on subsequent product realization or the final product.

a. The type and extent of control applied to the supplier is determined by applying a graded approach to implementation of the following items across the various approval levels of suppliers:

   (1) Expectations for a supplier's Quality Management System (QMS)

   (2) Evaluation, selection, and monitoring

   (3) Procurement documentation

   (4) Verification of procured products

b. PAs must maintain a list of approved suppliers who can provide acceptable products.

6.6 PRODUCTION

This section ensures that quality principles are captured and incorporated into production processes.

6.6.1 Control of Production

The PA (or DA that is responsible for performing surveillance testing) must establish a production environment by documenting and implementing an approach to plan and carry out production or surveillance under controlled conditions, which includes the following:

a. The ability to access the centralized NNSA product definition archive system to ensure the use of current released and authorized product definition.

   Note: Product definition includes a part defining drawing or model, and may include other models and drawings, specifications, DA specified procedures, or supplemental information.

b. The use of controlled; operating procedures, calibration procedures, maintenance procedures, and work instructions, as necessary.

Note: Work instructions can include process flow charts, production documents, manufacturing plans, and inspection documents.

c. The use of configuration managed production processes.

d. The use of controlled acceptance equipment.

Note: Acceptance equipment can include product testers, gages used for acceptance, and certified tools used for acceptance.

e. The availability and use of the correct M&TE for the process (e.g., development, in-process measurement, metrology, surveillance, acceptance, etc.,).

f. The collection of records that provide evidence that all production, inspection, test, and verification operations are completed prior to product submittal (e.g., travelers, routers, work orders, and process cards).

g. The implementation of packaging, shipment, and post-shipment activities.

h. The means to pause production and notify stakeholders when conditions adverse to quality exist.

i. Accountability for all product during production and surveillance (e.g., part status and nonconforming product).

j. Monitoring and control of utilities (e.g., water, compressed air, and electricity) to the extent they affect the ability of the product to meet requirements.

k. Monitoring and control of materials and supplies to the extent they affect the ability of the product to meet requirements.

Note: Materials and supplies include raw materials, materials and supplies used to produce weapon products that become part of the weapon product itself, materials and supplies that touch but do not become part of the weapon product, and support materials that are used in the production process.

l. Monitoring and control of production environments (e.g., humidity, temperature, etc.) to the extent they affect the ability of the product to meet requirements.

m. Monitoring and control of equipment and tooling that are used for production to the extent they affect the ability of the product to meet requirements.

n. Criteria for workmanship specified in the clearest practical way (e.g., written standards, representative samples, and illustrations).

o. Digital product incorporated into a parent weapon product is developed in accordance with industry consensus software engineering standards, and includes:

(1) At the completion of the design stages the digital product must be validated and qualified prior to it being delivered to the receiving PA to be incorporated into the parent product.

When changes occur that invalidate the original results the verification process must be repeated.

(2) Equipment and tools that transfer and verify the digital product to its parent must be validated to ensure the integrity of the load operation.

i. When changes are made to the digital product loading and verification, the changes must be verified by personnel who are knowledgeable of the digital product load requirements.

ii. When changes are made to the digital product loading and verification, the changes must be made in accordance with the formal change control process.

(3) A digital signature (i.e., hash) must be used for version control during delivery, installation and test.

6.6.2 Production Planning

During product realization the PRT must develop the production processes concurrent with the product design process by:

(1) Establishing, implementing, and maintaining critical manufacturing parameters to manage special requirements, critical items, and key characteristics, including process controls.

(2) Selecting M&TE based on the measurement type, range, accuracy, and uncertainty required to determine conformance to measurement requirements.

(3) Designing, manufacturing, configuration managing, and using the appropriate M&TE for in-process, production, and acceptance data

(4) Designing, manufacturing, configuration managing, and using tooling required to produce the product.

(5) Identifying in-process inspection and verification points, along with any intermediate acceptance criteria, for each process when adequate verification of conformance cannot be performed at a later stage of production.

6.6.3 Production Process Verification

a. The PRT must manufacture products in a production environment (a Process Prove-In [PPI] lot) to verify that the production processes, production documentation, and tooling are capable of producing product that meets production requirements and throughput rates.

b. Using the results of the PPI lot, the PA must lead the PRT in conducting a production readiness review to verify readiness for production.

c. The need to repeat this process must be evaluated by the PRT when changes occur that invalidate the original results (e.g., product design changes, manufacturing process changes, or tooling changes).

6.6.4 Qualification of Production Processes

a. The DA must determine what production and surveillance processes must be qualified and indicate that on the product definition. Qualification must be considered for all special processes.

b. The PRT must establish arrangements for these processes, including the following, as applicable:

(1) Defined criteria for review and approval of the processes.

(2) Defined product acceptance criteria with tolerances.

(3) Approval of equipment and qualification of personnel.

(4) Use of specific methods and procedures.

(5) Requirements for records (see Section 2.4).

(6) Requalification.

6.6.5 Control of Production Process Changes

a. Significant changes to qualified production processes must be assessed by the

PRT and the DA is responsible for determining if requalification is necessary.

b. The PRT must configuration manage changes affecting processes, acceptance equipment, tools, or software programs.

c. The results of changes to production processes must be assessed by the PRT to confirm that the desired effect has been achieved without adverse effects to product conformity and to re-qualify processes as necessary.

6.6.6 Control of Acceptance Equipment

a. Within the PRT, the DA must ensure that DA-controlled Acceptance Equipment is designated in the product definition and is designed, developed, and qualified prior to being used in production.

b. The PRT must ensure that tooling used to accept product (certified tools) are certified prior to being used in production and are qualified as part of the production processes.

c. When automated manufacturing processes are used as the method of acceptance, the PRT must ensure they are designed, validated, qualified, controlled, and sufficiently monitored to protect weapon product quality such that the completion of the automated operation may be accepted as objective evidence of conformance to requirements.

6.6.7 Identification and Traceability

a. The PA must apply part markings to the product as directed by the product definition, verify the part marking complies with the product definition and maintain the product identification and traceability records.

b. The PA must track the status of the product relative to acceptance requirements.

c. When required by the product definition, the PA must ensure the traceability of products manufactured from the same batch of raw material, or from the same manufacturing batch, to the destination (e.g., delivery, scrap, etc.)

d. When required by the product definition, for a subassembly, the PA must trace the components to the subassembly and then to the next higher assembly.

e. For a product, the PA must capture a sequential record of its production (i.e., manufacture, assembly, inspection and verification, operations and sustainment, and dismantlement and disposition) to be retrievable.

f. For digital product, the PA must uniquely identify associated configuration items throughout product realization. Prototype, experimental, and incremental builds must be uniquely identified and distinguished from final released digital product.

g. For digital product, the PA must establish a mechanism for tracing the specific version (major and minor, as appropriate) that is integrated into the next level of assembly.

6.6.8 Control of Product

a. The PA must control the product throughout its lifecycle to maintain conformity to product requirements. This includes applying identification, proper handling and processing, adequate packaging, controlling storage and shipping conditions, and general protection of the product.

b. The PA must apply appropriate controls to all levels of product from raw materials to final assemblies.

c. The DA must establish the requirements to maintain the conformity of the product during storage and shipment.

d. The DA must ensure that requirements to maintain the conformity of the product during storage and shipment are incorporated into the design of the packaging and containers that are used to store and ship the product (e.g., Fissile and Type B transportation containers and associated packaging material and other storage and shipment interfaces).

6.6.9 Monitoring and Measurement of Product

a. The PRT must document measurement requirements for product verification and must include the following:

(1) Criteria for acceptance or rejection.

(2) Specification of where measurement and testing operations are to be performed in a particular sequence.

(3) Quality evidence that is to be captured as records of production.

(4) Any specific measurement instruments that are required and any specific instructions associated with their use.

b. Throughout production, the PA must ensure product requirements are met through a combination of monitoring, measurement, and other forms of verification.

c. The PA must determine verification approaches that are not being evaluated as part of the qualification of the production processes.

d. The PA must maintain evidence of conformity with product requirements.

e. Where required to demonstrate product qualification, the PA must ensure that

records provide evidence of the product qualification prior to certification.

f. When required, after certification the product must be submitted for independent verification (to NNSA for Verification Inspection [see Section 7.1]).

6.6.10 Control of Nonconforming Product

a. The PA must ensure that suspect and nonconforming product is identified and controlled within the PA site to prevent it from being shipped.

(1) The PA must establish a documented process to ensure that when suspect or actual nonconforming products are identified, the discrepancy is evaluated, and appropriate action is taken.

(2) The PA must control nonconforming products by providing for the identification, documentation, evaluation, preservation, segregation, and disposition of the nonconforming products.

(3) The PA must notify the DA, when appropriate, and control the nonconforming product by one or more of the following ways:

a. Taking authorized action to correct the product (e.g., rework the product as allowed by the product definition).

b. Obtaining DA authorization to use the nonconforming product (e.g., authorization to use as-is or authorization to use in a restricted-use application).

c. Taking action to scrap the product, which must be marked and positively controlled until physically rendered unusable.

(4) Upon exercising the options in 6.6.11.a (3), the PA, in consultation with the DA, must take corrective action to prevent the recurrence of the nonconformance (see Section 6.6.11).

(5) The PA, in consultation with the DA, must ensure that records of the nature of nonconformities and any subsequent actions taken are maintained (see Section 2.4).

b. When NNSA-accepted product is found to be nonconforming, the PA must notify the NNSA F/PO Weapon Quality personnel and ensure that the product is appropriately controlled to prevent it from being shipped.

6.6.11 Corrective Action

DAs and PAs, as warranted, must work together to take action to eliminate the cause(s) of nonconforming product in order to prevent recurrence.

The DAs and PAs must work together, as warranted, to accomplish the following:

a. Review nonconforming product.

b. Determine the causes of a nonconforming product.

c. Determine the extent of condition based on the causes of the nonconforming product.

d. Evaluate the need for action to ensure that nonconforming products do not recur.

e. Determine and implement corrective action(s) needed.

f. Record the results of corrective action(s) taken (see Section 2.4).

g. Validate the effectiveness of the corrective action taken by using personnel that are not directly responsible for the work being corrected, as warranted.

h. Flow down corrective action requirements to a supplier when it is determined that the supplier is responsible for the nonconforming product.

i. Determine compensatory measures where timely or effective corrective actions are not achieved.

7.0 NNSA PRODUCT ACCEPTANCE

7.1 GENERAL

a. Early and continuous application of quality principles must be applied when realizing weapon products and they must be certified by the PA to meet the applicable product definition to become Mark Quality.

b. Weapon products are expected to be under NNSA control. To enable NNSA control, NNSA Product Acceptance must be accomplished for weapon products. This allows NNSA control of the accepted material to maintain Mark Quality status and to ensure that the product is used as intended.

c. NNSA Product Acceptance is the process by which the Mark Quality status of weapon products is verified to accept them for directive schedule use. It is based on a high level of assurance that weapon products meet requirements. Assurance is obtained by the NNSA F/PO Weapon Quality personnel through a combination

of Verification Inspections, Quality Assurance Surveys (QASs), and the collection and analysis of performance information.

d. The PA must ensure the following to allow for Verification Inspections:

(1) The PA must notify the NNSA F/PO Weapon Quality personnel of new production of weapon products to allow for an F/PO Quality Instruction List (QIL) determination.

(2) The PA must submit weapon products that are identified on the QIL to NNSA for Verification Inspection.

i. Prior to submittal, the PA must certify that the weapon product was manufactured to, and conforms to, the applicable product definition on a Certificate of Inspection (COI).

ii. As part of the submittal, the PA must provide quality evidence, specifications, acceptance equipment, and any additional information requested by the NNSA F/PO in support of the Verification Inspections.

Note: This allows for NNSA Product Acceptance of weapon products that require Verification Inspections to become NNSA-accepted.

e. The PA must allow for NNSA QASs to be conducted in the production environment to provide assurance that weapon products meet requirements.

Note: This allows for NNSA Product Acceptance of weapon products that do not require a Verification Inspection to become NNSA-accepted.

f. The PA must collect, analyze, and share performance information with the NNSA F/PO Weapon Quality personnel to provide assurance that weapon products meet requirements.

Note: This allows for NNSA Product Acceptance of weapon products that do not require a Verification Inspection to become NNSA-accepted.

7.2 NNSA-ACCEPTED PRODUCTS

a. NNSA-accepted products must be under NNSA Federal Program Manager administrative control.

b. To ensure effective management control of NNSA-accepted products, PAs must establish a production store for these products that includes the following elements:

(1) Access control is implemented to ensure that only authorized personnel have access to the NNSA-accepted products.

(2) Inventory control is implemented to ensure the timely and accurate inventory accountability of NNSA-accepted products.

(3) Environments are controlled to ensure that NNSA-accepted products are not damaged during storage, staging, or transportation.

c. NNSA Federal Program Managers must provide authorization, with concurrence from WQD, for reallocation of NNSA-accepted products to be used in an application other than their intended use.

d. Special handling, storage, processing, or evaluation of NNSA-accepted products as specified in a Special Instruction Engineering Release (SIER) must be reviewed and approved by NNSA F/PO Weapon Quality personnel with regards to the quality aspects of the SIER prior to the work being performed.

e. When NNSA-accepted products are found to be nonconforming, the PA must notify the NNSA F/PO Weapon Quality personnel.

f. When NNSA-accepted products are shipped from one PA's responsibility to another's (i.e., Interproject [IP] shipment), the receiving PA must ensure that the product is of the proper quantity, it has the proper identification, and that there is no shipping and handling damage.

7.3 GOVERNMENT-FURNISHED MATERIAL (GFM)

a. When weapon product is shipped from another federal agency to a PA (e.g., tail kits delivered from the DOD), the receiving PA must ensure that the product is of the proper quantity, it has the proper identification, and that there is no shipping and handling damage.

b. The PA must control and manage GFM in the same manner as NNSA-accepted products.

ATTACHMENT 3: APPLICABILITY DIAGRAM
NAP 401.1A, *Weapon Quality Policy*