EFCOG Guidance Document:

NQA-1 Sub-Part 2.14 Crosswalk to NQA-1 Part 1 and NAP 401.1 (Formerly NAP 24-A)

By the

Energy Facilities Contractors Group

Safety Working Group

Quality Assurance

Procurement Engineering Quality Task Team

Task PE-19-02

E-SG-QA-PEQ-2020-02
Final Draft
March 1, 2020

Procurement Quality Engineering Task Team Members and Principal Authors of this Document

Nielsen, Paul – Procurement Engineer P.E.
Idaho National Laboratory
EFCOG Procurement Engineering Task Group Member

Daw, Spencer L. – Procurement Engineer P.E.
Idaho National Laboratory
EFCOG Procurement Engineering Task Group Chair

Table of Contents

1.0 Abstract

This document was developed to provide personnel with a crosswalk between NQA-1 Part 2 Subpart 2.14, NQA-1 Part 1, and NAP 401.1 (formerly NAP 24-A).

2.0 Background

The commercial grade dedication requirements as found in NQA-1 Sub-Part 2.14 detail a rigorous process to provide reasonable assurance that the commercial grade items perform their safety functions. As documented in PE-19-01, the commercial power industry reserves this process for Safety Related items and does not apply it to defense in depth items. For those items whose safety function is to support defense in depth or for worker protection, the processes detailed in NQA-1 (excluding Sub-Part 2.14) are sufficient to ensure that those items will perform their safety function. This white paper will highlight those requirements from Part I of NQA-1 that can be relied upon to provide adequate confidence / reasonable assurance for a portion of what is currently in the population of Safety Class / Safety Significant items.

3.0 Discussion

Below is a summary of the sections that would be relied on to reasonably ensure that the items perform their safety function.

Requirement 1, Section 201 – Quality is achieved by those performing the work and verified by those not directly performing the work. Those who establish a quality program have sufficient authority and independence to focus on safety function consideration.

Requirement 2, Section 100 – A documented quality assurance program shall provide control over activities affecting quality consistent with the importance of the item or service. The program shall include monitoring activities against acceptance criteria in a manner sufficient to provide assurance that the activities affecting quality are performed satisfactorily.

Requirement 2, Section 200 – Indoctrination and training shall be commensurate with scope, complexity, importance of the activities, and the education, experience, and proficiency of the person.

Requirement 2, Section 201 – Personnel performing or managing activities affecting quality shall receive indoctrination in their job responsibilities and authority that includes general criteria, technical objectives, requirements of applicable codes and standards, regulatory commitments, company procedures, and quality assurance program requirements.

Requirement 2, Section 202 – Training shall be provided, if needed, to achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods, or job responsibilities.

Requirement 3, Section 300 – Design activities shall be documented in a sufficiently detailed way to permit verification that the design meets requirements. Appropriate

quality standards shall be identified and documented, and their selection reviewed and approved.

The design shall be selected and reviewed for suitability of application. The final design shall be relatable to the design input by documentation in sufficient detail to permit design verification and shall specify required inspections and tests and include or reference appropriate acceptance criteria.

Requirement 3, Section 500 – The extent of the design verification shall be a function of the importance to safety, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proved designs.

Requirement 3, Section 900 – Design documentation and records shall include not only final design documents, such as drawings and specifications, and revisions to those documents, but also documentation that identifies the important steps in the design process, including sources of design inputs that support the final design.

Requirement 4, Section 100 – Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services.

Requirement 4, Section 202 – The procurement documents shall identify technical requirements including appropriate tests, inspections and acceptance criteria for determining acceptability of the item.

Requirement 4, Section 203 – Quality assurance program requirements shall be specified in the procurement documents. These requirements shall be consistent with importance and/or complexity of the item or service being procured.

Requirement 7, Section 400 – Supplier-generated document submittals shall be evaluated against the procurement document requirements. Control of the review process shall provide for the acquisition, processing, and recorded evaluation of the quality assurance, technical, inspection, and test documentation or data against acceptance criteria.

Requirement 7, Section 500 – Verification that procured items comply with procurement requirements shall be made prior to acceptance. These verifications shall be a function of the relative importance, complexity, and quantity of the items procured and the Supplier's quality performance.

Requirement 7, Section 502 – Methods used to accept an item from a Supplier shall be a Supplier Certificate of Conformance, source verification, receiving inspection, or post-installation test at the nuclear facility site, or a combination of these methods.

Requirement 7, Section 505 – Receiving inspection shall verify by objective evidence such features as configuration, identification, physical characteristics, freedom from damage and cleanliness.

Requirement 7, Section 800 – Records shall be established and maintained of supplier evaluations, acceptance of items, and supplier nonconformances.

Requirement 10, Section 200 – Inspection requirements and acceptance criteria shall include specified requirements contained in the applicable design documents or other pertinent technical documents approved by the responsible design organization.

Requirement 10, Section 401 – Characteristics to be inspected, methods of inspection, and acceptance criteria shall be identified during the inspection planning process.

Requirement 11, Section 200 – Test requirements and acceptance criteria shall be provided or approved by the responsible design organization. Required tests shall be controlled and shall obtain the necessary data with sufficient accuracy for evaluation and acceptance. Test requirements and acceptance criteria shall be based upon specified requirements contained in applicable design or other technical documents.

Requirement 11, Section 600 – Test records shall be established and maintained to indicate the ability of the item to satisfactorily perform its function or to meet the documented requirements.

Requirement 11, Section 601 – Test records shall contain, as a minimum, item tested, date of test, tester or data recorder, type of observation, results and acceptability, actions taken due to any deviations, and the person evaluating the test results.

4.0 Examples

Examples of items requiring the full rigor of Sub-Part 2.14:

- Primary Coolant Pressure Boundary components
- Reactor confinement structural components

Examples that require only the built-in quality verification in NQA-1 Part 1

- Door sweeps and weather stripping on confinement man doors
- Lead shielding and shield glass in glove boxes

5.0 Crosswalk

The attached Appendix contains the comparable requirements between Sub-Part 2.14 and Part 1 of NQA-1 along with sections from NAP 401.1 (formerly NAP-24A).

Appendix A – Commercial Grade Dedication Crosswalk between NQA-1 Part 1, NQA-1 Part 2 Subpart 2.14, and NAP 401.1 (formerly NAP 24-A)

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
200, CGI Definition Applications A facility utilizing commercial grade items or services shall utilize the appropriate commercial grade item definitions to determine if the item or service can be procured commercial grade			
300, Utilization To utilize a commercial grade item or service, controls shall be implemented to provide reasonable assurance that the item or service will perform its intended safety function. Controls shall include the following: determination that the item or service performs a safety function confirmation that the item or service meets the applicable commercial grade item definitions identification and documentation of the critical characteristics, including acceptance criteria selection, performance, acceptance, and documentation of the dedication method(s) for determining compliance with the critical characteristic acceptance criteria. A dedication plan shall be developed for the item or service that identifies the critical characteristics and dedication methods, including acceptance criteria. Dedication requirements shall be included in applicable procurement and technical documents as necessary to support the dedication.	**Requirement 1, Organization Section 201 Structure and Responsibility** The organizational structure and responsibility assignments shall be such that (b) quality is achieved and maintained by those assigned responsibility for performing work (c) quality achievement is verified by those not directly responsible for performing the work (d) those responsible for assuring that an appropriate quality assurance program has been established and those verifying activities affecting quality have sufficient authority, direct access to responsible levels of management, organizational freedom, and access to work to perform this function, including sufficient independence from cost and schedule when opposed to safety function considerations. **Requirement 2, Quality Assurance Program, Section 100 Basic** A documented quality assurance program shall be planned, implemented, and maintained in accordance with this Part (Part I), or portions thereof. The program shall identify the activities and items to which it applies. The program shall provide control over activities affecting quality to an extent consistent with their importance. The program shall include monitoring activities against acceptance criteria in a manner sufficient to provide assurance that the activities affecting quality are performed satisfactorily.	**3.3.2 Design Process** a. Items and processes shall be designed using sound engineering, scientific principles, and appropriate standards. b. Designs shall provide a clear link between design inputs and design requirements, including production requirements and specifications. c. Design work, including changes, shall incorporate applicable requirements and design bases. d. Designs shall also incorporate critical characteristics required for such things as function, reliability, interchangeability, design life, safety, dismantlement, and reuse. e. Design specifications shall not be more restrictive than essential for achieving required performance with appropriate margin. f. The design agency shall determine and set the value and tolerance for design specifications. g. The design agency shall produce final designs that lead to successful manufacture, assembly, use, and operation. h. Calculations, modeling, and testing shall establish the design parameters and maintain the appropriate margins by taking into account uncertainties associated with the design envelope. i. Test equipment and instrumentation used for the development of design parameters shall be calibrated, and the precision and accuracy shall be established over the full range of use. j. Design information that supports use and maintenance of the weapon and weapon-related product, in	NQA-1 requires that those performing the design function select materials, parts, equipment and processes that are essential to the function of the item and that inspection and tests are specified with appropriate acceptance criteria.

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
	Requirement 3, Design Control, Section 300 Design Process (b) The design methods, materials, parts, equipment, and processes that are essential to the function of the items shall be selected and reviewed for suitability of application. (c) The final design shall (1) be relatable to the design input by documentation in sufficient detail to permit design verification. (2) specify required inspections and tests and include or reference appropriate acceptance criteria. **Requirement 3, Design Control, Section 500 Design Verification** The extent of the design verification shall be a function of the importance to safety, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proved designs. **Requirement 4, Procurement Document Control, Section 202 Technical Requirements** The procurement documents shall identify appropriate test, inspection, and acceptance criteria for determining acceptability of the item or service. **Requirement 4, Procurement Document Control, Section 203 Quality Assurance Program Requirements** Quality assurance program requirements shall be specified in the procurement documents. These requirements shall be consistent with importance and/or complexity of the item or service being procured.	addition to the disposition of non-conforming materials and items, shall be developed as part of the design process and documented. **3.3.4 Design Reviews** At suitable stages, design reviews shall be conducted and documented by individuals or groups not directly responsible for the work to ensure, at the time of the review, that i. design inputs are complete and correct; ii. assumptions necessary to perform the design are adequately described and valid; iii. applicable design standards are used; iv. computer programs, including mathematical models used in simulation codes, are adequately verified and validated and recorded for future retrieval; v. suitable materials, parts, processes, and inspection and testing criteria are specified; and vi. design qualification methods are adequate.	
401, Technical Evaluation - General The technical evaluation(s) shall be performed by the responsible engineering organization to (a) determine the safety function(s) of the item or service	**Requirement 2, Quality Assurance Program, Section 100 General** A documented quality assurance program shall be planned, implemented, and maintained in accordance with this Part (Part I), or portions thereof. The program shall	**3.2 Training** Documented processes shall ensure a. personnel are trained and/or qualified to be capable and competent prior to performing their assigned work;	Those performing design and procurement work are trained and supported by a

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
(b) identify performance requirements, the component/ part functional classification, and applicable service conditions (c) confirm that the item or service meets the commercial grade definition criteria (d) identify the critical characteristics, including acceptance criteria (e) identify the dedication method(s) for verification of the acceptance criteria (f) determine if a replacement item is a like-for-like or equivalent item. The requirements of this Sub-Part are only applicable to commercial grade items or services that perform a safety function. Design output documents, supplier technical information, and other relevant industry technical and operating experience information, as appropriate, shall be utilized to prepare the technical evaluation. Components that perform a safety function can contain items that do not perform a safety function. Replacement items shall be evaluated to determine their individual safety function in relation to the component or equipment. The credible failure modes of an item in its operating environment and the effects of these failure modes on the safety function shall be considered in the technical evaluation for the selection of the critical characteristics. Services shall be evaluated to determine if the failure or improper performance of the service could have an adverse impact on the safety function of equipment, materials, or the facility operations. If the design criteria for the commercial grade item are known by the dedicating entity, then the item may be dedicated to these criteria in lieu of defining a specific safety function. In this case, consideration of failure modes is not	identify the activities and items to which it applies. The program shall provide control over activities affecting quality to an extent consistent with their importance. The program shall include monitoring activities against acceptance criteria in a manner sufficient to provide assurance that the activities affecting quality are performed satisfactorily. **Requirement 200, Indoctrination and Training** Indoctrination and training shall be commensurate with scope, complexity, importance of the activities, and the education, experience, and proficiency of the person. **Requirement 201, Indoctrination** Personnel performing or managing activities affecting quality shall receive indoctrination in their job responsibilities and authority that includes general criteria, technical objectives, requirements of applicable codes and standards, regulatory commitments, company procedures, and quality assurance program requirements. **Requirement 202, Training** The need for a formal training program for personnel performing or managing activities affecting quality shall be determined. Training shall be provided, if needed, to achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods, or job responsibilities. On-the-job training shall be used if direct hands-on applications or experience is needed to achieve and maintain proficiency. **Requirement 3 Design Control, Section 300 Design Process** (a) The responsible design organization shall prescribe and document the design activities to the level of detail necessary to permit	b. personnel are provided continuing training to maintain job proficiency; c. evidence of training, qualification, and/or certification are maintained; and d. qualification is based on a combination of factors including education, training, skills and experience. **3.3.2 Design Process** a. Items and processes shall be designed using sound engineering, scientific principles, and appropriate standards. b. Designs shall provide a clear link between design inputs and design requirements, including production requirements and specifications. c. Design work, including changes, shall incorporate applicable requirements and design bases. d. Designs shall also incorporate critical characteristics required for such things as function, reliability, interchangeability, design life, safety, dismantlement, and reuse. e. Design specifications shall not be more restrictive than essential for achieving required performance with appropriate margin. f. The design agency shall determine and set the value and tolerance for design specifications. g. The design agency shall produce final designs that lead to successful manufacture, assembly, use, and operation. h. Calculations, modeling, and testing shall establish the design parameters and maintain the appropriate margins by taking into account uncertainties associated with the design envelope. i. Test equipment and instrumentation used for the development of design parameters shall be calibrated, and the precision and accuracy shall be established over the full range of use. j. Design information that supports use and maintenance of the weapon and weapon-related product, in	quality program that ensures that the activities affecting quality are performed satisfactorily.

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
required and the item's design parameters and allowables become the critical characteristics and acceptance criteria. If the design criteria or safety function of the original item have changed, the replacement item must meet the new design criteria and safety function. Like-for-like and equivalent items are not a design change subject to Part I, Requirement 3, section 600, Change Control. **500 Critical Characteristics** Critical characteristics selected for acceptance shall be identifiable and measurable attributes based on the complexity, application, function, and performance of the item or service for its intended safety function. Critical characteristics of an item for acceptance shall include the part number, physical characteristics, identification markings, and performance characteristics, as appropriate. The critical characteristic acceptance criteria shall include tolerances, when appropriate. An item's part or catalog number shall be considered a critical characteristic if it provides a method to link the item with the manufacturer's product description and published data. The dedication process shall not rely on the part number alone as the only critical characteristic to be verified. Commercial grade items or services can have numerous characteristics that are related to the composition, identification, or performance of the item or service. However, for acceptance, not all of these characteristics need to be verified to provide reasonable assurance that the item or service will perform its intended safety function. The manufacturer's published product description or additional technical information typically identifies technical criteria or performance characteristics inherent	the design process to be carried out in a correct manner, and to permit verification that the design meets requirements. Design documents shall support facility design, construction, and operation. Appropriate quality standards shall be identified and documented, and their selection reviewed and approved. (b) The design methods, materials, parts, equipment, and processes that are essential to the function of the items shall be selected and reviewed for suitability of application. (c) The final design shall (1) be relatable to the design input by documentation in sufficient detail to permit design verification. (2) specify required inspections and tests and include or reference appropriate acceptance criteria. **Section 500 (d), Design Verification** The extent of the design verification shall be a function of the importance to safety, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proved designs. Where the design has been subjected to a verification process in accordance with this Part (Part I), the verification process need not be duplicated for identical designs. However, the applicability of standardized or previously proven designs, with respect to meeting pertinent design inputs, shall be verified for each application. Known problems affecting the standard or previously proved designs and their effects on other features shall be considered. The original design and associated verification documentation shall be referenced in records of subsequent application of the design.	addition to the disposition of non-conforming materials and items, shall be developed as part of the design process and documented. **3.3.3 Design Verification** The adequacy of designs shall be verified and documented before approval and implementation. **3.3.4 Design Reviews** a. At suitable stages, design reviews shall be conducted and documented by individuals or groups not directly responsible for the work to ensure, at the time of the review, that i. design inputs are complete and correct; ii. assumptions necessary to perform the design are adequately described and valid; iii. applicable design standards are used; iv. computer programs, including mathematical models used in simulation codes, are adequately verified and validated and recorded for future retrieval; v. suitable materials, parts, processes, and inspection and testing criteria are specified; and vi. design qualification methods are adequate.	

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
in the design and manufacturing of the item. The manufacturer can employ standard tests or inspections as part of the manufacturing process and utilize a quality program to assure that appropriate controls are applied. This type of information is an example to be considered in the selection of critical characteristics and the related acceptance criteria. In cases where the critical characteristics and acceptance criteria cannot be determined from the manufacturer's documentation or other documentation, the dedicating entity may perform an engineering evaluation, examination, or test (or any combination thereof) of the original item to develop the critical characteristics and acceptance criteria. Critical characteristics selected for acceptance shall include criteria related to the location/design basis conditions (or manufacturing design limits) of the item in the facility or criteria addressing the most severe location criteria/design basis conditions (or manufacturing design limits) of the item in the facility, unless controls are in place to prevent usage in undesignated locations. Commercial grade items designated for installation or installed in seismically or environmentally qualified equipment or in locations which require such qualification shall include the selection of appropriate critical characteristics required to maintain the qualification of the component or equipment.			
601 Dedication (a) To provide reasonable assurance that a commercial grade item or service will perform its intended safety function, the dedicating entity shall verify that the commercial grade item or service meets the acceptance criteria for the identified	**Requirement 3, Design Control, Section 300 Design Process** The final design shall be relatable to the design input by documentation in sufficient detail to permit design verification and shall specify required inspections and tests and	**3.3.2 Design Process** a. Items and processes shall be designed using sound engineering, scientific principles, and appropriate standards. b. Designs shall provide a clear link between design inputs and design	Design documents are required to specify tests and inspections along with acceptance criteria.

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
critical characteristics by one or more of the following dedication methods: (1) Method 1: inspections, tests, or analyses performed after delivery (2) Method 2: commercial grade survey of the supplier (3) Method 3: source verification of the item or service (4) Method 4: acceptable supplier/item performance record (b) Prior to classifying the item or service as acceptable to perform its safety function, the dedicating entity shall determine that the following have been successfully performed, as applicable: (1) Damage was not sustained during shipment. (2) The item or service has satisfied the specified acceptance criteria for the identified critical characteristics. (3) Specified documentation was received and is acceptable. (c) The dedication method(s) described in paras. 602 through 605 shall provide a means to assure that the commercial grade item or service meets the acceptance criteria for the selected critical characteristics. The selection of acceptance method(s) shall be planned and based on the type of critical characteristics to be verified, available supplier information, quality history, and degree of standardization. If a critical characteristic cannot be verified by the selected dedication method, the dedicating entity may select another or combination of dedication methods to verify the critical characteristic. (d) The organization that performs or directs the dedication activity and determines the item or service has satisfactorily met the acceptance criteria for the selected critical characteristics is the dedicating entity. The dedicating entity can be the manufacturer, a third-party organization, the purchaser, or the nuclear facility organization.	include or reference appropriate acceptance criteria. **Requirement 7, Controls of Purchased Items and Services, Section 400 Control of Supplier-Generated Documents** Controls shall be implemented to ensure that the submittal and evaluation of Supplier-generated documents and changes are accomplished in accordance with the procurement document requirements. These controls shall provide for the acquisition, processing, and recorded evaluation of the quality assurance, technical, inspection, and test documentation or data against acceptance criteria. **Requirement 7, Controls of Purchased Items and Services, Section 500 Acceptance of Item or Service** Prior to offering the item or service for acceptance, the Supplier shall verify that the item or service being furnished complies with the procurement requirements. The extent of the verification activities by the Purchaser shall be a function of the relative importance, complexity, and quantity of the item or services procured and the Supplier's quality performance. Where required by code, regulation, or contract requirement, documentary evidence that items conform to procurement requirements shall be available at the nuclear facility site prior to installation or use. **Section 502** Purchaser methods used to accept an item or service from a Supplier shall be a Supplier Certificate of Conformance, source verification, receiving inspection, or postinstallation test at the nuclear facility site, or a combination of these methods.	requirements, including production requirements and specifications. c. Design work, including changes, shall incorporate applicable requirements and design bases. d. Designs shall also incorporate critical characteristics required for such things as function, reliability, interchangeability, design life, safety, dismantlement, and reuse. e. Design specifications shall not be more restrictive than essential for achieving required performance with appropriate margin. f. The design agency shall determine and set the value and tolerance for design specifications. g. The design agency shall produce final designs that lead to successful manufacture, assembly, use, and operation. h. Calculations, modeling, and testing shall establish the design parameters and maintain the appropriate margins by taking into account uncertainties associated with the design envelope. i. Test equipment and instrumentation used for the development of design parameters shall be calibrated, and the precision and accuracy shall be established over the full range of use. j. Design information that supports use and maintenance of the weapon and weapon-related product, in addition to the disposition of non-conforming materials and items, shall be developed as part of the design process and documented. **3.6.3 Acceptance of Procured Items and Materials** a. Processes and controls shall i. be established to evaluate procured items and materials to determine conformance to applicable specifications; and ii. ensure malicious hardware or software are prevented from entry into the Nuclear Security Enterprise (NSE) supply chain.	Testing and inspections are performed to controlled procedures and result in data with sufficient accuracy for evaluation and acceptance.

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
	Section 505 Receiving Inspection When receiving inspection is used, purchased items shall be inspected as necessary to verify conformance to specified requirements, taking into account source verification and audit activities and the demonstrated quality performance of the Supplier. Receiving inspection shall verify by objective evidence such features as (a) configuration (b) identification (c) dimensional, physical, and other characteristics (d) freedom from shipping damage (e) cleanliness Receiving inspection shall be coordinated with review of Supplier documentation when procurement documents require such documentation to be furnished prior to receiving inspection. **506 Postinstallation Testing** When postinstallation testing is used, postinstallation test requirements and acceptance documentation shall be mutually established by the Purchaser and Supplier. **Requirement 10, Inspection, Section 200 Inspection Requirements** Inspection requirements and acceptance criteria shall include specified requirements contained in the applicable design documents or other pertinent technical documents approved by the responsible design organization. **Section 401 Inspection Planning** Characteristics to be inspected, methods of inspection, and acceptance criteria shall be identified during the inspection planning process. **Requirement 11, Test Control, Section 200 Test Requirements** (a) Test requirements and acceptance criteria shall be provided	b. When Supplier-provided reports are used as a basis of acceptance, the reported results shall be compared with requirements. The validity of Supplier-provided reports shall be periodically verified by the purchaser by at least one of the following methods: i. independent evaluation to requirements; or ii. independent assessment (to establish the validity of the Supplier-provided reports). **3.6.4 Acceptance of Procured Services** In cases involving procurement of services only (such as third-party inspection/testing; engineering and consulting services; assessment; and installation, repair, overhaul, or maintenance work), the Purchaser shall accept the service by any or all of the following methods: a. technical verification of data produced; b. surveillance and/or assessment of the activity; and/or c. review of objective evidence for conformance to the procurement document requirements. **3.9.1 Inspection and Test** a. Inspection and testing of specified items, services, and processes shall be conducted under controlled conditions using established acceptance and performance criteria. b. Inspection and test requirements and results shall be documented. c. Equipment used for inspections and tests shall be calibrated and maintained. d. Measurement uncertainty requirements and capability of inspection and test processes shall be determined and documented. e. Qualified persons, other than those who perform or directly supervise the work being inspected or tested, shall perform acceptance inspections and tests verifying	

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
	or approved by the responsible design organization. Required tests (other than for computer programs) including, as appropriate, prototype qualification tests, production tests, proof tests prior to installation, construction tests, preoperational tests, and operational tests shall be controlled. Computer program tests including, as appropriate, software design verification, factory acceptance tests, site acceptance tests, and in-use tests shall be controlled. Required tests shall be controlled under appropriate environmental conditions using the tools and equipment necessary to conduct the test in a manner to fulfill test requirements and acceptance criteria. The tests performed shall obtain the necessary data with sufficient accuracy for evaluation and acceptance. (b) Test requirements and acceptance criteria shall be based upon specified requirements contained in applicable design documents, or other pertinent technical documents that provide approved requirements. **Section 300 Test Procedures** (a) Test procedures shall include or reference the test configuration and test objectives. Test procedures shall also include provisions for assuring that prerequisites and suitable environmental conditions are met, adequate instrumentation is available and used, appropriate tests and equipment are used, and necessary monitoring is performed. Prerequisites shall include the following, as applicable: (1) calibrated instrumentation (2) appropriate equipment (3) trained personnel (4) condition of test equipment and the item to be tested (5) suitable environmental conditions (6) provisions for data acquisition	weapon and weapon-related product conformance to design criteria. f. Where independent inspections and tests are not feasible because of special requirements, the responsible organization shall develop an alternative method, document it and the basis for requesting exception, obtain design agency approval for use, and notify HQ WQD of the approved alternative method. g. Records shall be maintained to establish traceability between product and measuring and test equipment used for its test or inspection. **3.9.2 Acceptance** There shall be a documented process and procedures for contractor submittal of completed weapon and weapon-related product and for NNSA acceptance of that product to ensure that a. the weapon and weapon-related product was manufactured to and conforms to the correct design definition; b. the quality evidence is correct and representative of that weapon and weapon-related product; c. when automated manufacturing processes are used as the method of acceptance, they are designed, validated, qualified, controlled, and monitored sufficiently to protect weapon and weapon-related product quality such that the completion of the automated operation may be accepted as objective evidence of conformance to requirements; d. when fixtures, molds, and other such tooling are used as the method of acceptance, they are certified prior to release for use and controlled and recertified according to established criteria; e. when material requires modification, repair, or replacement after weapon and weapon-related product acceptance, there is a witnessing or verification of the modification, repair, or replacement	

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
	(b) As an alternative to para. 300(a) of this Requirement, appropriate sections of related documents, such as ASTM methods, Supplier manuals, equipment maintenance instructions, or approved drawings or travelers with acceptance criteria, may be used. Such documents shall include or be supplemented with appropriate criteria from para. 300(a) to assure adequate procedures for the test are used.	and reverification of affected characteristics prior to reacceptance; and f. sampling plans prescribe random sampling and afford a sound statistical basis to ensure quality.	
800 Documentation Documentation of the commercial grade item or service dedication process shall be traceable to the item, group of items, or services and shall contain the following types of documents, depending on the applicable dedication method: (a) dedication plans or procedures including the essential elements of the dedication process (b) commercial grade item or service procurement documents (c) technical evaluations (d) critical characteristic identification and acceptance Criteria (e) test reports or results, inspection reports, analysis reports (f) commercial grade survey reports (g) source verification reports (h) historical performance information (i) dedication report containing sufficient data to accept the item or service	**Requirement 3 Design Control, Section 900 Documentation and Records** Design documentation and records shall include not only final design documents, such as drawings and specifications, and revisions to those documents, but also documentation that identifies the important steps in the design process, including sources of design inputs that support the final design. **Requirement 7 Control of Purchased Items and Services, Section 800 Records** Records shall be established and maintained to indicate the performance of the following functions: (a) supplier evaluation and selection (b) acceptance of items or services (c) supplier nonconformances to procurement document requirements, including their evaluation and disposition **Requirement 11, Test Control, Section 600 Test Records** Test records shall be established and maintained to indicate the ability of the item or computer program to satisfactorily perform its intended function or to meet its documented requirements. Test records vary depending on the test type, purpose, and application, but shall contain the following information, as a minimum, for the specified	**3.3.9 Design Records** Complete and accurate records of weapon design activities shall be maintained in accordance with NAP-24A, Attachment 2, Section 3.14. **3.6.2 Procurement Documentation** Procurement documents shall specify that the Supplier have an effective QMS that complies with the applicable requirements of this document. Procurement documents shall be controlled and identify a. documentation required; b. requirements for approval and/or qualification of weapon and weapon related product, processes and equipment, to include supplier requirements to notify Purchaser of subsequent changes and when to obtain re-approval; c. requirements for control of weapon and weapon-related product and equipment; d. requirements for configuration control of customer requirements and implementing procedures; e. requirements to notify of nonconforming weapon and weapon-related products or processes; f. requirements for disposition of nonconforming weapon and weapon related products; g. flow-down requirements to Supplier's supply chain; h. records to be submitted and/or maintained; i. record retention and disposition requirements; and	Documentation is required for design, procurement, testing, and inspections.

NQA-1 Part 2 Subpart 2.14 (2008/9a)	NQA-1 Part 1	NAP-401.1	Notes
	application identified in paras. 601 and 602. **601 Test Records** (a) item tested (b) date of test (c) tester or data recorder (d) type of observation (e) results and acceptability (f) action taken in connection with any deviations (g) person evaluating test results	j. requirements for purchaser's prior approval of substitutions. **3.7.2 Control of Items** b. Items shall be traceable to the applicable specification and grade of the material; heat, batch, lot, part, or serial number; or specified inspection, test, or other records. **3.9.1 Inspection and Test** g. Records shall be maintained to establish traceability between product and measuring and test equipment used for its test or inspection.	