Enclosure 3

PVNGS Operations Quality Assurance Program Description

(QAPD)

Revision 3

PVNGS Operations Quality Assurance Program Description (QAPD)

REVISION 3

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PVNGS Operations Quality Assurance Program Description (QAPD)

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DESCRIPTION OF CHANGES **PAGES**

Revision 3

Incorporated the following Interim Changes:

Interim Change 2a

1.	Section 2.1.4 – Incorporated Vice President, Regulatory and Oversight and realigned responsibilities with EVP/CNO, Section 2.1.2	7,8
2.	Section 2.1.5 – (and throughout document) – Changed Director, Nuclear Assurance to Director, Nuclear Oversight	8,14,15,38
3.	Section 2.1.5.1 – Changed Director, Nuclear Oversight to report to Vice President, Regulatory and Oversight	8
4.	Section 2.1.8/2.1.9 – Separated Nuclear Engineering and Regulatory Affairs and re-aligned responsibilities.	9,10
5.	Section 2.2.5 – Added “or the Vice President, Regulatory and Oversight” to the QAPD approval authority.	14
6.	Section 2 – Updated section numbering	7-12
7.	Figure 1 – Revised organizational chart to reflect current organizational structure	62

Interim Change 2b

1.	Section 2.7.2 – Revised the conditions required to be met when purchasing commercial grade calibration or testing services from a laboratory holding accreditation by an accrediting body recognized by the ILAC MRA.	24,25

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Arizona Public Service

POLICY STATEMENT

Arizona Public Service (APS) will operate Palo Verde Nuclear Generating Station (PVNGS) in a manner that will ensure the health and safety of the public and workers. These activities shall be performed in compliance with the requirements of the Code of Federal Regulations (CFR), the applicable Nuclear Regulatory Commission (NRC) Facility Operating License and applicable laws and regulations of the state and local governments.

The PVNGS Quality Assurance Program (QAP) is the Quality Assurance Program Description (QAPD) provided in this document and the associated implementing documents. Together they provide for control of PVNGS activities that affect the quality of safety-related nuclear plant structures, systems, and components (SSCs) and include all planned and systematic activities necessary to provide adequate confidence that such SSCs will perform satisfactorily in service. The QAPD may also be applied to certain equipment and activities that are not safety-related, but support safe plant operations, or where other NRC guidance establishes program requirements.

The QAPD is the top-level policy document that establishes the manner in which quality is to be achieved and presents PVNGS's overall philosophy regarding achievement and assurance of quality. Implementing documents assign more detailed responsibilities and requirements and define the organizational interfaces involved in conducting activities within the scope of the QAP. Senior management establishes overall expectations for effective implementation of the quality assurance program and is responsible for obtaining the desired end result. Compliance with the QAPD and implementing documents is mandatory for personnel directly or indirectly associated with implementation of the PVNGS QAP.

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Adam Heflin
Executive Vice President and Chief Nuclear Officer
Palo Verde Nuclear Generating Station

1.0 GENERAL

The PVNGS QAPD is the top-level policy document that establishes the quality assurance policy and assigns major functional responsibilities for operational phase activities conducted by or for PVNGS. The QAPD describes the methods and establishes quality assurance (QA) and administrative control requirements that meet 10 CFR 50, Appendix B, 10 CFR 71, Subpart H, and 10 CFR 72, Subpart G. The QAPD is based on the requirements and guidance of ASME NQA-1-2008 and NQA-1a-2009 Addenda, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, with specific reference to selected Part III sections, as identified in this document. The QA Program (QAP) is defined by the NRC-approved regulatory document that describes the QA elements (i.e., the QAPD), along with the associated implementing documents. Procedures and instructions that control operational phase activities will be developed prior to commencement of those activities. Policies establish high-level responsibilities and authority for carrying out important administrative functions which are outside the scope of the QAPD. Procedures establish practices for certain activities which are common to all PVNGS organizations performing those activities so that the activity is controlled and carried out in a manner that meets QAPD requirements. Procedures specific to a site, organization, or group establish detailed implementation requirements and methods, and may be used to implement policies or be unique to particular functions or work activities.

1.1 SCOPE/APPLICABILITY

The QAPD applies to operational phase activities affecting the quality and performance of safety-related structures, systems, and components, including, but not limited to:

Designing	Storing	Operating
Decommissioning	Receiving	Maintaining
Procuring	Erecting	Repairing
Fabricating	Installing	Modifying
Cleaning	Inspecting	Refueling
Handling	Testing	Training
Shipping		

Safety-related SSCs, under the control of the QAPD, are identified by design documents. The technical aspects of these items are considered when determining program applicability, including, as appropriate, the item's design safety function. The QAPD may be applied to certain activities where regulations other than 10 CFR 50, Appendix B, 10 CFR 71, Subpart H, and 10 CFR 72, Subpart G, establish QA requirements for activities within their scope.

The policy of PVNGS is to assure a high degree of availability and reliability of the nuclear generating station while ensuring the health and safety of its workers and the public. To this end, selected elements of the QAPD are also applied to certain equipment and activities that are not safety-related, but support safe, economic, and reliable plant operations, or where other NRC guidance establishes quality assurance requirements. This includes nonsafety-related SSCs related to aging management. Implementing documents establish program element applicability.

The definitions provided in ASME NQA-1-2008 and NQA-1a-2009 Addenda, Part I, Section 400, apply to select terms as used in this document.

2.0 QAPD DETAILS

2.1 ORGANIZATION

This section describes the PVNGS organizational structure, functional responsibilities, levels of authority and interfaces for establishing, executing, and verifying QAPD implementation. The organizational structure includes corporate support and onsite functions for PVNGS operations, including interface responsibilities for the organizations that perform quality-related functions. The overall PVNGS operating and support organizations, including reporting relationships, are illustrated in the organizational charts in Figures 1 and 2 of this QAPD. Specific line responsibilities and authorities for operation of the PVNGS nuclear power plants are described in PVNGS UFSAR Section 13.1.2 and the Unit Technical Specifications.

Implementing documents assign more specific responsibilities and duties, and define the organizational interfaces involved in conducting activities and duties within the scope of the QAPD. Management gives careful consideration to the timing, extent, and effects of organizational structure changes.

2.1.1 Chief Executive Officer (CEO)

Arizona Public Service Company (APS), one of the owners of the Palo Verde Nuclear Generating Station (PVNGS), has the overall responsibility for management, operation and oversight of the PVNGS site nuclear facilities. The APS CEO is responsible for all aspects of operation of the PVNGS plants and site. The APS CEO is also responsible for all technical and administrative support activities provided by APS and contractors. The APS CEO directs the Executive Vice President and Chief Nuclear Officer (CNO) in fulfillment of his/her responsibilities. The APS CEO reports to the APS Board of Directors with respect to all matters affecting the PVNGS.

2.1.2 Executive Vice President and Chief Nuclear Officer (CNO)

The Executive Vice President and Chief Nuclear Officer (CNO) is responsible for the safe, reliable, and efficient operation of the PVNGS nuclear facilities. The CNO provides direction to the PVNGS Senior Vice President, Site Operations, the Vice President, Regulatory and Oversight, and the Vice President, Site Services.

Additionally, the Executive Vice President and Chief Nuclear Officer (CNO) is responsible for:

- administration of nuclear safety culture programs, including the program to investigate, resolve, and document nuclear safety concerns

2.1.3 Senior Vice President, Site Operations

The Senior Vice President, Site Operations is responsible for:

- overall PVNGS site and plant management, including nuclear power plant and spent fuel storage facility operations, technical and engineering support for operations, maintenance and modifications, work management, water reclamation facility operations, industrial health and safety programs, and nuclear training activities
- establishing and administering policies, providing procedures, and maintaining standards of performance that ensure safe operation of PVNGS
- ensuring site operations and technical support activities are in compliance with requirements of the operating license, applicable regulations, and regulatory commitments

2.1.3.1 Site General Plant Manager/Vice President, Site Operations

The Site General Plant Manager/Vice President, Site Operations reports to the Senior Vice President, Site Operations and has direct line responsibility for operation and maintenance of the PVNGS nuclear plants.

This position fulfills the role of the Plant Manager as described in the PVNGS Unit Technical Specifications.

2.1.4 Vice President, Regulatory and Oversight

The Vice President, Regulatory and Oversight, is responsible for:

- licensing and regulatory compliance functions
- non-radiological environmental programs
- development, maintenance, and administration of programs for independent review and audit of operational activities affecting quality and/or nuclear safety
- administration of programs for review and use of internal and external operating experience
- development, maintenance, and administration of the programs for corrective action and trending of conditions adverse to quality as described in the PVNGS quality assurance program for operations
- appropriately delegating department responsibilities to the management positions within the regulatory and oversight organization, such that the authority and independence of the Director, Nuclear Oversight, are maintained

2.1.5 Quality Assurance

The PVNGS Nuclear Assurance organization, under the direction of the Director, Nuclear Oversight, is responsible for:

- establishing quality assurance program requirements via the PVNGS QAPD
- independently planning and performing activities to verify effective implementation of the PVNGS Quality Assurance Program

2.1.5.1 Quality Assurance Management

The Director, Nuclear Oversight reports to the Vice President, Regulatory and Oversight. The Director, Nuclear Oversight is responsible for assuring compliance with regulatory requirements and procedures through audits and technical reviews; monitoring organizational processes to ensure conformance to commitments and licensing document requirements; and ensuring that vendors providing quality services, parts, and materials to PVNGS are meeting the requirements of 10 CFR 50, Appendix B or other pertinent regulatory requirements through joint nuclear industry or PVNGS vendor audits.

The Director, Nuclear Oversight has sufficient independence from other operational priorities to bring forward issues affecting safety and quality and makes judgments regarding quality in all areas regarding PVNGS operational activities as appropriate. The Director, Nuclear Oversight may make recommendations to the PVNGS management regarding improving the quality of work processes. The Director, Nuclear Oversight has the responsibility and authority to escalate safety or quality issues to the level of site or APS corporate management deemed appropriate to obtain satisfactory resolution. The Nuclear Assurance staff, which is outside of the line of responsibility for power production and independent of day-to-day plant operating responsibilities, includes personnel with engineering and operational expertise. The Nuclear Assurance staff performs independent review and assessment of plant activities, including plant maintenance, modifications, and operations. The Nuclear Assurance staff is

expected to develop and present recommendations to plant management for such things as revised procedures or equipment modifications where useful improvements in plant safety or human performance can be achieved.

2.1.5.2 Authority to Stop Work

Quality Assurance and Quality Control Inspection personnel have the authority, and the responsibility, to stop work in progress which is not being done in accordance with approved procedures or where safety or SSC integrity may be jeopardized. This authority extends to off-site work performed by suppliers that furnish safety-related materials or services to PVNGS.

2.1.5.3 Quality Assurance Organizational Independence

For the operational phase, independence shall be maintained between the organization(s) performing the checking (quality assurance and quality control) functions and the organizations performing the functions to the extent described in the specific sections of this QAPD.

2.1.6 Organizational Effectiveness

A management position is responsible for development, maintenance and administration of the operating experience program and the programs for corrective action and trending of conditions adverse to quality as described in the QAPD.

2.1.7 Site Procedure Standards

A management position is responsible for:

- development and maintenance of standards for PVNGS policies, programs and procedures
- assuring that the preparation, review, and approval of PVNGS policies, programs, and procedures are carried out as specified by the PVNGS quality assurance program and administrative requirements
- assisting the nuclear operations organizations in preparing, reviewing, approving, and maintaining their procedures

2.1.8 Nuclear Regulatory Affairs and Environmental

A management position is responsible for:

- development, maintenance, and administration of environmental licensing and compliance programs
- development, maintenance, and administration of the nuclear licensing and compliance programs
- monitoring nuclear safety, engineering, operating, and environmental activities to assure activities are carried out within plant licensing and design bases and activities comply with applicable regulations
- interfacing with state and federal regulatory agencies on nuclear and environmental licensing and compliance matters, including submitting routine and non-routine regulatory reports
- development, maintenance, and administration of programs governing the development and maintenance of PVNGS licensing basis documents

2.1.9 Nuclear Engineering

A management position is responsible for the overall direction, administration, and supervision of the PVNGS engineering organizations.

2.1.9.1 Nuclear Fuel Management

A management position is responsible for:

- nuclear fuel design, contracting and utilization expertise
- nuclear fuel core, and plant transient and accident analysis
- operational reactor engineering support
- alternative core operating strategies
- spent fuel storage

2.1.9.2 Design, Projects, and Plant Engineering

One (or more) management position(s) is (are) responsible for:

- development, maintenance, and administration of the facility design basis, including determining and documenting the quality classifications of the PVNGS facility structures, systems, components, and replacement parts
- development, maintenance, and administration of engineering programs including inspections, testing, equipment qualification, configuration maintenance, nondestructive examinations, performance monitoring, erosion/corrosion monitoring, equipment root cause of failure analysis, and probabilistic risk analysis
- development and administration of engineering projects, including equipment design modifications and fabrication
- providing technical analysis in support of plant operations and maintenance
- implementation and monitoring of programs related to plant aging management
- controlling software and data for plant digital process control and monitoring systems

2.1.10 Maintenance

A management position is responsible for:

- managing and directing maintenance, modifications, and related support activities
- ensuring that the PVNGS units are maintained and modified in strict compliance with regulatory requirements and consistent with requirements for public health and safety
- managing and providing programs and procedures for control of plant maintenance
- managing technical resources supporting maintenance and modification activities

2.1.11 Nuclear Projects

A management position is responsible for:

- managing quality of assigned maintenance and modification activities
- planning, scheduling, and implementing assigned maintenance and modification activities, including the management of resources and funding for assigned maintenance and modification activities

2.1.12 Work Management

A management position is responsible for:

- developing long-term refueling cycle and outage plans
- preparing plans for accomplishing refueling, maintenance, and modifications during planned outages, with the concurrence of other departments
- directing and controlling outage work activities
- acting as a central source for transferring "lessons learned" from previous outages and for developing a standardized approach toward planning and conducting outages
- providing support to the units as necessary for unplanned outages
- scheduling of day-to-day unit activities

2.1.13 Radiation Protection Manager

The Radiation Protection Manager is responsible for:

- the overall implementation and performance of the radiation protection program at PVNGS, to include radioactive waste processing and shipping, radioactive effluent activities, radiological environmental monitoring, and radioactive material control
- taking timely actions to correct substandard performance within the radiation protection program

This position satisfies the requirements of the Director, Site Radiation Protection, as described in the PVNGS Unit Technical Specifications.

2.1.14 Chemistry

A management position is responsible for:

- overall direction of plant chemistry activities for PVNGS
- systems chemistry control, chemical and radiochemical sampling and analysis

2.1.15 Assistant Plant Manager(s)

Assistant Plant Manager(s) are responsible for:

- coordinating outages and equipment reliability improvement activities
- working in concert with other site organizations to ensure overall safe and efficient implementation of work activities
- assisting the site general plant manager in developing and/or reviewing strategic plans and actions to improve overall work performance and enhance the safe and reliable operation of plant equipment

2.1.16 Site Services

A management position is responsible for:

- development, maintenance, and administration of programs for security operations, security training, access authorization, and fitness for duty
- development, maintenance, and administration of programs for fire protection for the nuclear power plants, including critical support structures, systems and components, and the independent spent fuel storage facility
- development, maintenance, and administration of programs for procurement of materials and services, material control, including implementation of QC receiving inspection functions
- development, maintenance, and administration of the PVNGS document and record control programs
- information technology support for PVNGS, including administration and maintenance of non-process computer networks, databases, and software, and program management for the PVNGS non-process software quality assurance program
- providing the overall infrastructure and administrative controls for managing PVNGS site programs, processes and procedures; maintain the business processes and infrastructure to support this function

2.1.17 Water Reclamation Facility

A management position is responsible for:

- the maintenance and operation of the WRF and the incoming pipeline
- supply of site water and chemicals
- management of underground piping projects
- maintenance and testing activities as delegated by the operating organization

2.1.18 Nuclear Training

The Director, Nuclear Training has overall responsibility for:

- the conduct and administration of training programs for the staff of PVNGS
- the development, maintenance, and administration of the coordinated PVNGS, federal, state, and local government emergency response program for PVNGS

2.1.19 Industrial Health and Safety

A management position is responsible for development, maintenance, and administration of programs promoting personnel health and safety.

2.1.20 NQA-1 Commitment

In establishing its organizational structure, PVNGS commits to compliance with NQA-1-2008, Requirement 1.

2.2 QUALITY ASSURANCE PROGRAM

PVNGS has established the necessary measures and governing procedures to implement the QAP as described in the QAPD. PVNGS is committed to implementing the QAP in all aspects of work that are important to the safety of the nuclear facility, as described and to the extent delineated in the QAPD. The QAP shall include monitoring activities against acceptance criteria in a manner sufficient to provide assurance that the activities important to safety are performed satisfactorily. Further, PVNGS ensures through the systematic process described herein, that its suppliers of safety-related equipment or services meet the applicable requirements of 10 CFR Part 50, Appendix B, 10 CFR 71, Subpart H, 10 CFR 72, Subpart G, and 10 CFR Part 21. Senior management is regularly apprised of the adequacy of implementation of the QAP through the audit functions described in Section 2.18.

The objective of the QAP is to assure that PVNGS, including the Independent Spent Fuel Storage Installation (ISFSI) located at the facility, is designed, maintained, and operated in accordance with governing regulations and license requirements. The program is based on the requirements of ASME NQA-1-2008 and NQA-1a-2009 Addenda, "Quality Assurance Requirements for Nuclear Facility Applications," as further described in this document. The QAP applies to those quality-related activities that involve the functions of safety-related structures, systems, and components (SSCs) associated with the design, fabrication, maintenance, testing, and safe operation of the nuclear facility and to the managerial and administrative controls to be used to assure safe operations. A list or system that identifies SSCs and activities to which this program applies is maintained at PVNGS. UFSAR 3.2 is used as the basis for this list. Cost and scheduling challenges must be addressed; however, they do not prevent proper implementation of the QAP.

As described in Sections 3.1 and 3.2 of the QAPD, specific program controls are applied to nonsafety-related SSCs that are significant contributors to plant safety, for which 10 CFR 50, Appendix B, is not applicable. The specific program controls, consistent with applicable sections of the QAPD, are applied to those items in a select manner, targeted at those characteristics or critical attributes that qualify the SSC as a significant contributor to plant safety.

Delegated responsibilities may be performed under a supplier's QAP, provided that the supplier has been approved as a supplier in accordance with the PVNGS QAP. Periodic audits and assessments of supplier QA programs are performed to assure compliance with the supplier's QAPD and implementing procedures. In addition, routine interfaces with the supplier’s personnel provide added assurance that quality expectations are met.

In general, the program requirements specified herein are detailed in implementing procedures that are either PVNGS implementing procedures, or supplier implementing procedures governed by a supplier quality assurance program.

Audits shall be performed at the intervals designated herein for each audit area. Schedules shall be based on the month in which the audit starts. Internal audits of operational activities are described in QAPD Section 2.18.2, and audits of suppliers of safety-related components and/or services are conducted as described in QAPD Section 2.7.1.

A maximum extension not to exceed 25 percent may be applied to provisions that are required to be performed on a periodic basis, unless otherwise noted. For audits on a 24 month frequency, the maximum time between specific audits shall not exceed 30 months. Likewise, audits and evaluations on an annual (12 month) frequency shall not be extended beyond 15 months.

When an audit interval extension greater than one month is used, the next audit for that particular audit area will be scheduled from the original anniversary month rather than from the month of the extended audit.

The maximum extension not to exceed 25 percent of the audit interval shall also apply to supplier audits and evaluations except that a total combined time interval for any three consecutive inspection or audit intervals should not exceed 3.25 times the specified inspection or audit interval.

2.2.1 Responsibilities

Personnel who work directly or indirectly for PVNGS are responsible for achieving acceptable quality in the work covered by the QAPD. This includes the activities delineated in Section 1.1. PVNGS personnel performing verification activities are responsible for verifying the achievement of acceptable quality. Activities governed by the QAPD are performed as directed by documented instructions, procedures, and drawings that are of a detail appropriate for the activity's complexity and effect on safety. Instructions, procedures and drawings specify quantitative or qualitative acceptance criteria as applicable or appropriate for the activity, and verification is against these criteria. Provisions are established to designate or identify the proper documents to be used in an activity, and to ascertain that such documents are being used. The Director, Nuclear Oversight is responsible to verify that processes and procedures comply with QAPD and other applicable requirements, that such processes or procedures are implemented, and that management appropriately ensures compliance.

2.2.2 Delegation of Work

PVNGS retains and exercises the responsibility for the scope and implementation of an effective QAP. Positions identified in UFSAR 13.1 and QAPD Section 2.1 may delegate all or part of the activities of planning, establishing, and implementing the program for which they are responsible to others, but retain the responsibility for the program's effectiveness. Decisions affecting safety are made at the level appropriate based upon their nature and effect, with technical advice or review as appropriate.

2.2.3 Deleted

2.2.4 Periodic Review of the Quality Assurance Program

Management of those organizations other than APS implementing the PVNGS QA program, or portions thereof, shall assess the adequacy of that part of the program for which they are responsible to assure its effective implementation at least once every two years or at least once during the life of the activity, whichever is shorter.

2.2.5 Issuance and Revision to Quality Assurance Program

Administrative control of the QAPD will be in accordance with 10 CFR 50.54(a). Changes to the QAPD are evaluated by the Director, Nuclear Oversight to ensure that such changes do not degrade safety for previously approved quality assurance controls specified in the QAPD. New revisions to the document will be reviewed, at a minimum, by the PVNGS Director, Nuclear Oversight and approved by the PVNGS Executive Vice President and Chief Nuclear Officer (CNO) or the Vice President, Regulatory and Oversight.

Regulations require that the Final Safety Analysis Report (FSAR) include, among other things, the managerial and administrative controls to be used to assure safe operation, including a discussion of how the applicable requirements of 10 CFR 50, Appendix B will be satisfied. In order to comply with this

requirement, the PVNGS UFSAR references the QAPD and, as a result, the requirements of 10 CFR 50.54(a) are satisfied by and apply to the QAPD.

2.2.6 Personnel Training and Qualifications

Personnel assigned to implement elements of the QAPD shall be capable of performing their assigned tasks. To this end, PVNGS establishes and maintains formal indoctrination, training, and qualification as necessary for personnel performing, verifying, or managing activities within the scope of the QAPD to achieve initial proficiency, maintain proficiency, and adapt to technology changes, method, or job responsibilities. The indoctrination, training, and qualification programs are commensurate with scope, complexity, and importance of the activities; and include or address the following, as appropriate:

- Education, experience, and proficiency of the personnel receiving training
- General criteria, technical objectives, requirements of applicable codes and standards, regulatory commitments, company procedures, and quality assurance program requirements
- On-the-job training, if direct hands-on applications or experience is needed to achieve and maintain proficiency

Plant and support staff minimum qualification requirements are as delineated in the unit Technical Specifications. Other qualification requirements may be established but will not reduce those required by Technical Specifications.

Sufficient managerial depth is provided to cover absences of incumbents. When required by code, regulation, or standard, specific qualification and selection of personnel is conducted in accordance with those requirements as established in the applicable PVNGS procedures. Indoctrination includes the administrative and technical objectives, requirements of the applicable codes and standards, and the QAPD elements to be employed. Training for positions identified in 10 CFR 50.120 is accomplished according to programs accredited by the National Nuclear Accrediting Board of the National Academy of Nuclear Training that implement a systematic approach to training. Records of personnel training and qualification are maintained.

The minimum qualifications of the Director, Nuclear Oversight are that he or she holds an engineering or related science degree and a minimum of four years of related experience including two years of nuclear power plant experience, one year of supervisory or management experience, and one year of the experience is in performing quality verification activities. Special requirements shall include management and supervisory skills and experience or training in leadership, interpersonal communication, management responsibilities, motivation of personnel, problem analysis and decision making, and administrative policies and procedures. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

The minimum qualifications for the individuals responsible for supervising QA or QC personnel is that each has a high school diploma or equivalent and has a minimum of one year of experience performing quality verification activities. Individuals who do not possess these formal education and experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

The minimum qualifications of individuals that are part of the Nuclear Assurance organization responsible for planning, implementing, and maintaining the programs for the QAPD are that each has a high school diploma or equivalent and has a minimum of one year of related experience. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

2.2.7 NQA-1 Commitment/Exceptions

In establishing qualification and training programs, PVNGS commits to compliance with NQA-1-2008, Requirement 2 with the following clarifications and exceptions:

- Section 302, Inspection and Test

  (1) In lieu of Nonmandatory Appendix 2A-1, PVNGS may not establish levels of qualification/certification for inspection personnel. Instead, PVNGS may establish initial qualification requirements and determine individual qualification through evaluation of education, training and experience, and through demonstration of capability in performing the type of inspections expected on the job.

  (2) Inspections, examinations or tests may be performed by individuals in the same organization as that which performed the work, provided that (a) the qualifications of the inspector for an activity are equal to or better than the minimum qualifications for persons performing the activity, (b) the work is within the skills of personnel and/or is addressed by procedures, and (c) if work involves breaching a pressure-retaining item, the quality of the work can be demonstrated through a functional test. When a, b and c are not met, inspections, examinations, or tests are carried out by individuals certified in accordance with Section 300. Individuals performing visual inspections or nondestructive examinations required by the ASME Boiler and Pressure Vessel Code are qualified and certified according to Code requirements.

- PVNGS follows Section 301 for qualification of nondestructive examination personnel, except that PVNGS will follow the applicable standard cited in the version(s) of Section III and Section XI of the ASME Boiler and Pressure Vessel Code approved by the NRC for use at PVNGS for the scope of activities governed by these cited standards.

- As an alternative to Section 303.3 that prospective Lead Auditors have participated in a minimum of five (5) audits in the previous three (3) years, the following may be used for qualification of experienced individuals:

  Prospective lead auditors shall demonstrate their ability to effectively implement the audit process and lead an audit team. They shall have participated in at least one Nuclear Assurance audit within the year preceding the individual's effective date of qualification. Upon successful demonstration of the ability to effectively lead audits, licensee management may designate a prospective lead auditor as a "lead auditor."

- Section 400(a)(8) requires the date of certification expiration be included on the qualification record. PVNGS considers the certification expiration date to be the date from the certification or recertification date plus the certification interval time, and its inclusion on the qualification record is optional.

2.3 DESIGN CONTROL

PVNGS has established and implements a process to control the design, design changes, and temporary modifications (e.g., temporary bypass lines, electrical jumpers and lifted wires, and temporary setpoints) of items that are subject to the provisions of the QAPD. The design process includes provisions to control design inputs, outputs, changes, interfaces, records, and organizational interfaces within PVNGS and with suppliers. These provisions assure that design inputs (such as design bases and the performance, regulatory, quality, and quality verification requirements) are correctly translated into design outputs (such as analyses, specifications, drawings, procedures, and instructions) so that the final design output contains or references appropriate acceptance criteria that can be related to the design input in sufficient detail to permit verification by inspection and test, as required. Design change processes and the division of responsibilities for design related activities are detailed in PVNGS and supplier procedures. Changes to design inputs, final designs, field changes, and temporary and permanent modifications to the facility are justified and subject to design control measures commensurate with those applied to the original design. The design control program includes interface controls necessary to control the development, verification, approval, release, status, distribution, and revision of design inputs and outputs. Design changes and disposition of nonconforming items as "use as is" or "repair" are reviewed and approved by the PVNGS design organization or by other organizations so authorized by PVNGS.

Design documents are reviewed by individuals knowledgeable in QA to ensure the documents contain the necessary QA requirements.

2.3.1 Design Verification

PVNGS design processes provide for design verification to ensure that items, computer programs, and activities subject to the provisions of the QAPD are suitable for their intended application, consistent with their effect on safety. Design changes are subjected to design controls, which include verification measures commensurate with those applied to original plant design.

Design verifications are performed by competent individuals or groups other than those who performed the design but who may be from the same organization. The verifier shall not have taken part in the selection of design inputs, the selection of design considerations, or the selection of a singular design approach, as applicable. This verification may be performed by the originator's supervisor provided the supervisor did not specify a singular design approach, rule out certain design considerations, and did not establish the design inputs used in the design, or if the supervisor is the only individual in the organization competent to perform the verification. If the verification is performed by the originator's supervisor, the justification of the need is documented and approved in advance by management.

The extent of the design verification required is a function of the importance to safety of the item or computer program under consideration, the complexity of the design, the degree of standardization, the state-of-the-art, and the similarity with previously proven designs. This includes design inputs, design outputs, and design changes. Design verification procedures are established and implemented to assure that an appropriate verification method is used, the appropriate design parameters to be verified are chosen, the acceptance criteria are identified, and the verification is satisfactorily accomplished and documented. Verification methods may include, but are not limited to, design reviews, alternative calculations, and qualification testing. Testing used to verify the acceptability of a specific design feature demonstrates acceptable performance under conditions that simulate the most adverse design conditions expected for the item's intended use.

PVNGS normally completes design verification activities before the design outputs are used by other organizations for design work, and before they are used to support other activities such as procurement, manufacture, or construction. When such timing cannot be achieved, the design verification is completed before relying on the item to perform its intended design or safety function.

2.3.2 Design Records

PVNGS maintains records sufficient to provide evidence that the design was properly accomplished. These records include the final design output and any revisions thereto, as well as record of the important design steps (e.g., calculations, analyses and computer programs) and the sources of input that support the final output. Plant configuration documents reflect the properly reviewed and approved design of the plant.

2.3.3 Computer Application and Digital Equipment Software

The QAPD governs the development, procurement, testing, maintenance, control, and use of computer applications and digital equipment software when used in safety-related applications and designated nonsafety-related applications. Computer program acceptability is pre-verified or the results verified with the design analysis for each application. Pre-verified computer programs are controlled using a software configuration management process. PVNGS and suppliers are responsible for developing, approving, and issuing procedures, as necessary, to control the use of such computer application and digital equipment software. The procedures require that the application software be assigned a proper quality classification and that the associated quality requirements be consistent with this classification. Each application software and revision thereto is documented and approved by authorized personnel. The QAPD is also applicable to the administrative functions associated with the maintenance and security of computer hardware where such functions are considered essential in order to comply with other QAPD requirements such as QA records.

2.3.4 Setpoint Control

Instrument and equipment setpoints that could affect nuclear safety shall be controlled in accordance with written instructions. As a minimum, these written instructions shall:

- Identify responsibilities and processes for reviewing, approving, and revising setpoints and setpoint changes supplied by a supplier, Design Certification holder, or the plant's technical staff.
- Ensure that setpoints and setpoint changes are consistent with design and accident analysis requirements and assumptions.
- Provide for documentation of setpoints, including those determined operationally.
- Provide for access to necessary setpoint information for personnel who write or revise plant procedures, operate or maintain plant equipment, develop or revise design documents, or develop or revise accident analyses.

2.3.5 NQA-1 Commitment

In establishing its program for design control and verification, PVNGS commits to compliance with NQA-1-2008 and NQA-1a-2009 Addenda, Requirement 3, Subpart 2.7 for computer software, and Subpart 2.14 for Quality Assurance requirements for commercial grade items and services.

2.4 PROCUREMENT DOCUMENT CONTROL

PVNGS has established the necessary measures and governing procedures to assure that purchased items, computer programs, and services are subject to appropriate quality and technical requirements. Procurement document changes shall be subject to the same degree of control as utilized in the preparation of the original documents. These controls include provisions such that:

- Where original technical or quality assurance requirements cannot be determined, an engineering evaluation is conducted and documented by qualified staff to establish appropriate requirements and controls to assure that interfaces, interchangeability, safety, fit, and function, as applicable, are not adversely affected or contrary to applicable regulatory requirements.

- Applicable technical, regulatory, administrative, quality, and reporting requirements (such as specifications, codes, standards, tests, inspections, special processes, and 10 CFR 21) are invoked for procurement of items and services. 10 CFR 21 requirements for posting, evaluating, and reporting will be followed and imposed on suppliers when applicable. Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services. To the extent necessary, procurement documents shall require suppliers to have a documented QA program that is determined to meet the applicable requirements of 10 CFR 50 Appendix B, 10 CFR 71 Subpart H, or 10 CFR 72 Subpart G, as appropriate to the circumstances of procurements (or the supplier may work under PVNGS's approved QA program). Reviews of procurement documents shall be performed by personnel who have access to pertinent information and who have an adequate understanding of the requirements and intent of the procurement documents.

2.4.1 NQA-1 Commitment/Exceptions

In establishing controls for procurement, PVNGS commits to compliance with NQA-1-2008, Requirement 4, with the following clarifications and exceptions:

- With regard to service performed by a supplier, PVNGS procurement documents may allow the supplier to work under the PVNGS QAP, including implementing procedures, in lieu of the supplier having its own QAP.
- Section 300 and 400 of Requirement 4 require the review of technical and Quality Assurance Program requirements of procurement documents prior to award of a contract and for procurement document changes. PVNGS may satisfy this requirement through the review of the procurement specification, when the specification contains the technical and quality assurance requirements of the procurement.
- Procurement documents for Commercial Grade Items that will be procured by PVNGS for use as safety-related items shall contain technical and quality requirements such that the procured item can be appropriately dedicated in accordance with Section 2.7, "Control of Purchased Material, Equipment and Services."

2.5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

PVNGS has established the necessary measures and governing procedures to ensure that activities affecting quality are prescribed by and performed in accordance with instructions, procedures, or drawings of a type appropriate to the circumstances and which, where applicable, include quantitative or qualitative acceptance criteria to implement the QAP as described in the QAPD. Such documents are prepared and controlled according to Section 2.6. In addition, means are provided to disseminate to the staff instructions of both general and continuing applicability, as well as those of short-term applicability. Provisions are included for reviewing, updating, and canceling such procedures.

2.5.1 Procedure Adherence

PVNGS policy is that procedures are followed, and the requirements for use of procedures have been established in administrative procedures. Where procedures cannot be followed as written, provisions are established for making changes in accordance with Section 2.6. Requirements are established to identify the manner in which procedures are to be implemented, including identification of those tasks that require: (1) the written procedure to be present and followed step-by-step while the task is being performed, (2) the user to have committed the procedure steps to memory, (3) verification of completion of significant steps, by initials or signatures or use of check-off lists. Procedures that are required to be present and referred to directly are those developed for extensive or complex jobs where reliance on memory cannot be trusted, tasks that are infrequently performed, and tasks where steps must be performed in a specified sequence.

In cases of emergency, personnel are authorized to depart from approved procedures when necessary to prevent injury to personnel or damage to the plant. Such departures are recorded describing the prevailing conditions and reasons for the action taken.

2.5.2 Procedure Content

The established measures address the applicable content of procedures as described in the Introduction to Part II of NQA-1-2008. In addition, procedures governing tests, inspections, operational activities and maintenance will include as applicable, initial conditions and prerequisites for the performance of the activity.

2.5.3 NQA-1 Commitment

In establishing procedural controls, PVNGS commits to compliance with NQA-1-2008, Requirement 5.

2.6 DOCUMENT CONTROL

PVNGS has established the necessary measures and governing procedures to control the preparation of, issuance of, and changes to documents that specify quality requirements or prescribe how activities affecting quality, including organizational interfaces, are controlled to ensure that correct documents are employed. The following controls, including electronic systems used to make documents available, are applied to documents and changes thereto:

- Identification of controlled documents
- Specified distribution of controlled documents for use at the appropriate location
- A method to identify the correct document (including revision) to be used and control of superseded documents
- Identification of authorized personnel responsible for controlled document preparation, review, approval, and distribution
- Review of controlled documents for adequacy, completeness, and approval prior to distribution
- A method to ensure the correct documents are being used
- A method to provide feedback from users to improve procedures and work instructions
- Coordinating and controlling interface documents and procedures

The types of documents to be controlled include:

- Drawings such as design, installation, and as-built drawings
- Engineering calculations
- Design specifications
- Purchase orders and related documents
- Vendor-supplied documents
- Audit, surveillance, and quality verification/inspection procedures
- Inspection and test reports
- Instructions and procedures for activities covered by the QAPD including design, installation, operating (including normal and emergency operations), maintenance, calibration, and routine testing
- Technical specifications
- Nonconformance reports and corrective action reports

Where temporary procedures are used, they shall include a designation of the period of time during which it is acceptable to use them.

2.6.1 Review and Approval of Documents

Documents are reviewed for adequacy by qualified person(s) other than the preparer. The documented review signifies concurrence.

Documents affecting the configuration or operation of the station as described in the UFSAR are screened to identify those that require review by the Independent Review Body prior to implementation as described in QAPD Section 5.2.2.

To ensure effective and accurate procedures, applicable procedures are reviewed, and updated as necessary, based on the following conditions:

- Following any modification to a system
- Following an unusual incident, such as an accident, significant operator error, or equipment malfunction
- When procedure discrepancies are found
- Prior to use if not used in the previous two years
- Results of QA audits conducted in accordance with QAPD Section 2.18.1

Prior to issuance or use, documents including revisions thereto, are approved by the designated authority. A listing of all controlled documents identifying the current approved revision, or date, is maintained so personnel can readily determine the appropriate document for use.

2.6.2 Changes to Documents

Changes to documents, other than those defined in implementing procedures as minor changes, are reviewed and approved by the same organizations that performed the original review and approval unless other organizations are specifically designated. The reviewing organization has access to pertinent background data or information upon which to base their approval. Where temporary procedure changes are necessary, changes that clearly do not change the intent of the approved procedure may be implemented provided they are approved by two members of the staff knowledgeable in the areas affected by the procedures. Minor changes to documents, such as inconsequential editorial corrections, do not require that the revised documents receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type of minor changes that do not require such a review and approval and the persons who can authorize such a classification shall be clearly delineated in implementing procedures.

2.6.3 NQA-1 Commitment

In establishing provisions for document control, PVNGS commits to compliance with NQA-1-2008, Requirement 6.

2.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

PVNGS has established the necessary measures and governing procedures to control purchased items and services to assure conformance with specified requirements. Such control provides for the following as appropriate: source evaluation and selection, evaluation of objective evidence of quality furnished by the supplier, source inspection, audit, and examination of items or services.

2.7.1 Acceptance of Item or Service

PVNGS establishes and implements measures to assess the quality of purchased items and services, whether purchased directly or through contractors, at intervals and to a depth consistent with the item or service importance to safety, complexity, quantity, and the frequency of procurement. Verification actions include testing, as appropriate, during design, fabrication, and operation activities. Verifications occur at the appropriate phases of the procurement process, including, as necessary, verification of activities of suppliers below the first tier. Measures to assure the quality of purchased items and services include the following, as applicable:

- Items are inspected, identified, and stored to protect against damage, deterioration, or misuse.

- Prospective safety-related items and service suppliers are evaluated to assure only qualified suppliers are used. Qualified suppliers are audited on a triennial basis. In addition, if a subsequent contract or a contract modification significantly changes the scope, methods, or controls performed by a supplier, an audit of the changes is performed, thus starting a new triennial period.

- PVNGS may utilize audits conducted by outside organizations for supplier qualification provided that the scope and adequacy of the audits meet PVNGS requirements. Documented annual evaluations are performed for qualified suppliers to assure they continue to provide acceptable products and services. Industry programs, such as those applied by ASME, Nuclear Procurement Issues Corporation (NUPIC), or other established utility groups, are used as input or the basis for supplier qualification whenever appropriate. The results of the reviews are promptly considered for effect on a supplier's continued qualification and adjustments made as necessary (including corrective actions, adjustments of supplier audit plans, and input to third party auditing entities, as warranted). In addition, results are reviewed periodically to determine if, as a whole, they constitute a significant condition adverse to quality requiring additional action.

- Provisions are made for accepting purchased items and services, such as source verification, receipt inspection, pre- and post-installation tests, certificates of conformance, and document reviews (including Certified Material Test Report/Certificate). Acceptance actions/documents should be established by the Purchaser with appropriate input from the Supplier and be completed to ensure that procurement, inspection, and test requirements, as applicable, have been satisfied before relying on the item to perform its intended safety function.

- Controls are imposed for the selection, determination of suitability for intended use (critical characteristics), evaluation, receipt, and acceptance of commercial-grade services or items to assure they will perform satisfactorily in service in safety-related applications.

- Remote source verification is acceptable as a dedication and acceptance process when a pandemic or similar state of emergency has been declared restricting access or travel to and/or from vendor locations affected by the declaration. The remote source verification will be screened for eligibility, planned, performed using video applications and/or other real-time communication

technologies, and documented. In establishing remote source verification requirements, PVNGS commits to compliance with the guidance in Electric Power Research Institute (EPRI) Technical Report (TR) 3002019436, Remote Source Verification During a Pandemic or Similar State of Emergency.

- If there is insufficient evidence of implementation of a QA program, the initial evaluation is of the existence of a QA program addressing the scope of services to be provided. The initial audit is performed after the supplier has completed sufficient work to demonstrate that its organization is implementing a QA program.

2.7.2 NQA-1 Commitment/Exceptions

In establishing controls for purchased items and services, PVNGS commits to compliance with NQA-1a-2009, Requirement 7, with the following clarifications and exceptions:

- PVNGS considers that other 10 CFR Parts 50 and 52 licensees, Authorized Nuclear Inspection Agencies, National Institute of Standards and Technology, or other State and Federal agencies which may provide items or services to PVNGS are not required to be evaluated or audited.

- When purchasing commercial grade calibration or testing services from a laboratory holding accreditation by an accrediting body recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA), commercial grade surveys need not be performed provided each of the following conditions are met:

    - A documented review of the supplier's accreditation is performed and includes a verification of the following:

        - The calibration or test laboratory holds accreditation by an accrediting body recognized by the ILAC MRA. The accreditation encompasses ISO/IEC-17025:2017, "General Requirements for the Competence of Testing and Calibration Laboratories."
        - For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.
        - For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty.
        - The laboratory has achieved accreditation based on an on-site accreditation assessment by the selected AB within the past 48 months. The laboratory's accreditation cannot be based on two consecutive remote accreditation assessments.

    - The purchase documents require that:

        - The service must be provided in accordance with their accredited ISO/IEC-17025:2017 program and scope of accreditation.
        - As-found calibration data must be reported in the certificate of calibration when calibrated items are found to be out-of-tolerance. (for calibration services only)
        - The equipment/standards used to perform the calibration must be identified in the certificate of calibration. (for calibration services only)

- Subcontracting of these accredited services is prohibited.
- The customer must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation.
- Performance of the services listed on this order is contingent on the laboratory's accreditation having been achieved through an on-site accreditation assessment by the Accreditation Body within the past 48 months.
- Additional technical and quality requirements, as necessary, based upon a review of the procured scope of services, which may include, but are not necessarily limited to, tolerances, accuracies, ranges, and industry standards.

- It is validated, at receipt inspection, that the laboratory's documentation certifies that:

  - The contracted calibration or test service has been performed in accordance with their ISO/IEC-17025:2017 program, and has been performed within their scope of accreditation, and
  - The purchase order's requirements are met.

- A commercial grade dedication technical evaluation is required to document the critical characteristics and acceptance methods when dedicating calibration and testing services based on the ILAC process.

- Accreditation in lieu of a commercial grade survey, as described in NEI 14-05A, cannot be used to dedicate NDE services (including ASME Code and non-Code safety related applications).

- For Section 501, PVNGS considers documents that may be stored in approved electronic media under PVNGS or vendor control, not physically located on the PVNGS site, but accessible from the respective nuclear facility site as meeting the NQA-1 requirement for documents to be available at the site. The PVNGS records management system will provide for timely retrieval of necessary records.

- In establishing commercial grade item requirements, PVNGS commits to compliance with NQA-1a-2009, Section 700 and Subpart 2.14, with the following clarification:

  - For commercial grade items, quality verification requirements are established and described in PVNGS documents to provide the necessary assurance an item will perform satisfactorily in service. The PVNGS documents address determining the critical characteristics that ensure an item is suitable for its intended use, technical evaluation of the item, receipt requirements, and quality evaluation of the item.

  - PVNGS will assume 10 CFR 21 reporting responsibility for all items that PVNGS dedicates as safety-related.

2.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

PVNGS has established the necessary measures and governing procedures to identify and control items to prevent the use of incorrect or defective items. This includes controls for consumable materials and items with limited shelf life. The identification of items is maintained throughout fabrication, erection, installation, and use so that the item can be traced to its documentation, consistent with the item's effect on safety. Identification locations and methods are selected so as not to affect the function or quality of the item.

2.8.1 NQA-1 Commitment

In establishing provisions for identification and control of items, PVNGS commits to compliance with NQA-1-2008, Requirement 8.

2.9 CONTROL OF SPECIAL PROCESSES

PVNGS has established the necessary measures and governing procedures to assure that special processes that require interim process controls to assure quality, such as welding, heat treating, and nondestructive examination, are controlled. These provisions include assuring that special processes are accomplished by qualified personnel using qualified procedures and equipment. Personnel are qualified and special processes are performed in accordance with applicable codes, standards, specifications, criteria or other specially established requirements. Special processes are those where the results are highly dependent on the control of the process or the skill of the operator, or both, and for which the specified quality cannot be fully and readily determined by inspection or test of the final product.

2.9.1 NQA-1 Commitment

In establishing measures for the control of special processes, PVNGS commits to compliance with NQA-1-2008, Requirement 9.

2.10 INSPECTION

PVNGS has established the necessary measures and governing procedures to implement inspections that assure items, services, and activities affecting safety meet established requirements and conform to applicable documented specifications, instructions, procedures, and design documents. Inspections may also be applied to items, services, and activities affecting plant reliability and integrity. Types of inspections may include those verifications related to procurement, such as source, in-process, final, and receipt inspection, as well as installation, maintenance, modification, in-service, and operations activities. Inspections are carried out by properly qualified persons independent of those who performed or directly supervised the work. Inspection results are documented.

2.10.1 Inspection Program

The inspection program establishes inspections (including surveillance of processes), as necessary to verify quality:

(1) at the source of supplied items or services,
(2) in-process during fabrication at a supplier's facility or at PVNGS,
(3) for final acceptance of fabricated and/or installed items, and
(4) upon receipt of items for PVNGS, as well as
(5) during maintenance, modification, in-service, and operating activities.

The inspection program establishes requirements for planning inspections, such as the group or discipline responsible for performing the inspection, where inspection hold points are to be applied, determining applicable acceptance criteria, the frequency of inspection to be applied, and identification of special tools needed to perform the inspection. Inspection planning is performed by personnel qualified in the discipline related to the inspection and includes qualified inspectors or engineers. Inspection plans are based on, as a minimum, the importance of the item to the safety of the facility, the complexity of the item, technical requirements to be met, and design specifications. Where significant changes in inspection activities for the facilities are to occur, management responsible for the inspection programs evaluate the resource and planning requirements to ensure effective implementation of the inspection program.

Inspection program documents establish requirements for performing the planned inspections and documenting required inspection information such as rejection, acceptance, and re-inspection results, and the person(s) performing the inspection.

Inspection results are documented by the inspector, reviewed by authorized personnel qualified to evaluate the technical adequacy of the inspection results, and controlled by instructions, procedures, and drawings.

2.10.2 Inspector Qualification

PVNGS has established qualification programs for personnel performing quality inspections. The qualification program requirements are described in QAPD Section 2.2. These qualification programs are applied to individuals performing quality inspections regardless of the functional group where they are assigned.

2.10.3 NQA-1 Commitment/Exceptions

In establishing inspection requirements, PVNGS commits to compliance with NQA-1-2008 and NQA-1a-2009, Requirement 10 and Part II, Subparts 2.4 and 2.8 for establishing appropriate inspection requirements with the following clarifications:

- Subpart 2.4 commits PVNGS to IEEE 336-1985, which refers to IEEE 498-1985. Both IEEE 336-1985 and IEEE 498-1985 use the definition of "Safety Systems" from IEEE 603-1980. PVNGS commits to the definition of Safety Systems in IEEE 603-1980, but does not commit to the balance of that standard. This definition is only applicable to equipment in the context of Subpart 2.4.

- An additional exception to Subpart 2.4 is addressed in QAPD Section 2.12.

2.11 TEST CONTROL

PVNGS has established the necessary measures and governing procedures to demonstrate that items subject to the provisions of the QAPD will perform satisfactorily in service, that the plant can be operated safely and as designed, and that the coordinated operation of the plant as a whole is satisfactory. These programs include criteria for determining when testing is required, such as proof tests before installation, post-maintenance tests, post-modification tests, in-service tests, and operational tests (such as surveillance tests required by Plant Technical Specifications), to demonstrate that performance of plant systems is in accordance with design. Programs also include provisions to establish and adjust test schedules, and to maintain status for periodic or recurring tests.

Tests are performed according to applicable procedures that include, consistent with the effect on safety:

(1) instructions and prerequisites to perform the tests,
(2) use of proper test equipment,
(3) acceptance criteria, and
(4) mandatory verification points as necessary to confirm satisfactory test completion.

Test results are documented and evaluated by the organization performing the test and reviewed by a responsible authority to assure that the test requirements have been satisfied. If acceptance criteria are not met, re-testing is performed as needed to confirm acceptability following correction of the system or equipment deficiencies that caused the failure.

Except for computer program testing, which is addressed in QAPD Section 2.11.1, tests are performed and results documented in accordance with applicable technical and regulatory requirements, including those described in the Technical Specifications and UFSAR. Test programs ensure appropriate retention of test data in accordance with the records requirements of the QAPD. Personnel that perform or evaluate tests are qualified in accordance with the requirements established in QAPD Section 2.2.

2.11.1 NQA-1 Commitment for Computer Program Testing

PVNGS establishes and implements provisions to assure that computer software used in applications affecting safety is prepared, documented, verified and tested, such that the expected output is obtained and configuration control maintained. To this end PVNGS commits to compliance with the requirements of NQA-1a-2009, Requirement 11 and Subpart 2.7 to establish the appropriate provisions in addition to the commitment to NQA-1-2008, Requirement 3.

2.11.2 NQA-1 Commitment

In establishing provisions for testing, PVNGS commits to compliance with NQA-1a-2009, Requirement 11.

2.12 CONTROL OF MEASURING AND TEST EQUIPMENT

PVNGS has established the necessary measures and governing procedures to control the calibration, maintenance, and use of measuring and test equipment (M&TE) that provides data to verify acceptance criteria are met for information important to safe plant operation. The provisions of such procedures cover equipment such as indicating and actuating instruments and gages, tools, reference and transfer standards, and nondestructive examination equipment. The suppliers of commercial grade calibration services are controlled as described in QAPD Section 2.7.

2.12.1 Installed Instrument and Control Devices

PVNGS has established and implements procedures for the calibration and adjustment of instrument and control devices installed in the facility. The calibration and adjustment of these devices is accomplished through the facility maintenance programs to ensure the facility is operated within design and technical requirements. Appropriate documentation will be maintained for these devices to indicate the control status, when the next calibration is due, and identify any limitations on use of the device.

2.12.2 NQA-1 Commitment/Exceptions

In establishing provisions for control of measuring and test equipment, PVNGS commits to compliance with NQA-1-2008 and NQA-1a-2009, Requirement 12 with the following clarification and exception:

- NQA-1-2008, Subpart 2.4 refers to ANSI/IEEE Std. 336-1985 for the installation, inspection, and testing requirements for power, instrumentation, and control equipment at nuclear facilities. Where ANSI/IEEE Std. 336-1985 makes reference to the use of IEEE Std. 498-1985 for measuring and test equipment control, PVNGS will implement the QA requirements of NQA-1-2008, Requirement 12.

2.13 HANDLING, STORAGE, AND SHIPPING

PVNGS has established the necessary measures and governing procedures to control the handling, storage, packaging, shipping, cleaning, and preservation of items to prevent inadvertent damage or loss, and to minimize deterioration. These provisions include specific procedures, when required to maintain acceptable quality of the items important to the safe operations of the plant. Items are appropriately marked and labeled during packaging, shipping, handling, and storage to identify, maintain, and preserve the item's integrity and indicate the need for special controls. Special controls (such as containers, shock absorbers, accelerometers, inert gas atmospheres, specific moisture content levels, and temperature levels) are provided when required to maintain acceptable quality.

Special or additional handling, storage, shipping, cleaning, and preservation requirements are identified and implemented as specified in procurement documents and applicable procedures. Where special requirements are specified, the items and containers (where used) are suitably marked.

Special handling tools and equipment are used and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment are inspected and tested in accordance with procedures at specified time intervals or prior to use.

Operators of special handling and lifting equipment are experienced or trained in the use of the equipment. PVNGS establishes and implements controls over hoisting, rigging, and transport activities to the extent necessary to protect the integrity of the items involved, as well as potentially affected nearby structures and components. Where required, PVNGS complies with applicable hoisting, rigging and transportation regulations and codes.

2.13.1 Housekeeping

Housekeeping practices are established to account for conditions or environments that could affect the quality of structures, systems, and components within the plant. This includes control of cleanliness of facilities and materials, fire prevention and protection, disposal of combustible material and debris, control of access to work areas, and protection of equipment, as well as, radioactive contamination control, and storage of solid radioactive waste. Housekeeping practices help assure that only proper materials, equipment, processes, and procedures are used and that the quality of items is not degraded. Necessary procedures or work instructions, such as for electrical bus and control center cleaning, and cleaning of control consoles, and radioactive decontamination are developed and used.

2.13.2 NQA-1 Commitment/Exceptions

In establishing provisions for handling, storage, and shipping, PVNGS commits to compliance with NQA-1-2008, Requirement 13. PVNGS also commits to compliance with the requirements of NQA-1-2008 and NQA-1a-2009, Part II, Subpart 2.1, Subpart 2.2, Subpart 2.3, and Part III, Subpart 3.2, Appendix 2.1, with the following clarifications and exceptions:

NQA-1-2008 and NQA-1a-2009, Part II, Subpart 2.1

- Subpart 2.1, Section 301 and 302 establish criteria for classifying items into cleanness classes and requirements for each class. Instead of using the cleanness level system of Subpart 2.1, PVNGS may establish cleanness requirements on a case-by-case basis, consistent with the other provisions of Subpart 2.1. PVNGS establishes appropriate cleanliness controls for work on safety-related equipment to minimize introduction of foreign material and maintain system/component

cleanliness throughout maintenance or modification activities, including documented verification of absence of foreign material prior to system closure.

NQA-1a-2009, Part II, Subpart 2.2

- Subpart 2.2, Section 201 establishes criteria for classifying items into protection levels. Instead of classifying items into protection levels during the operational phase, PVNGS may establish controls for the packaging, shipping, handling, and storage of such items on a case-by-case basis with due regard for the item's complexity, use, and sensitivity to damage. Prior to installation or use, the items are inspected and serviced as necessary to assure that no damage or deterioration exists which could affect their function.

- Subpart 2.2, Section 606, "Storage Records": This section requires written records be prepared containing information on personnel access. As an alternative to this requirement, PVNGS documents establish controls for storage areas that describe those authorized to access areas and the requirements for recording access of personnel. However, these records of access are not considered quality records and will be retained in accordance with the administrative controls established for PVNGS.

NQA-1-2008 and NQA-1a-2009, Part II, Subpart 2.3

- Subpart 2.3, Section 202 requires the establishment of five zone designations for housekeeping cleanliness controls. Instead of the five-level zone designation, PVNGS may base its control over housekeeping activities on a consideration of what is necessary and appropriate for the activity involved. The controls are implemented through procedures or instructions which, in the case of maintenance or modification work, may be developed on a case-by-case basis. Factors considered in developing the procedures and instructions include cleanliness control, personnel safety, fire prevention and protection, radiation control, and security. The procedures and instructions make use of standard janitorial and work practices to the extent possible.

NQA-1a-2009, Part III, Subpart 3.2

- Subpart 3.2, Appendix 2.1: Only Section 300, "Cleaning Recommendations and Precautions" are being committed to in accordance with RG 1.37. In addition, a suitable chloride stress-cracking inhibitor should be added to the fresh water used to flush systems containing austenitic stainless steels.

2.14 INSPECTION, TEST, AND OPERATING STATUS

PVNGS has established the necessary measures and governing procedures to identify the inspection, test, and operating status of items and components subject to the provisions of the QAPD in order to maintain personnel and reactor safety and avoid inadvertent operation of equipment. Where necessary to preclude inadvertent bypassing of inspections or tests, or to preclude inadvertent operation, these measures require the inspection, test, or operating status be verified before release, fabrication, receipt, installation, test or use. These measures also establish the necessary authorities and controls for the application and removal of status indicators or labels.

In addition, temporary design changes (temporary modifications), such as temporary bypass lines, electrical jumpers and lifted wires, and temporary trip-point settings, are controlled by procedures or work instructions that include requirements for appropriate installation and removal, independent/concurrent verifications, and status tracking.

Administrative procedures also describe the measures taken to control altering the sequence of required tests, inspections, and other operations. Review and approval for these actions is subject to the same control as taken during the original review and approval of tests, inspections, and other operations.

2.14.1 NQA-1 Commitment

In establishing measures for control of inspection, test and operating status, PVNGS commits to compliance with NQA-1-2008, Requirement 14.

2.15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

PVNGS has established the necessary measures and governing procedures to control items, including services that do not conform to specified requirements to prevent inadvertent installation or use. Instructions require that the individual discovering a nonconformance identify, describe, and document the nonconformance in accordance with the requirements of QAPD Section 2.16. Controls provide for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations. Controls are provided to address conditional release of nonconforming items for use on an at-risk basis prior to resolution and disposition of the nonconformance, including maintaining identification of the item and documenting the basis for such release. Conditional release of nonconforming items for installation requires the approval of the designated management. Nonconformances are corrected or resolved prior to depending on the item to perform its intended safety function. Nonconformances are evaluated for impact on operability of quality structures, systems, and components to assure that the final condition does not adversely affect safety, operation, or maintenance of the item or service. Nonconformances to design requirements dispositioned repair or use-as-is are subject to design control measures commensurate with those applied to the original design. Nonconformance dispositions are reviewed for adequacy, analysis of quality trends, and reports provided to the designated management. Significant trends are reported to management in accordance with PVNGS procedures, regulatory requirements, and industry standards.

2.15.1 Interface with the Reporting Program

PVNGS has appropriate interfaces between the QAP for identification and control of nonconforming materials, parts, or components and the non-QA Reporting Program to satisfy the requirements of 10 CFR 21.

2.15.2 NQA-1 Commitment

In establishing measures for nonconforming materials, parts, or components, PVNGS commits to compliance with NQA-1-2008, Requirement 15 with the following clarifications and exceptions:

- For Section 200, “Identification”, PVNGS considers other means of identification acceptable when marking or tagging on either the item, the container, or the package containing the item is not practical.

2.16 CORRECTIVE ACTION

PVNGS has established the necessary measures and governing procedures to promptly identify, control, document, classify, and correct conditions adverse to quality. PVNGS procedures assure that corrective actions are documented and initiated following the determination of conditions adverse to quality in accordance with regulatory requirements and applicable quality standards. PVNGS procedures require personnel to identify known conditions adverse to quality. When complex issues arise where it cannot be readily determined if a condition adverse to quality exists, PVNGS documents establish the requirements for documentation and timely evaluation of the issue. Reports of conditions adverse to quality are analyzed to identify trends. Significant conditions adverse to quality and significant adverse trends are documented and reported to responsible management. In the case of a significant condition adverse to quality, the cause is determined and actions to preclude recurrence are taken.

In the case of suppliers working on safety-related activities, or other similar situations, PVNGS may delegate specific responsibilities for corrective actions but PVNGS maintains responsibility for the effectiveness of corrective action measures.

2.16.1 Interface with the Reporting Program

PVNGS has appropriate interfaces between the QAP for corrective actions and the non-QA Reporting Program to satisfy the requirements of 10 CFR 21.

2.16.2 NQA-1 Commitment

In establishing provisions for corrective action, PVNGS commits to compliance with NQA-1-2008, Requirement 16.

2.17 QUALITY ASSURANCE RECORDS

PVNGS has established the necessary measures and governing procedures to ensure that sufficient records of items and activities affecting quality are developed, reviewed, approved, issued, used, and revised to reflect completed work. The provisions of such procedures establish the scope of the records retention program for PVNGS and include requirements for records administration, including receipt, preservation, retention, storage, safekeeping, retrieval, access controls, user privileges, and final disposition.

2.17.1 Record Retention

Measures are established that ensure sufficient records of completed items and activities affecting quality are appropriately stored. Records of activities for design, engineering, procurement, manufacturing, construction, inspection and testing, installation, pre-operation, startup, operations, maintenance, modification, decommissioning, and audits and their retention times are defined in appropriate procedures. For design, construction, and initial start-up activities, the records to be maintained and their retention times are based on previous PVNGS commitments to Regulatory Guide 1.28, Revision 0, and Regulatory Guide 1.88, Revision 2. For operational phase activities, records to be maintained and their retention times are based on PVNGS commitment to Regulatory Guide 1.28, Revision 4, and the list of typical lifetime records provided in NQA-1-2008, Part III, Nonmandatory Appendix 17A-1, Section 200. In all cases where state, local, or other agencies have more restrictive requirements for record retention, those requirements will be met.

2.17.2 Electronic Records

When using optical disks for electronic records storage and retrieval systems, PVNGS complies with the NRC guidance in Generic Letter 88-18, Plant Record Storage on Optical Disks. PVNGS will manage the storage of QA Records in electronic media consistent with the intent of RIS 2000-18 and associated NIRMA Guidelines TG11-2011, TG15-2011, TG16-2011, and TG21-2011.

2.17.3 NQA-1 Commitment/Exceptions

In establishing provisions for records, PVNGS commits to compliance with NQA-1-2008, Requirement 17, and regulatory positions stated in Regulatory Guide 1.28, Rev 4, June 2010.

In establishing the provisions for managing electronic records, PVNGS commits to comply with Regulatory Guide 1.28, Revision 4, position C.1.b(2) with the following clarification:

- In lieu of adopting NIRMA Guidelines TG11-1998, TG15-1998, TG16-1998, and TG21-1998, PVNGS adopts TG11-2011, TG15-2011, TG16-2011, and TG21-2011.

2.18 AUDITS

PVNGS has established the necessary measures and governing procedures to implement audits to verify that activities covered by the QAPD are performed in conformance with the established requirements and performance criteria are met. The audit programs are themselves reviewed for effectiveness as a part of the overall audit process.

2.18.1 Performance of Audits

Internal audits of selected aspects of operating phase activities are performed with a frequency commensurate with safety significance and in a manner which assures that audits of safety-related activities are completed. Functional areas of an organization's QA program for auditing include, at a minimum, verification of compliance and effectiveness of implementation of internal rules and procedures (e.g., operating, design, procurement, maintenance, modification, refueling, surveillance, test, security, radiological protection procedures, and the emergency plan), Technical Specifications, regulations and license conditions, programs for training, retraining, qualification and performance of operating staff, corrective actions, and observation of performance of operating, refueling, maintenance, and modification activities, including associated record keeping.

The audits are scheduled on a formal preplanned audit schedule and in a manner to provide coverage and coordination with ongoing activities, based on the status and importance of the activity. Additional audits may be performed as deemed necessary by management. The scope of the audit is determined by the quality status and safety importance of the activities being performed. These audits are conducted by trained personnel not having direct responsibilities in the area being audited and in accordance with preplanned and approved audit plans or checklists, under the direction of a qualified lead auditor and the cognizance of the Director, Nuclear Oversight.

PVNGS is responsible for conducting periodic internal audits to determine the adequacy of programs and procedures and to determine if they comply with the overall QAPD.

The results of each audit are reported in writing to the Senior Vice President, Site Operations, and the Chief Nuclear Officer or designee, as appropriate. Additional internal distribution is made to concerned management levels and to management of the internal audited organizations or activities in accordance with approved procedures.

Management responds to all audit findings and initiates corrective action where indicated in accordance with the PVNGS corrective action program. Where corrective action measures are indicated, documented follow-up of applicable areas through inspections, reviews, re-audits, or other appropriate means is conducted to verify implementation of assigned corrective action.

Audits of suppliers of safety-related components and/or services are conducted as described in QAPD Section 2.7.1.

2.18.2 Internal Audits

Internal audits of operational activities are performed at a frequency commensurate with the safety significance and in such a manner as to assure that an audit of all applicable QA program elements is completed for each functional area within a period of two years. Internal audit frequencies of well established activities may be extended one year at a time beyond the above two-year interval based on the results of an annual evaluation of the applicable functional area and objective evidence that the functional area activities are being satisfactorily accomplished. The evaluation should include a detailed performance

analysis of the functional area based upon applicable internal and external source data and due consideration of the impact of any functional area changes in responsibility, resources, or management. However, the internal audit frequency interval should not exceed a maximum of four years. If performance dictates, the extension of the internal audit frequency interval for the applicable functional area should be rescinded and an audit scheduled as soon as practicable.

Internal audits of operational phase activities include verification of compliance and effectiveness of the administrative controls established for implementing the requirements of the QAPD; regulations and license provisions; provisions for training, retraining, qualification, and performance of personnel performing activities covered by the QAPD; corrective actions taken following abnormal occurrences; and, observation of the performance of fabrication, operating, refueling, maintenance, and modification activities including associated record keeping.

These audits will include, as a minimum, activities in the following areas:

- The conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions including administrative controls
- The performance, training, and qualifications of the facility staff
- The performance of activities required by the QAPD to meet the criteria of 10 CFR 50, Appendix B
- The Fire Protection Program and implementing procedures. A fire protection equipment and program implementation inspection and audit are conducted utilizing either a qualified off-site licensed fire protection engineer or an outside qualified fire protection consultant
- Other activities and documents considered appropriate by the Senior Vice President, Site Operations, or the Chief Nuclear Officer

Audits may also be used to meet the periodic review requirements of the code for the Security, Emergency Preparedness, and Radiological Protection programs within the provisions of the applicable code.

2.18.3 NQA-1 Commitment

In establishing the independent audit program, PVNGS commits to compliance with NQA-1-2008, Requirement 18 and the regulatory positions stated in Regulatory Guide 1.28, Revision 4.

3.0 NONSAFETY-RELATED SSC QUALITY CONTROL

3.1 NONSAFETY-RELATED SSCS – SIGNIFICANT CONTRIBUTORS TO PLANT SAFETY

Specific program controls are applied to nonsafety-related SSCs, for which 10 CFR 50, Appendix B is not applicable, that are significant contributors to plant safety. The specific program controls consistent with applicable sections of the QAPD are applied to those items in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety. The following clarify the applicability of the QA Program to the nonsafety-related SSCs and related activities, including the identification of exceptions to the QA Program described in QAPD Sections 2.1 through 2.18 that are taken for nonsafety-related SSCs.

3.1.1 Organization

The verification activities described in this part may be performed by the PVNGS line organization. The QA organization described in QAPD Section 2.1.5 is not required to perform these functions.

3.1.2 QA Program

PVNGS QA requirements for nonsafety-related SSCs are established in the QAPD and appropriate procedures. Suppliers of these SSCs or related services describe the quality controls applied in appropriate procedures. A new or separate QA program is not required.

3.1.3 Design Control

PVNGS has design control measures to ensure that the contractually established design requirements are included in the design. These measures ensure that applicable design inputs are included or correctly translated into the design documents, and deviations from those requirements are controlled. Design verification is provided through the normal supervisory review of the designer's work.

3.1.4 Procurement Document Control

Procurement documents for items and services obtained by or for PVNGS include or reference documents describing applicable design bases, design requirements, and other requirements necessary to ensure component performance. The procurement documents are controlled to address deviations from the specified requirements.

3.1.5 Instructions, Procedures, and Drawings

PVNGS provides documents such as, but not limited to, written instructions, plant procedures, drawings, vendor technical manuals, and special instructions in work orders, to direct the performance of activities affecting quality. The method of instruction employed provides an appropriate degree of guidance to the personnel performing the activity to achieve acceptable functional performance of the SSC.

3.1.6 Document Control

PVNGS controls the issuance and change of documents that specify quality requirements or prescribe activities affecting quality to ensure that correct documents are used. These controls include review and approval of documents, identification of the appropriate revision for use, and measures to preclude the use of superseded or obsolete documents.

3.1.7 Control of Purchased Items and Services

PVNGS employs measures, such as inspection of items or documents upon receipt or acceptance testing, to ensure that all purchased items and services conform to appropriate procurement documents.

3.1.8 Identification and Control of Purchased Items

PVNGS employs measures where necessary, to identify purchased items and preserve their functional performance capability. Storage controls take into account appropriate environmental, maintenance, or shelf life restrictions for the items.

3.1.9 Control of Special Processes

PVNGS employs process and procedure controls for special processes, including welding, heat treating, and nondestructive testing. These controls are based on applicable codes, standards, specifications, criteria, or other special requirements for the special process.

3.1.10 Inspection

PVNGS uses documented instructions to ensure necessary inspections are performed to verify conformance of an item or activity to specified requirements or to verify that activities are satisfactorily accomplished. These inspections may be performed by knowledgeable personnel in the line organization. Knowledgeable personnel are from the same discipline and have experience related to the work being inspected.

3.1.11 Test Control

PVNGS employs measures to identify required testing that demonstrates that equipment conforms to design requirements. These tests are performed in accordance with test instructions or procedures. The test results are recorded, and authorized individuals evaluate the results to ensure that test requirements are met.

3.1.12 Control of Measuring and Test Equipment (M&TE)

PVNGS employs measures to control M&TE use, and calibration and adjustment at specific intervals or prior to use.

3.1.13 Handling, Storage, and Shipping

PVNGS employs measures to control the handling, storage, cleaning, packaging, shipping, and preservation of items to prevent damage or loss and to minimize deterioration. These measures include appropriate marking or labels, and identification of any special storage or handling requirements.

3.1.14 Inspection, Test, and Operating Status

PVNGS employs measures to identify items that have satisfactorily passed required tests and inspections and to indicate the status of inspection, test, and operability, as appropriate.

3.1.15 Control of Nonconforming Items

PVNGS employs measures to identify and control items that do not conform to specified requirements to prevent their inadvertent installation or use.

3.1.16 Corrective Action

PVNGS employs measures to ensure that failures, malfunctions, deficiencies, deviations, defective components, and nonconformances are properly identified, reported, and corrected.

3.1.17 Records

PVNGS employs measures to ensure records are prepared and maintained to furnish evidence that the above requirements for design, procurement, document control, inspection, and test activities have been met.

3.1.18 Audits

PVNGS employs measures for line management to periodically review and document the adequacy of the process, including taking any necessary corrective action. Audits independent of line management are not required. Line management is responsible for determining whether reviews conducted by line management or audits conducted by any organization independent of line management are appropriate. If performed, audits are conducted and documented to verify compliance with design and procurement documents, instructions, procedures, drawings, and inspection and test activities. Where the measures of QAPD Section 3.0 are implemented by the same programs, processes, or procedures as the comparable activities of QAPD Section 2.0, the audits performed under the provisions of QAPD Section 18.0 may be used to satisfy the review requirements of 3.1.18.

3.2 NON-SAFETY-RELATED SSCS CREDITED FOR REGULATORY EVENTS

The following criteria apply to fire protection (10 CFR 50.48), anticipated transients without scram (ATWS) (10 CFR 50.62), and the station blackout (SBO) (10 CFR 50.63) SSCs that are not safety-related:

- PVNGS implements quality requirements for the fire protection system in accordance with Section C to Appendix A of Branch Technical Position 9.5-1. Implementation is described in UFSAR 9B.3.1.

- PVNGS implements the quality requirements for ATWS equipment in accordance with QAPD Section 3.1.

- PVNGS implements quality requirements for SBO equipment in accordance with QAPD Section 3.1.

4.0 REGULATORY COMMITMENTS

NRC Regulatory Guides and Quality Assurance Standards

This section identifies the NRC Regulatory Guides (RG) and the other quality assurance standards which have been selected to supplement and support the PVNGS QAPD. PVNGS complies with these standards to the extent described or referenced. Commitment to a particular RG or standard does not constitute a commitment to other RGs or standards that may be referenced therein.

Regulatory Guide 1.8, Revision 1-R, September 1975, Personnel Selection and Training Regulatory Guide 1.8, Revision 1-R, was issued for comment in September of 1975. This same Regulatory Guide was re-issued in May of 1977 without any changes except the words “For Comment” were deleted. For the purposes of conformance to this guide, the 1975 and 1977 versions are considered the same.

The position of Regulatory Guide 1.8 is accepted with the following exceptions and clarifications:

A. Where Part C to the guide discusses ANSI N18.1-1971 as the criteria for the selection and training of nuclear power plant personnel, ANSI/ANS 3.1-1978 is substituted.

B. Where Part C to the guide provides additional guidance for the Radiation Protection Manager, the guidance of ANSI/ANS 3.1-1978 is substituted. Regulatory Guide 1.8, Part C, as it pertains to the Radiation Protection Manager, is equivalent to the requirements of ANSI/ANS 3.1-1978, Section 4.4.4. Both Regulatory Guide 1.8 and ANSI/ANS 3.1-1978 require a bachelor’s degree or equivalent. APS has defined equivalency using an NRC approved change in accordance with the requirements of 10 CFR 50.54(a)3(ii). Equivalence is defined below and is not an exception to Technical Specification 5.3.1.

C. Where equivalency to a bachelor’s degree is permitted by the applicable regulatory guide or the endorsed industry standards, a high school education plus the following qualifications may be considered equivalent to the bachelor’s degree:

   1. 4 years of post-secondary schooling in science or engineering, or
   2. 6 years of applied experience at a nuclear facility in the area for which qualification is sought, or
   3. 6 years of operational or technical experience/training in nuclear power, or
   4. Any combination of the above totaling 6 years.

   Any years of experience credited to meet the education (degree) requirement, as described above, shall not also be credited to meet any additional experience required by the standard.

D. For those individuals not already qualified by experience and education in their designated craft or discipline and where ANSI/ANS 3.1-1978 permits the use of related training to meet certain qualifications (examples include sections 3.2.4 and 5.3.1-5.3.4), appropriate training and qualification shall be provided to demonstrate capability to perform assigned tasks. Additional training program requirements for the nuclear power plant staff are described at UFSAR 13.2 and the pertinent section of the PVNGS Operations Quality Assurance Program Description.

E. The experience requirements of NUREG 1021, Rev. 8, ES-202, "Preparing and Reviewing Operator License Applications" are satisfied in lieu of experience requirements of ANSI/ANS 3.1, paragraph 4.3.1, Supervisors Requiring NRC Licenses, for individuals filling the position of LSRO.

F. Qualifications of the quality assurance manager, quality assurance personnel, and quality control inspectors are as described in the pertinent sections of the PVNGS Operations Quality Assurance Program Description.

Regulatory Guide 1.26, Revision 1, September 1974 Quality Group Classifications and Standards for Water, Steam and Radioactive-Waste-Containing Components of Nuclear Power Plants

Equipment classification and code requirements are described in UFSAR 3.2. Quality Group classification and code requirements for each quality group correspond to those indicated in Regulatory Guide 1.26, Revision 1, with the following exceptions:

A. Positions C.1 and C.2

For Quality Group B and C instrument lines for safety related instruments, the instrument piping, tubing, and fittings downstream of the instrument root valves will be the same quality group classification as the root valve. The instrument valves will be Quality Group D.

B. Position C.1 for the Quality Group B Refueling Water Tank and Position C.2 for the Quality Group C Condensate Storage Tank

These tanks are of concrete construction with a stainless steel liner for maintenance of water quality and are not constructed to the ASME Boiler and Pressure Vessel Code, Section III.

C. Positions C.1.d, C.1.e, C.2.c, and Footnote 4

The words "or remote manual" are considered to be inserted between the words "automatic" and "closure." This option is included to avoid an unnecessary complication (leading to decreased plant reliability) in lines which would not normally be provided with automatic closing valves.

D. Position C.1.d

Specific exceptions taken to placing main steam and feedwater lines in Quality Group B are as follows: The branch line size limitation of application of Seismic Category I requirements, indicated in Regulatory Guide 1.29, is also applied to quality group classification. Therefore, branch lines 2 inches nominal pipe size and under, excluding containment penetrations, are placed in Quality Group D.

E. Position C.2.a

The requirement that systems providing cooling for the spent fuel pool be placed in Quality Group C is interpreted to apply only to the minimum systems required during an emergency condition and not necessarily to those systems normally providing such cooling.

F. Position C.2.b

The seal water injection lines to the reactor coolant pumps are constructed to ASME Section III Class 2 requirements, although the cooling water lines to the shell side of the seal water heat exchanger are constructed to Quality Group D requirements as are the cooling water lines for the reactor coolant pump

motors. This piping is quality Group D because the cooling water is not required for safe shutdown of the reactor as the reactor coolant pumps can coast down without the benefit of this cooling water.

In the normal borated makeup flowpath, a coriolis type flow sensor was selected to provide reliable and accurate measurement of flow rate over the full range of expected service, including the very low flow rates required at the end of core life. Since the line is designated as an ASME Section III, Safety Class 3, Regulatory Guide 1.26 indicates that the flow sensor should meet Quality Group C requirements. However, because an instrument manufactured in accordance with ASME Code Section III was not available, PVNGS proposed an alternate set of quality assurance requirements to ensure that the component quality was high and commensurate with its safety significance. Since the PVNGS licensing basis in UFSAR Chapter 17 and section 1.8 (Regulatory Guide 1.26) endorse the ASME Code to comply with 10 CFR 50.55a(a)(1), the subject relief request was made under the provision of 10 CFR 50.55a(a)(3). NRC approved the alternate quality assurance provisions with the safety evaluation in NRC Letter to APS, "ASME Code Alternative Request for the Palo Verde Nuclear Generating Station," dated March 8, 1999.

Regulatory Guide 1.28, Revision 4, June 2010 - Quality Assurance Program Criteria (Design and Construction)

Regulatory Guide 1.28 describes a method acceptable to the NRC staff for complying with the provisions of 10 CFR 50, Appendix B, with regard to establishing and implementing the requisite quality assurance program for the design and construction of nuclear power plants. Regulatory Guide 1.28, Revision 4, conditionally endorses NQA-1-2008 and NQA-1a-2009 Addenda as the basis for the quality assurance program.

- **ASME NQA-1-2008 Edition with NQA-1a-2009 Addenda** – Quality Assurance Requirements for Nuclear Facility Applications Regulatory Guide 1.28, Revision 4, and NQA-1-2008 with NQA-1a-2009 Addenda have been adapted for use during the operational phase as provided for in NEI 11-04A, Revision 0, and its supporting NRC Safety Evaluation Report. For the operational phase, PVNGS adopts Regulatory Guide 1.28, Revision 4, and NQA-1-2008 with NQA-1a-2009 Addenda consistent with the guidance of NEI 11-04A, Revision 0. Exceptions and clarifications are as described in the pertinent sections of the PVNGS Operations Quality Assurance Program Description.

- **Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guides (TGs)** - Regulatory Guide 1.28, Revision 4, Regulatory Position C.1.(b) provides guidance on managing records in electronic media and refers to Regulatory Information Summary (RIS) 2000-18, “Guidance on Managing Quality Assurance Records in Electronic Media,” dated October 23, 2000. RIS 2000-18 refers to NIRMA Technical Guides (TGs) as an acceptable method for maintaining records in electronic media. NEI 11-04A, Revision 0, also endorses the use of these NIRMA Technical Guides. PVNGS adopts the 2011 versions of the NIRMA Technical Guides described in NEI 11-04A Revision 0. Conformance with the NIRMA Technical Guides, including any exceptions or clarifications, is as described in the pertinent sections of the PVNGS Operations Quality Assurance Program Description.

Regulatory Guide 1.29, Revision 3, September 1978 - Seismic Design Classification Seismic classifications of structures, systems, and components are described in UFSAR 3.2.

For operations phase activities that are comparable to activities occurring during the construction phase, the following interpretations apply to the position of Regulatory Guide 1.29:

A. Position C.1.d

Systems required for cooling the spent fuel storage pool are required to be designed for the SSE. This is interpreted to apply only to the minimum systems required in an emergency condition and not necessarily to those systems normally providing such cooling.

B. Position C.1.f and Footnote 1

The words "or remote manual" are considered to be inserted between the words "automatic" and "closure." This option is included to avoid an unnecessary complication (leading to decreased plant reliability) in lines which would not normally be provided with automatic closing valves.

C. Position C.1.h

Refer to UFSAR section 5.4.1.

Regulatory Guide 1.33, Revision 2, February 1978 - Quality Assurance Program Requirements (Operations)

Regulatory Guide 1.33 describes a method acceptable to the NRC staff for complying with the Commission's regulations with regard to overall quality assurance program requirements for the operations phase of nuclear power plants. Regulatory Guide 1.33, Revision 2, conditionally endorses ANSI N18.7-1976 as providing acceptable methods for satisfying NRC regulations for operations phase quality assurance.

In lieu of adopting ANSI N18.7-1976, PVNGS adopts the guidance of NEI 11-04A, Revision 0, in conjunction with commitment to Regulatory Guide 1.28, Revision 4, which conditionally endorses NQA-1-2008 with NQA-1a-2009 Addenda. Adopting a quality assurance program consistent with the guidance of NEI 11-04A Revision 0 has been determined by NRC Safety Evaluation Report dated May 9, 2013, to be an acceptable alternative to adopting the guidance of ANSI N18.7-1976. Specific PVNGS exceptions and clarifications to the guidance of NEI 11-04A Revision 0, Regulatory Guide 1.28 Revision 4, and NQA-1-2008 with NQA-1a-2009 Addenda, are as described in the pertinent sections of the PVNGS Operations Quality Assurance Program Description.

Regulatory Guide 1.37, Revision 1, March 2007 - Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants

In lieu of adopting Regulatory Guide 1.37, Revision 1, PVNGS adopts Regulatory Guide 1.28, Revision 4, and the guidance of NQA-1-2008 with NQA-1a-2009 Addenda, as modified by NEI 11-04A, Revision 0. Conformance to NQA-1-2008 with NQA-1a-2009 Addenda, including any exceptions or clarifications, is as described in the pertinent sections of the PVNGS Operations Quality Assurance Program Description.

Regulatory Guide 1.54, Revision 0, June 1973 - Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants.

The requirements of Regulatory Guide 1.54, Revision 0, and the referenced standard (ANSI N101.4-1972) are included in the APS quality assurance program as modified or interpreted below:

A. Section 2.5

A meeting will not necessarily be held prior to coating work or a demonstration conducted provided all parties understand the coating requirements and acceptance standards.

B. Section 5.2

Coating procedures used by suppliers may not be required to be submitted to the owner or his/her representative. However, they will be required to be approved by the coating applicator and coating manufacturer.

C. Section 6

Instead of using a coating inspection agency, coating inspectors may be assigned by the owner or supplier to perform this function. These inspectors will meet the qualification requirements of section 6.3.1, but may be assigned other inspection duties as long as these duties do not interfere with the coating inspection.

Service Level I, II, and III coatings are defined as:

Service Level I coatings are used in areas inside the reactor containment where the coating failure could adversely affect the operation of post-accident fluid systems and thereby impair safe shutdown.

Service Level II coatings are used in areas where coatings failure could impair, but not prevent, normal operating performance. The functions of Service Level 2 coatings are to provide corrosion protection and decontaminability in those areas outside the reactor containment that are subject to radiation exposure and radionuclide contamination. Service Level II coatings are not safety-related.

Service Level III coatings are used in areas outside the reactor containment where failure could adversely affect the safety function of a safety-related structure, system, or component. Service Level III also includes immersion surfaces of safety-related piping, tanks, ducts, and safety related systems and components.

Balance of Plant (BOP) coatings are used in areas outside the reactor containment and not subject to radioactive contamination. These areas are not classified as Service Level I, II, or III.

The selection of protective coatings for specific locations and the extent of applicability of Regulatory Guide 1.54 shall be based on the following coatings criteria:

A. Location

Coating systems selected for either shop coatings program or field coatings are based on the location of the particular area or equipment within the plant, as it may be subject to unique environmental exposures and service conditions. These areas are identified as Q, RCA, and NON-RCA areas.

1. Q Area (nuclear)

Area located inside the Containment Building (Service Level I) and immersion surface of safety related systems and components (Service Level III) that may affect the safe shut down of the plant.

2. RCA Area (decontaminable)

Area located outside the Containment Building but subject to radioactive contamination (Service Level II). These areas include portions of the Auxiliary, Fuel, Radwaste Buildings, Low Level Storage Facility, Dry Active Waste Processing Storage Facility, and Outage Support Facility.

3. NON-RCA Areas (Balance of Plant Areas)

Areas located outside the Containment Building and not subject to radioactive contamination. These are all areas not classified under Q or RCA (BOP as described above).

B. Quality Assurance Requirements

1. Summary

a. Compliance with Regulatory Guide 1.54 for RCA and NON-RCA areas is not required and, therefore, will not be imposed for these areas.

b. Coating systems used in the Containment Building shall meet the testing and evaluation criteria of ANSI N101.2 or ASTM D3911, ASTM D4082, and ASTM D5139. The coating used shall be certified by the coating manufacture to withstand the spray solution proposed by the project.

c. Compliance with Regulatory Guide 1.54 for each and every item to be located within the Containment Building is considered impractical and in some cases unattainable. Therefore, Regulatory Guide 1.54 will or will not be imposed in accordance with the following criteria:

2. Regulatory Guide 1.54 will be imposed for items located within the Containment Building as follows:

a. For shop priming of liner plate, structural steel, and fabricated shapes.
b. For shop priming of fabricated pipes, tanks, HVAC ducts, and equipment.
c. Field touch-up of any Q class coated items, except as noted in section 5 below.

d. For field finish painting of structural steel and equipment where called for in drawings and specifications.
e. For surfacing of concrete where indicated in drawings and specifications.

3. Regulatory Guide 1.54 will be implemented by requirements as follows:

a. Use of specific coatings systems which are Design Basis Accident (DBA) qualified to ANSI N101.2 or ASTM D3911, ASTM D4082, and ASTM D5139 in the Containment Building.
b. Surface preparation standards
c. Surface profile requirements
d. Application of the coating systems in accordance with the paint manufacturer's printed instructions
e. Inspections and nondestructive examinations
f. Identification of all nonconformances
g. Certifications of compliance and/or documentation procedures to satisfy project requirements
h. Coated surfaces not meeting the requirements of Regulatory Guide 1.54 will be considered "Unqualified Coating" applications, see Section 5 for Tracking.

3.1 Items (b) through (g) above shall also be applicable for Q area coatings applications outside of the Containment Building.

4. Regulatory Guide 1.54 will not be imposed when:

a. The item is to be insulated
b. The surface is contained within a cabinet or enclosure (the interior of the cab of a polar crane; the interior surfaces of ducts)
c. The surface is stainless or galvanized
d. The coating is used for the color coding markings on piping.

5. Coating surfaces applied in the Containment Building that do not meet the requirements of Regulatory Guide 1.54, as stated in item 3.a above, are nonconforming and shall be documented as indicated below. These coatings are considered to be “Unqualified Coatings.”

a. The field repair to any “Q” Class coated item with an unqualified coating system shall be documented and reported for tracking in the Unqualified Coating Log.

Containment building interior coating system assessments shall be performed in accordance with the Containment Coatings Condition Assessment procedure every operating cycle.

Regulatory Guide 1.94, Revision 1, April 1976 - Installation, Inspection, and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants

For operations phase activities that are comparable to activities during the construction phase, the position of Regulatory Guide 1.94, Revision 1, is accepted.

5.0 ADDITIONAL QUALITY ASSURANCE AND ADMINISTRATIVE CONTROLS FOR THE PLANT OPERATIONAL PHASE

PVNGS includes the requirements of Part V that follow when establishing the necessary measures and governing procedures for the operational phase of the plant.

5.1 DEFINITIONS

PVNGS uses the definitions of terms as provided in Section 400 of the Introduction of NQA-1-2008 with NQA-1a-2009 Addenda in interpreting the requirements of NQA-1 and the other standards to which the QAPD commits. In addition, definitions are provided for the following terms not covered in NQA-1:

administrative controls: rules, orders, instructions, procedures, policies, practices, and designations of authority and responsibility

experiments: performance of plant operations carried out under controlled conditions in order to establish characteristics or values not previously known

independent review: review completed by personnel not having direct responsibility for the work function under review regardless of whether they operate as a part of an organizational unit or as individual staff members (see review)

nuclear power plant: any plant using a nuclear reactor to produce electric power, process steam, or provide space heating

on-site operating organization: on-site personnel concerned with the operation, maintenance and certain technical services

operating activities: work functions associated with normal operation and maintenance of the plant, and technical services routinely assigned to the on-site operating organization

operational phase: that period of time during which the principal activity is associated with normal operation of the plant. This phase of plant life is considered to begin formally with commencement of initial fuel loading, and ends with plant decommissioning

review: a deliberately critical examination, including observation of plant operation, evaluation of assessment results, procedures, certain contemplated actions, and after-the-fact investigations of abnormal conditions

supervision: direction of personnel activities or monitoring of plant functions by an individual responsible and accountable for the activities they direct or monitor

surveillance testing: periodic testing to verify that safety related structures, systems, and components continue to function or are in a state of readiness to perform their functions

system: an integral part of nuclear power plant comprising components which may be operated or used as a separate entity to perform a specific function

5.2 REVIEW OF ACTIVITIES AFFECTING SAFE PLANT OPERATION

5.2.1 Onsite Operating Organization Review

The PVNGS onsite organization employs reviews, both periodic and as situations demand, to evaluate plant operations and plan future activities. The important elements of the reviews are documented and subjects of potential concern for the independent review described below are brought to the attention of the site general plant manager. The reviews are part of the normal duties of plant supervisory personnel in order to provide timely and continuing monitoring of operating activities in order to assist the site general plant manager in keeping abreast of general plant conditions and to verify that day-to-day operations are conducted safely in accordance with the established administrative controls. The site general plant manager ensures the timely referral of the applicable matters discussed in the reviews to appropriate management and independent reviewers.

5.2.2 Independent Review

Activities shall be independently reviewed on a periodic basis. The independent review function performs the following:

- Reviews proposed changes to the facility as described in the updated final safety analysis report (UFSAR). The Independent Review Body (IRB) also verifies that changes do not adversely affect safety and if a technical specification change or NRC review is required.
- Reviews proposed tests and experiments not described in the UFSAR prior to implementation. Verifies the determination of whether changes to proposed tests and experiments not described in the UFSAR require a technical specification change or license amendment.
- Reviews proposed technical specification changes and license amendments relating to nuclear safety prior to NRC submittal and implementation, except in those cases where the change is identical to a previously approved change.
- Reviews violations, deviations, and events that are required to be reported to the NRC. This review includes the results of investigations and recommendations resulting from such investigations to prevent or reduce the probability of recurrence of the event.
- Reviews any matter related to nuclear safety that is requested by the vice president, site operations or any IRB member.
- Reviews corrective actions for significant conditions adverse to quality.
- Reviews internal audit reports.
- Reviews the adequacy of the internal audit program every 24 months.

A group may function as an independent review body (IRB). In discharging its review responsibilities, the IRB keeps safety considerations paramount when opposed to cost or schedule considerations. One or more organizational units may collectively perform this function.

IRB reviews are supplemented as follows:

- A qualified person, independent of the preparer, reviews proposed changes in the procedures as described in the UFSAR prior to implementation of the change to determine if a technical specification change or NRC approval is required.
- Audits of selected changes in the procedures described in the UFSAR are performed to verify that procedure reviews and revision controls are effectively implemented.
- Competent individual(s) or group(s) other than those who performed the original design but who may be from the same organization verify that changes to the facility do not result in a loss of adequate design or safety margins.
- The results of IRB reviews of matters involving the safe operation of the facility are periodically independently reviewed. This review supports management in identifying and resolving issues potentially affecting safe plant operation. This review supplements the existing corrective action programs and audits.

    - The review is performed by a team consisting of personnel with experience and competence in the activities being reviewed, but independent from cost and schedule considerations and from the organizations responsible for those activities. The IRB supervisor or chairman has a minimum six (6) years combined managerial and technical support experience. The members of the IRB should have a minimum of five years of experience in their own area of responsibility as applicable to the activities being reviewed (i.e., a minimum of five years of experience in one of the areas listed below:
        - Nuclear power plant operations
        - Nuclear engineering
        - Chemistry and radiochemistry
        - Metallurgy
        - Nondestructive testing
        - Instrumentation and control
        - Radiological safety
        - Mechanical engineering
        - Electrical engineering
        - Administrative control and quality assurance practices
        - Training
        - Emergency plans and related procedures and equipment).

    - The review is supplemented by outside consultants or organizations as necessary to ensure the team has the requisite expertise and competence.
    - Results of the review are documented and reported to responsible management.
    - Management periodically consider issues they determine warrant special attention, such as deficient plant programs, declining performance trends, employee concerns, or other issues related to safe plant operations and determine what issues warrant the review.
    - Management determines the scheduling and scope of review and the composition of the team performing the review.

5.3 OPERATIONAL PHASE PROCEDURES

The following is a description of the various types of procedures used by PVNGS to govern the design, operation, and maintenance of its nuclear generating plants. PVNGS follows the guidance of Appendix A to Regulatory Guide 1.33 in identifying the types of activities that should have procedures or instructions to control the activity. Each procedure shall be sufficiently detailed for a qualified individual to perform the required function without direct supervision, but need not provide a complete description of the system or plant process.

5.3.1 Format and Content

Procedure format and content may vary from one location to another, however, procedures include the following elements as appropriate to the purpose or task to be described.

Title/Status
Each procedure is given a title descriptive of the work or subject it addresses, and includes a revision number and/or date and an approval status.

Purpose/Statement of Applicability/Scope
The purpose for which the procedure is intended is clearly stated (if not clear from the title). The systems, structures, components, processes or conditions to which the procedure applies are also clearly described.

References
Applicable references, including reference to appropriate Technical Specifications, are required. References are included within the body of the procedure when the sequence of steps requires other tasks to be performed (according to the reference) prior to or concurrent with a particular step.

Prerequisites/Initial Conditions
Prerequisites/initial conditions identify independent actions or procedures that must be accomplished and plant conditions which must exist prior to performing the procedure; including prerequisites applicable to only a specific portion of a procedure.

Precautions
Precautions alert the user to those important measures to be used to protect equipment and personnel, including the public, or to avoid an abnormal or emergency situation during performance of the procedure. Cautionary notes applicable to specific steps are included in the main body of the procedure and are identified as such.

Limitations and actions
Limitations on the parameters being controlled and appropriate corrective measures to return the parameter to the normal control band are specified.

Main body
The main body of the procedure contains the step-by-step instructions in the degree of detail necessary for performing the required function or task.

Acceptance criteria
The acceptance criteria provide the quantitative or qualitative criteria against which the success or failure (as of a test-type activity) of the step or action would be judged.

Checklists
Complex procedures utilize checklists which may be included as part of the procedure or appended to it.

5.3.2 Procedure Types

Procedure types may vary from one location to the other based on scope of activities; however, procedures are developed in each of the following categories.

Administrative Control Procedures

These include administrative procedures, directives, policies, standards, and similar documents that control the programmatic aspects of facility activities. These administrative documents ensure that the requirements of regulatory and license commitments are implemented. Several levels of administrative controls are applied ranging from those affecting the entire Company to those prepared at the implementing group level. These documents establish responsibilities, interfaces, and standard methods (rules of practice) for implementing programs. In addition to the administrative controls described throughout this QAPD, instructions governing the following activities are provided:

Operating Orders/Procedures

Instructions of general and continuing applicability to the conduct of business to the plant staff are provided. Examples include, but are not limited to, job turnover and relief, designation of confines of control room, definition of duties of operators and others, transmittal of operating data to management, filing of charts, limitations on access to certain areas and equipment, shipping and receiving instructions. Provisions are made for periodic review and updating of these documents, where appropriate.

Special Orders

Management instructions, which have short-term applicability and require dissemination, are issued to encompass special operations, housekeeping, data taking, publications and their distribution, plotting process parameters, personnel actions, or other similar matters. Provisions are made for periodic review, updating, and cancellation of these documents, where appropriate.

Plant Security and Visitor Control

Procedures or instructions developed to supplement features and physical barriers designed to control access to the plant and, as appropriate, to vital areas within the plant. Information concerning specific design features and administrative provisions of the plant security program is confidential and thus accorded limited distribution. The security and visitor control procedures consider, for example, physical provisions, such as: fences and lighting; lock controls for doors, gates and compartments containing sensitive equipment; and provisions for traffic and access control. Administrative provisions, such as: visitor sign-in and sign-out procedures; escorts and badges for visitors; emphasis on inspection, observation and challenging of strangers by operating crews; and a program of pre-employment screening for potential employees are also considered.

Temporary Procedures

Temporary procedures may be used to direct operations during testing, refueling, maintenance, and modifications to provide guidance in unusual situations not within the scope of the normal procedures. These procedures ensure orderly and uniform operations for short periods when the plant, a system, or a component of a system is performing in a manner not covered by existing detailed procedures or has been

modified or extended in such a manner that portions of existing procedures do not apply. Temporary procedures include designation of the period of time during which they may be used and are subject to the procedure review process as applicable.

Engineering Procedures

These documents provide instructions for the preparation of engineering documents, engineering analysis, and implementation of engineering programs. This includes activities such as designs; calculations; fabrication, equipment, construction, and installation specifications; drawings; analysis and topical reports; and testing plans or procedures. They include appropriate references to industry codes and standards, design inputs, and technical requirements.

Configuration Management Procedures

These documents provide instructions for the responsibility and authority for functions that affect the configuration of the facility including activities such as operations, design, maintenance, construction, licensing, and procurement.

Installation Procedures

These documents provide instructions for the installation of components generally related to new construction and certain modification activities. They include appropriate reference to industry standards, installation specifications, design drawings, and supplier and technical manuals for the performance of activities. These documents include provisions, such as hold or witness points, for conducting and recording results of required inspections or tests. These documents may include applicable inspection and test instructions subject to the requirements for test and inspection procedures below.

System Procedures

These documents contain instructions for energizing, filling, venting, draining, starting up, shutting down, changing modes of operation, and other instructions appropriate for operations of systems related to the safety of the plant. Actions to correct off-normal conditions are invoked following an operator observation or an annunciator alarm indicating a condition which, if not corrected, could degenerate into a condition requiring action under an emergency procedure. Separate procedures may be developed for correcting off-normal conditions for those events where system complexity may lead to operator uncertainty. Appropriate procedures will also be developed for the fire protection program.

Start-up Procedures

These documents contain instructions for starting the reactor from cold or hot conditions and establishing power operation. This includes documented determination that prerequisites have been met, including confirmation that necessary instruments are operable and properly set; valves are properly aligned, necessary system procedures, tests and calibrations have been completed; and required approvals have been obtained.

Shutdown Procedures

These documents contain guidance for operations during controlled shutdown and following reactor trips, including instructions for establishing or maintaining hot shutdown/standby or cold shutdown conditions, as applicable. The major steps involved in shutting down the plant are specified, including instructions for such actions as monitoring and controlling reactivity, load reduction and cooldown rates, sequence for

activating or deactivating equipment, requirements for prompt analysis for causes of reactor trips or abnormal conditions requiring unplanned controlled shutdowns, and provisions for decay heat removal.

Power Operation and Load Changing Procedures

These documents contain instructions for steady-state power operation and load changing. These documents include, as examples, provisions for use of control rods, chemical shim, coolant flow control, or any other system available for short term or long-term control of reactivity, making deliberate load changes, responding to unanticipated load changes, and adjusting operating parameters.

Process Monitoring Procedures

These documents contain instructions for monitoring performance of plant systems to assure that core thermal margins and coolant quality are maintained in acceptable status at all times, that integrity of fission product barriers is maintained, and that engineered safety features and emergency equipment are in a state of readiness to keep the plant in a safe condition if needed. Maximum and minimum limits for process parameters are appropriately identified. Operating procedures address the appropriate nature and frequency of this monitoring.

Fuel Handling Procedures

These documents contain instructions for core alterations, accountability of fuel and partial or complete refueling operations that include, for example, continuous monitoring of neutron flux throughout core loading, periodic data recording, audible annunciation of abnormal flux increases, and evaluation of core neutron multiplication to verify safety of loading increments. Procedures are also provided for receipt and inspection of new fuel, and for fuel movements in the spent fuel storage areas. Fuel handling procedures include prerequisites to verify the status of systems required for fuel handling and movement; inspection of replacement fuel and control rods; designation of proper tools, proper conditions for spent fuel movement, proper conditions for fuel cask loading and movement; and status of interlocks, reactor trip circuits and mode switches. These procedures provide requirements for refueling, including proper sequence, orientation and seating of fuel and components, rules for minimum operable instrumentation, actions for response to fuel damage, verification of shutdown margin, communications between the control room and the fuel handling station, independent verification of fuel and component locations, criteria for stopping fuel movements, and documentation of final fuel and component serial numbers (or other unique identifiers) and locations.

Maintenance Procedures

These documents contain instructions in sufficient detail to permit maintenance work to be performed correctly and safely, and include provisions, such as hold or witness points, for conducting and recording results of required inspections or tests. These documents may include applicable inspection or test instructions subject to the requirements for test and inspection procedures below. Appropriate referencing to other procedures, standards, specifications, or supplier manuals is provided. When not provided through other documents, instructions for equipment removal and return to service, and applicable radiation protection measures (such as protective clothing and radiation monitoring) will be included.

Radiological Protection Procedures

These documents contain instructions for implementation of the radiological protection program requirements necessary to meet regulatory commitments, including acquisition of data and use of equipment to perform necessary radiation surveys, measurements and evaluations for the assessment and

control of radiation hazards. These documents provide requirements for monitoring both external and internal exposures of employees, utilizing accepted techniques; routine radiation surveys of work areas; effluent and environmental monitoring in the vicinity of the plant; radiation monitoring of maintenance and special work activities, and for maintaining records demonstrating the adequacy of measures taken to control radiation exposures to employees and others. These documents also provide for the control, treatment and management of radioactive wastes, and control of radioactive calibration sources.

Calibration and Test Procedures

These documents contain instructions for periodic calibration and testing of instrumentation and control systems, and for periodic calibration of measuring and test equipment used in activities affecting the quality of these systems. These documents provide for meeting surveillance requirements and for assuring measurement accuracy adequate to keep safety-related parameters within operational and safety limits.

Chemical and Radiochemical Control Procedures

These documents contain instructions for chemical and radiochemical control activities and include: the nature and frequency of sampling and analyses; instructions for maintaining coolant quality within prescribed limits; and limitations on concentrations of agents that could cause corrosive attack, foul heat transfer surfaces, or become sources of radiation hazards due to activation.

Emergency Operating Procedures

These documents contain instructions for response to potential emergencies so that a trained operator will know in advance the expected course of events that will identify an emergency and the immediate actions that are taken in response. Format and content of emergency procedures are based on NUREG and Owner's Group(s) guidance that identify potential emergency conditions and require such procedures to include, as appropriate, a title, symptoms to aid in identification of the nature of the emergency, automatic actions to be expected from protective systems, immediate operator actions for operation of controls or confirmation of automatic actions, and subsequent operator actions to return the reactor to a normal condition or provide for a safe extended shutdown period under abnormal or emergency conditions.

Emergency Plan Implementing Procedures

These documents contain instructions for activating the Emergency Response Organization and facilities, protective action levels, organizing emergency response actions, establishing necessary communications with local, state and federal agencies, and for periodically testing the procedures, communications and alarm systems to assure they function properly. Format and content of such procedures are such that requirements of each facility's NRC-approved Emergency Plan are met.

Test and Inspection Procedures

These documents provide the necessary measures to assure quality is achieved and maintained for the nuclear facilities. The instructions for tests and inspections may be included within other procedures, such as installation and maintenance procedures, but will contain the objectives, acceptance criteria, prerequisites for performing the test or inspection, limiting conditions, and appropriate instructions for performing the test or inspection, as applicable. These procedures also specify any special equipment or calibrations required to conduct the test or inspection and provide for appropriate documentation and evaluation by responsible authority to assure test or inspection requirements have been satisfied. Where necessary, hold or witness points are identified within the procedures and require appropriate approval for the work to continue beyond the designated point. These procedures provide for recording the date,

identification of those performing the test or inspection, as-found condition, corrective actions performed (if any), and as-left condition, as appropriate for the subject test or inspection.

5.4 CONTROL OF SYSTEMS AND EQUIPMENT IN THE OPERATIONAL PHASE

Permission to release systems and equipment for maintenance or modification is controlled by designated operating personnel and documented. Measures, such as installation of tags or locks and releasing stored energy, are used to ensure personnel and equipment safety. When entry into a closed system is required, PVNGS has established control measures to prevent entry of extraneous material and to assure that foreign material is removed before the system is reclosed.

Administrative procedures require the designated operating personnel to verify that the system or equipment can be released and determine the length of time it may be out of service. In making this determination, attention is given to the potentially degraded degree of protection where one subsystem of a redundant safety system is not available for service. Conditions to be considered in preparing equipment for maintenance include, for example: shutdown margin; method of emergency core cooling; establishment of a path for decay heat removal; temperature and pressure of the system; valves between work and hazardous material; venting, draining and flushing; entry into closed vessels; hazardous atmospheres; handling hazardous materials; and electrical hazards.

When systems or equipment are ready to be returned to service, designated operating personnel control placing the items in service and document its functional acceptability. Attention is given to restoration of normal conditions, such as removal of jumpers or signals used in maintenance or testing, or actions such as returning valves, breakers or switches to proper start-up or operating positions from "test" or "manual" positions. Where necessary, the equipment placed into service receives additional surveillance during the run-in period.

Independent/concurrent verifications, where appropriate, are used to ensure that the necessary measures have been implemented correctly. The minimum requirements and standards for using independent/concurrent verification are established in company documents.

5.5 PLANT MAINTENANCE

PVNGS establishes controls for the maintenance or modification of items and equipment subject to this QAPD to ensure quality at least equivalent to that specified in original design bases and requirements, such that safety-related structures, systems and components are maintained in a manner that assures their ability to perform their intended safety function(s). Maintenance activities (both corrective and preventive) are scheduled and planned so as not to unnecessarily compromise the safety of the plant. In establishing controls for plant maintenance, PVNGS commits to compliance with NQA-1-2008, Subpart 2.18, with the following clarifications and exceptions:

- Where Subpart 2.18 refers to the requirements of ANS-3.2, it shall be interpreted to mean the applicable standards and requirements established within the PVNGS QAPD.

- Section 203 requires cleanliness during maintenance to be in accordance with Subpart 2.1. The commitment to Subpart 2.1 is described QAPD Section 2.13.2.

- Section 207 refers to Subpart 2.5 for inspection. In lieu of using Subpart 2.5, PVNGS will apply the commitment to NRC Regulatory Guide 1.94 (R1, April 1976)/ANSI 45.2.5 (1974)

Figure 1 – PVNGS Organization

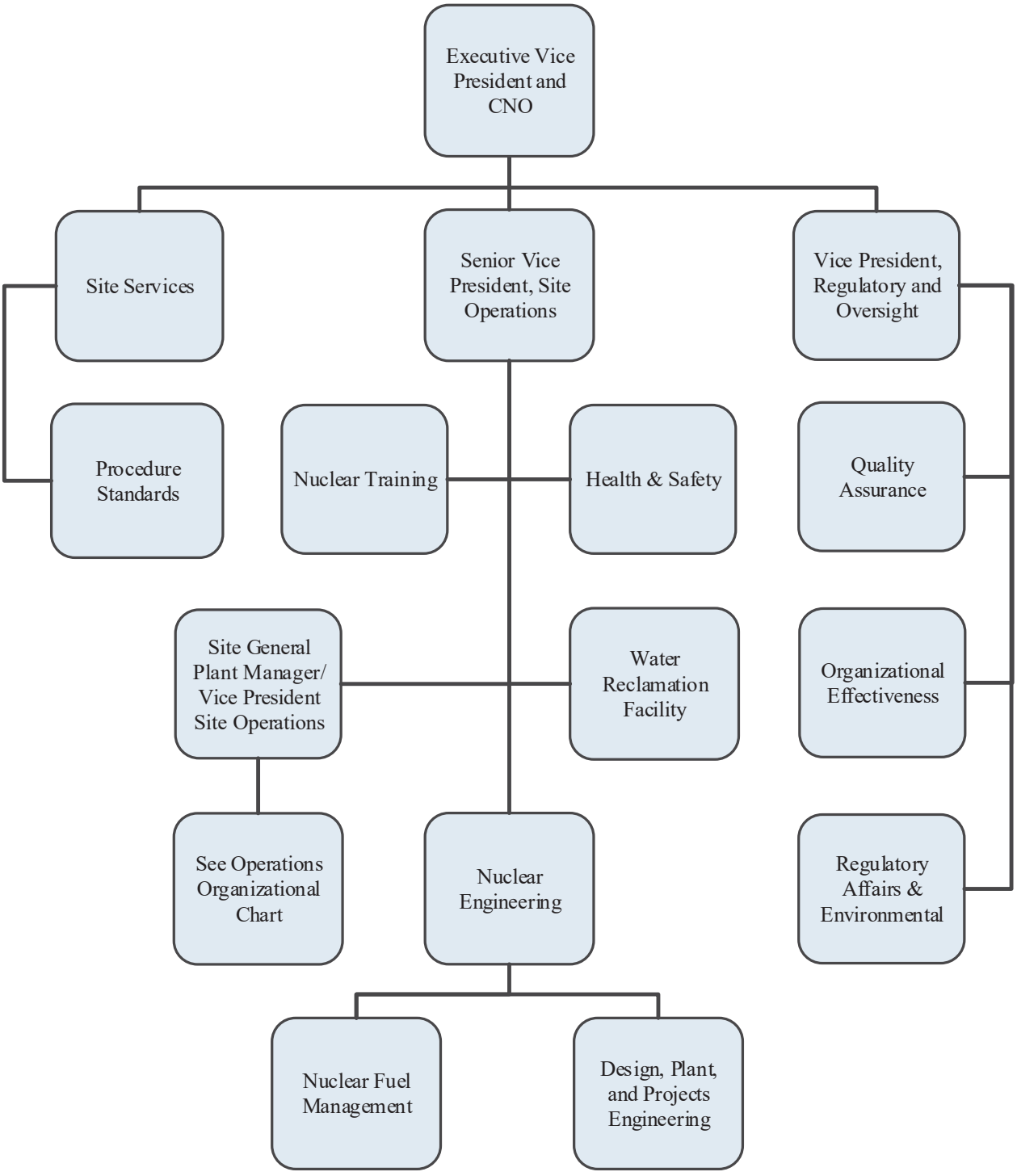

Figure 2 – PVNGS Operations Organization