10 CFR 50.54(a)

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102-07022-MLL/JR
July 28, 2015

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Units 1, 2, and 3
Docket Nos. STN 50-528, 50-529, and 50-530
Request to Change the Quality Assurance Program Description (QAPD)

Pursuant to 10 CFR 50.54(a), Arizona Public Service Company (APS) hereby requests a change to the PVNGS Quality Assurance Program Description (QAPD). As detailed further in the enclosure to this letter, the proposed change involves an entire rewrite and extraction of the PVNGS QAPD from the Updated Final Safety Analysis Report (UFSAR) in order to adopt a standardized QAPD based upon guidance of Nuclear Energy Institute (NEI) 11-04A, *Nuclear Generation Quality Assurance Program Description*. The NEI 11-04A Quality Assurance Program template was reviewed and approved by the NRC via Safety Evaluation Report (NRC Agencywide Document Management System {ADAMS} Accession Number ML13023A051) dated May 9, 2013.

The enclosure to this letter includes background and description information along with attachments providing a detailed description of, and basis for, the proposed QAPD change. The attachments include:

- Regulatory Basis for Revised Quality Assurance Program Description
- Proposed PVNGS Operations QAPD Based Upon NEI 11-04A
- Mark-Ups of Existing QA-Related UFSAR Pages
- Comparison of Existing NRC Regulatory Guide Commitments to the New NRC Regulatory Guide Commitments Adopted in the Proposed QAPD
- Specific Deviations from the NEI 11-04A Template and the Basis for Deviations

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- Comparison of Current QAPD to Proposed QAPD Based Upon NEI 11-04A and NQA-1-2008/NQA-1a-2009
- NEI 11-04A, Revision 0, Appendix 1, Regulatory Guide 1.33, Rev. 2, ANSI N18.7-1976, NQA-1- 2008/NQA-1a-2009 Standards, and NEI 11-04 QAPD Compliance Matrix

Once approved, implementation shall be completed within 270 days.

The Plant Review Board and the Offsite Safety Review Committee have reviewed and concurred with this proposed QAPD change.

No new NRC commitments are being made by this letter. Should you need further information regarding this submittal, please contact Thomas N. Weber, Regulatory Affairs Department Leader, at (623) 393-5764.

Sincerely,

Maria Lacal

MLL/JR

Enclosure: Proposed Change to the Palo Verde Nuclear Generating Station (PVNGS) Operations Quality Assurance Program Description (QAPD)

cc:	M. L. Dapas	NRC Region IV Regional Administrator
	M. M. Watford	NRC NRR Project Manager for PVNGS
	L. J. Klos	NRC NRR Project Manager
	C.A. Peabody	NRC Senior Resident Inspector for PVNGS

ENCLOSURE

Proposed Change to the Palo Verde Nuclear Generating Station (PVNGS) Operations Quality Assurance Program Description (QAPD)

- BACKGROUND AND DESCRIPTION
- ATTACHMENTS:

1. Regulatory Basis for Revised Quality Assurance Program Description
2. Proposed PVNGS Operations QAPD Based Upon NEI 11-04A
3. Mark-Ups of Existing QA-Related UFSAR Pages
4. Comparison of Existing NRC Regulatory Guide Commitments to New NRC Regulatory Guide Commitments Adopted in the Proposed QAPD
5. Specific Deviations from the NEI 11-04A Template and the Basis for Deviations
6. Comparison of Current QAPD to Proposed QAPD Based Upon NEI 11-04A and NQA-1-2008/NQA-1a-2009
7. NEI 11-04A, Revision 0, Appendix 1, Regulatory Guide 1.33, Rev. 2, ANSI N18.7-1976, NQA-1-2008/NQA-1a-2009 Standards, and NEI 11-04 QAPD Compliance Matrix

ENCLOSURE

BACKGROUND AND DESCRIPTION

Pursuant to 10 CFR 50.54(a), Arizona Public Service (APS) is requesting approval of a revision to the Palo Verde Nuclear Generating Station (PVNGS) Operations Phase Quality Assurance (QA) Program to adopt updated industry standards. The updated industry standards represent approximately 40 years of experience and advancement for quality assurance and administrative controls related to the siting, design, construction, start-up, operation, and decommissioning of commercial nuclear power plants. Although the updated industry standards were developed primarily as a result of the resurgence of interest in the construction of domestic nuclear power plants, they are adaptable for use at an operating facility.

Nuclear Energy Institute (NEI) 11-04A, *Nuclear Generation Quality Assurance Program Description*, Revision 0, was developed to be used by new licensees constructing facilities under Early Site Permit and combined Construction and Operating License provisions of 10 CFR 52. APS has adapted the NEI 11-04A template to replace the existing PVNGS Operations Quality Assurance Program Description (QAPD) and thus appropriate deviations from the NEI 11-04A guidance were necessary to address an operational facility that has already been designed, constructed, and licensed to earlier regulatory guidance and industry standards.

The basis for concluding that the revised PVNGS QAPD satisfies the requirements of 10 CFR 50, Appendix B, and additional administrative requirements of NRC Regulatory Guide (RG) 1.33, Revision 2, is provided as Attachment 1, *Regulatory Basis for Revised Quality Assurance Program Description.*

The current PVNGS QAPD resides in various sections of the PVNGS Updated Final Safety Analysis Report (UFSAR). The revised PVNGS QAPD is intended to be issued as a separate topical report following the overall format and content of the NEI 11-04A template. The revised PVNGS QAPD is provided in Attachment 2, *Proposed PVNGS Operations Quality Assurance Program Description (QAPD) Based Upon NEI 11-04A*. A marked-up copy of existing QA-related UFSAR pages is provided in Attachment 3, *Mark-Ups of Existing QA-Related UFSAR Pages*.

A summary table comparing existing commitments to NRC Regulatory Guides and commitments to the updated NRC Regulatory Guides is provided as Attachment 4, *Comparison of Existing NRC Regulatory Guide Commitments to New NRC Regulatory Guide Commitments Adopted in the Proposed QAPD*. The overall change implements an updated QA regulatory commitment structure based upon RG 1.28, Revision 4, which endorses Nuclear Quality Assurance (NQA)-1-2008 and the subsequent addenda in NQA-1a-2009 (NQA-1-2008/NQA-1a-2009), *Quality Assurance Requirements for Nuclear Facility Applications.* The commitment to RG 1.28 replaces commitments to several NRC Regulatory Guides which endorsed ANSI

N45.2-1971, and several of the older ANSI N45.2 series of standards that have been incorporated into NQA-1-2008/NQA-1a-2009. The additional operational phase administrative controls previously addressed by adopting ANSI N18.7-1976 are now addressed by adopting RG 1.28, NQA-1-2008/NQA-1a-2009, and the additional operational phase administrative controls embedded in the text of NEI 11-04A. The overall format of NEI 11-04A has been adopted with some minor numbering modifications.

Specific deviations from the NEI 11-04A template and the basis for deviations are presented in Attachment 5, *Specific Deviations from the NEI 11-04A Template and the Basis for Deviations*.

APS has evaluated the proposed PVNGS QAPD changes in accordance with 10 CFR 50.54(a) and has concluded the extent of changes to licensee (APS) regulatory commitments warrants NRC review and approval prior to implementation. Although the overall effect of the PVNGS QAPD change has generally been determined to be equivalent to the existing QA requirements and controls, there are specific changes in the level of detail presented in the revised PVNGS QAPD that could be considered reductions in QA program commitments pursuant to 10 CFR 50.54(a). A discussion of those areas APS believes could be considered as either reductions or increases in the level of regulatory commitment is provided in Attachment 6, *Comparison of Current QAPD to Proposed QAPD Based Upon NEI 11-04A and NQA-1-2008/NQA-1a-2009*. Attachment 6 provides a table comparing major sections in the existing PVNGS QAPD to the proposed PVNGS QAPD sections that will describe related QA program requirements and administrative controls.

The proposed changes in QA regulatory commitments for PVNGS, when approved by the NRC, shall not be construed to negatively impact the quality of any items (structures, systems, components, parts, or materials) that were properly controlled or activities that were properly implemented in accordance with previous NRC approved QA programs for PVNGS, as periodically updated per requirements of 10 CFR 50.54(a).

As described in the NRC Safety Evaluation Report for adopting the NEI 11-04A template, PVNGS has incorporated all of the administrative controls for the operational phase as described in NEI 11-04A, Appendix 1, *Regulatory Guide 1.33, Rev. 2, ANSI N18.7-1976, NQA-1- 2008/NQA-1a-2009 Standards, and NEI 11-04 QAPD Compliance Matrix*. Incorporation of the administrative controls as described in NEI 11-04A, Appendix 1, provides an equivalent and acceptable alternative to the existing PVNGS commitment to RG 1.33. Appendix 1 of NEI 11-04A, is included as Attachment 7, *NEI 11-04A, Revision 0, Appendix 1, Regulatory Guide 1.33, Rev. 2,*

ANSI N18.7-1976, NQA-1-2008/NQA-1a-2009 Standards, and NEI 11-04 QAPD Compliance Matrix. Attachment 4 describes the incorporation of the administrative controls into the PVNGS QAPD.

ATTACHMENT 1

Regulatory Basis for Revised Quality Assurance Program Description

(16 Pages follow)

ATTACHMENT 1

Regulatory Basis for Revised Quality Assurance Program Description

The Palo Verde Nuclear Generating Station (PVNGS) Quality Assurance Program Description (QAPD) is the top-level policy document that establishes the quality assurance (QA) policy and assigns major functional responsibilities for operational phase activities conducted by or for PVNGS. The PVNGS QAPD describes the methods and establishes QA and administrative control requirements that meet 10 CFR 50, Appendix B, 10 CFR 71, Subpart H, and 10 CFR 72, Subpart G, using the applicable regulatory guidance and industry standards as a basis.

In June 2010, the NRC issued Regulatory Guide (RG) 1.28, Revision 4, *Quality Assurance Program Criteria (Design and Construction)*. This RG described methods that the NRC staff considered acceptable for complying with the provisions of 10 CFR Part 50 and 10 CFR Part 52 for establishing and implementing a QAPD for the design and construction of nuclear power plants and fuel reprocessing plants.

Regulatory Guide 1.28 endorsed the American Society of Mechanical Engineers Standard NQA-1, *Quality Assurance Requirements for Nuclear Facility Applications,* Part I and Part II requirements included in NQA-1-2008 and the subsequent addenda in NQA-1a-2009 (NQA-1-2008/NQA-1a-2009), as the bases for complying with the requirements of 10 CFR Part 50, Appendix B, subject to the additions and modifications of NQA-1-2008/NQA-1a-2009 identified in the regulatory positions of the RG.

The NRC staff approved a QAPD template provided by the Nuclear Energy Institute (NEI) which reflected the guidance of RG 1.28, Revision 4. The QAPD template was released as NEI 11-04A, *Quality Assurance Program Description*, Revision 0, the "A" denoting NRC staff approval, as documented by NRC Safety Evaluation (SE) dated May 9, 2013.

As stated in the NRC SE, the NEI template provides an adequate basis for complying with the requirements of Appendix B to 10 CFR Part 50, subject to specific additions and modifications of NQA-1-2008/NQA-1a-2009, as supplemented by additional regulatory guidance and industry guidance applicable to administrative and quality controls during nuclear power plant operation. The QAPD template provides guidance for establishing a top-level policy document that defines QA policy and assigns major QA Program functional responsibilities. The QAPD template can be used for early site permit, construction, preoperational, and/or operational activities, as applicable, that affect the quality and performance of safety-related structures, systems, and components (SSCs).

Regulatory Basis for Revised Quality Assurance Program Description

The NRC SE stipulates additional quality assurance program requirements for the operating phase:

> "an applicant must either demonstrate that its QAPD has incorporated all of the administrative controls not included in NQA-1-2008 and the NQA-1a-2009 Addenda by explicitly addressing the provisions in NEI 11-04, Revision 0, Part V and Appendix 1, or otherwise by including a commitment to RG 1.33, *Quality Assurance Program Requirements (Operation),* Revision 2 in Part IV of the QAPD."

The additional requirements are met by the proposed PVNGS QAPD as follows:

- NEI 11-04A, Revision 0, Part V is addressed in PVNGS QAPD Section 5.0.
- Appendix 1 of NEI 11-04A is explicitly addressed in this submittal and is included as Attachment 7, *NEI 11-04A, Revision 0, Appendix 1, Regulatory Guide 1.33, Rev. 2, ANSI N18.7-1976, NQA-1- 2008/NQA-1a-2009 Standards, and NEI 11-04 QAPD Compliance Matrix*.

The PVNGS QAPD is also intended to satisfy the quality assurance program requirements of other regulations under Title 10, Energy, which also contain 18 quality assurance criteria which are either identical to, or essentially the same as, the 18 Criteria of 10 CFR 50, Appendix B. The other regulations which have applicability are listed as follows:

- 10 CFR 71, Subpart H – *Quality Assurance*, for packaging and transportation of radioactive material
- 10 CFR 72, Subpart G – *Quality Assurance*, for the independent storage of spent nuclear fuel and high-level radioactive waste, and reactor-related greater than Class C waste

Regulatory Basis for Revised Quality Assurance Program Description

The following is a discussion regarding how the revised PVNGS QAPD satisfies each of the 18 Criteria of 10 CFR 50, Appendix B.

Criterion 1 - Organization

The PVNGS QAPD Section 2.1 provides an organizational description that clearly describes the management structure and functional responsibilities, from corporate management through operating plant positions, to establish, maintain, and implement the regulatory and QA Program requirements applicable to PVNGS. The QAPD functional description of responsibilities allows management to size the nuclear production and technical organizations commensurate with their assigned duties and responsibilities. The organizational structure described provides sufficient independence of the organization with primary responsibility of verifying effective implementation of the PVNGS QA Program requirements.

The PVNGS QAPD adopts the quality standards for the organization as described in NQA-1-2008, Requirement 1, and an organizational description for the operational phase consistent with guidance provided in the NEI 11-04A QAPD template. These standards and guidance are endorsed as acceptable methods of meeting 10 CFR 50, Appendix B by NRC RG 1.28, Revision 4, dated June 2010, and the NRC SE for NEI 11-04A.

Criterion 2 - Quality Assurance Program

The PVNGS QAPD Sections 2.2 and 3.0 establish the necessary measures to implement a QA Program to ensure that the operation of the PVNGS nuclear power plants and facilities are in accordance with governing regulations and license requirements. The QA Program comprises those planned and systematic actions necessary to provide confidence that structures, systems, and components (SSCs) will perform their intended safety functions, including certain non-safety related SSCs and activities that are significant contributors to plant safety or compliance with other regulations applicable 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). PVNGS maintains a list or system identifying SSCs and activities within the scope of the QA program.

The PVNGS QAPD provides measures to assess the adequacy of the QAPD and to ensure its effective implementation at least once every 2 years. In addition, a grace period of 90 days is applied to activities that must be performed on a periodic basis.

The PVNGS QAPD describes the necessary measures to establish and maintain formal indoctrination and training programs for personnel performing, verifying, or maintaining activities within the scope of the PVNGS QAPD to ensure task-related proficiency is maintained. The PVNGS QAPD provides the minimum training requirements for managers responsible for implementing elements of the PVNGS QAPD and for the manager responsible for planning, implementing, and maintaining the programs for the PVNGS QAPD.

The PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 2 with alternatives provided in the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4; the guidance of NQA-1-2008/NQA-1a-2009; and specific alternatives of NEI 11-04A in lieu of existing commitments to RG 1.58 (ANSI N45.2.6) and RG 1.146 (ANSI N45.2.23). The existing PVNGS commitment to NRC RG 1.8, which endorses ANSI/ANS 3.1-1978, is maintained with some modifications. These modifications remove a previous exception to ANSI/ANS 3.1-1978 for the "Engineer in Charge" and adopt NQA-1-2008/NQA-1a-2009 as the basis for QA management qualifications in lieu of ANSI/ANS 3.1-1978.

One additional alternative to the guidance of NQA-1-2008, Requirement 2, related to qualification of lead auditors, is also included in the PVNGS QAPD Section 2.2.7. A similar alternative was previously accepted by NRC SE dated March 27, 1998, for the San Onofre Nuclear Generating Station. This alternative was adopted by PVNGS and incorporated into the PVNGS QAPD under the provisions of 10 CFR 50.54(a)(3)(ii) in November 2000.

Criterion 3 - Design Control

The PVNGS QAPD Section 2.3 establishes the necessary measures to control design, design changes, and temporary modifications of items within the scope of the PVNGS QAPD. The PVNGS QAPD includes measures to control design inputs, outputs, changes, interfaces, records, and organizational interfaces among the licensee and its suppliers. These provisions ensure that the design inputs are correctly translated into design outputs. In addition, the PVNGS QAPD provides for individuals knowledgeable in QA principles to review design documents to ensure that they contain the necessary QA requirements.

The PVNGS QAPD adopts the quality standards for design control and verification as described in NQA-1-2008 and NQA-1a-2009 Addenda, Requirement 3; Subpart 2.7

for computer software; and Subpart 2.14 for QA requirements for commercial grade items and services. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4, and guidance of NQA-1-2008/NQA-1a-2009 in lieu of existing commitment to NRC RG 1.64 and ANSI N45.2.11.

Criterion 4 - Procurement Document Control

The PVNGS QAPD Section 2.4 establishes the necessary administrative controls and processes to ensure that procurement documents include or reference applicable regulatory, technical, and QA program requirements. Applicable technical, regulatory, administrative, quality, and reporting requirements are invoked for procurement of items and services.

The PVNGS QAPD adopts the quality standards for procurement document control as described in NQA-1-2008, Requirement 4, with alternatives provided in the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4, and the guidance of NQA-1-2008/NQA-1a-2009 with alternatives of NEI 11-04A in lieu of existing commitment to NRC RG 1.123 and ANSI N45.2.13.

Criterion 5 - Instructions, Procedures, and Drawings

The PVNGS QAPD Sections 2.5 and 5.3 establish the necessary measures and governing procedures to ensure that activities affecting quality are prescribed by and performed in accordance with documented instructions, procedures, and drawings.

The PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 5, and the guidance of NEI 11-04A, Part V, Section 3, *Operational Phase Procedures*, in establishing the required procedural controls. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B.

Criterion 6 - Document Control

To ensure effective and accurate procedures during the operational phase, procedures are reviewed and updated as necessary. Temporary changes to a procedure that clearly do not alter the intent of the procedure may be

implemented, provided that two members of the operations staff knowledgeable in the areas affected by the procedure approve the changes. These temporary changes include a specific period of time during which the revised procedure may be used.

In establishing provisions for document control, the PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 6 and the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B.

Criterion 7 - Control of Purchased Material, Equipment, and Services

The PVNGS QAPD Section 2.7 establishes necessary measures and governing procedures that control procurement of items and services to ensure conformance with specified requirements. The controls include measures for evaluating prospective suppliers and selecting only those that are qualified. In addition, controls include auditing and evaluating suppliers to ensure that qualified suppliers continue to provide acceptable products and services.

The program provides for acceptance actions (e.g. source verification, receipt inspection, pre- and post-installation tests) and review of documentation (e.g. certificates of conformance) to ensure that the procurement, inspection, and test requirements have been satisfied before relying on the item to perform its intended safety function. Purchased items (components, spares, and replacement parts necessary for plant operation, refueling, maintenance, and modifications) and services are subject to quality and technical requirements at least equivalent to those specified for original equipment, or specified by properly reviewed and approved revisions to design documentation, to ensure these are suitable for their intended service and are of acceptable quality, consistent with their effect on safety.

In establishing procurement verification control, the PVNGS QAPD adopts the quality standards described in NQA-1a-2009, Requirement 7, with alternatives provided in the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4, and the guidance of NQA-1-2008/NQA-1a-2009 with alternatives of NEI 11-04A in lieu of existing commitment to NRC RG 1.123 and ANSI N45.2.13.

Criterion 8 - Identification and Control of Materials, Parts, and Components

The PVNGS QAPD Section 2.8 establishes necessary measures for identification and control of items such as materials, including consumables, and items with limited shelf life, parts, components, and partially fabricated subassemblies. Identification of items is maintained throughout fabrication, erection, installation, and use so that the item is traceable to its documentation.

In establishing provisions for identification and control of items, the PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 8 and the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4, in lieu of existing commitment to NRC RG 1.38 and ANSI N45.2.2.

Criterion 9 - Control of Special Processes

The PVNGS QAPD Section 2.9 establishes programs, procedures, and processes to ensure that special processes requiring interim process controls to ensure quality are controlled in accordance with applicable codes, specifications, and standards for the specific application.

In establishing measures for the control of special processes, the PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 9 and the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B.

Criterion 10 - Inspection

The PVNGS QAPD Section 2.10 establishes the necessary measures to implement inspections that ensure items, services, and activities affecting safety meet established requirements and conform to documented specifications, instructions, procedures, and design documents. The inspection program establishes requirements for planning inspections, determining applicable acceptance criteria, setting the frequency of inspections, and identifying special tools needed to perform the inspections. Qualified personnel perform the inspections and are independent of those who perform or directly supervise the work.

In establishing inspection requirements, the PVNGS QAPD adopts the quality standards described in NQA-1-2008 and NQA-1a-2009, Requirement 10, and

Subparts 2.4 and 2.8, with alternatives provided in the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4, with alternatives of NEI 11-04A, in lieu of existing commitment to RG 1.30 (ANSI N45.2.4) and RG 1.116 (ANSI N45.2.8). The PVNGS QAPD maintains existing commitment to NRC RG 1.94 and ANSI N45.2.5 rather than adopting NQA-1-2008 Subpart 2.5.

Criterion 11 - Test Control

The PVNGS QAPD Section 2.11 establishes necessary measures and governing provisions to demonstrate that items within the scope of the QAPD will perform satisfactorily in service, that the plant can be operated safely as designed, and that the operation of the plant, as a whole, is satisfactory. The PVNGS QAPD establishes 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.

In establishing the overall provisions for testing of items within the PVNGS QA Program scope, the PVNGS QAPD adopts the quality standards described in NQA-1a-2009, Requirement 11 and the NEI 11-04A QAPD template. Testing of computer software is addressed by the PVNGS QAPD's adoption of the appropriate provisions of Requirement 11 and Subpart 2.7 from NQA-1a-2009. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B.

Criterion 12 - Control of Measuring and Test Equipment

The PVNGS QAPD Section 2.12 establishes necessary measures to control the calibration, maintenance, and use of measuring and test equipment that provides information important to safe plant operation.

In establishing provisions for control of measuring and test equipment, the PVNGS QAPD adopts the quality standards described in NQA-1-2008 and NQA-1a-2009, Requirement 12 with alternatives provided in the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B.

Criterion 13 - Handling, Storage, and Shipping

The PVNGS QAPD Section 2.13 establishes the necessary measures to control handling, storage, packaging, shipping, cleaning, and preservation of items to prevent inadvertent damage or loss and to minimize deterioration.

In establishing provisions for the handling, storage, packaging, shipping, cleaning, and preservation of items, the PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 13. The PVNGS QAPD also adopts the quality standards described in NQA-1-2008 and NQA-1a-2009, Subpart 2.1, Subpart 2.2, Subpart 2.3, and Subpart 3.2, Appendix 2.1, with alternatives provided in the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4, and the guidance of NQA-1-2008/NQA-1a-2009 with alternatives of NEI 11-04A in lieu of existing commitments to NRC Regulatory Guides 1.37 (ANSI N45.2.1), 1.38 (ANSI N45.2.2), and 1.39 (ANSI N45.2.3).

Criterion 14 - Inspection, Test, and Operating Status

The PVNGS QAPD Sections 2.14 and 5.4 establish the necessary measures to identify the inspection, test, and operating status of items and components within the scope of the QAPD to maintain personnel and reactor safety and to prevent inadvertent operation of equipment.

In establishing measures for control of inspection, test, and operating status, the PVNGS QAPD adopts the standards described in NQA-1-2008, Requirement 14 and the additional operational phase equipment control measures described in the NEI 11-04A QAPD template, Part V, Section 4, *Control of Systems and Equipment in the Operational Phase.* These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B.

Criterion 15 - Nonconforming Materials, Parts, or Components

The PVNGS QAPD Section 2.15 establishes the necessary measures to control items, including services that do not conform to specified requirements to prevent inadvertent installation or use. Nonconformances are evaluated for their impact on operability of quality SSCs to ensure that the final condition does not adversely affect safety, operation or maintenance of the item or service. Results of evaluations of conditions adverse to quality are analyzed to identify quality trends,

documented, and reported to upper management in accordance with applicable procedures.

In addition, the PVNGS QAPD establishes the necessary interfaces between the QA program for identification and control of nonconforming material, parts, and components and the non-QA reporting program that satisfies applicable requirements of 10 CFR Part 21.

In establishing measures for nonconforming materials, parts, or components, the PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 15 and the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. A clarification is included regarding identification of nonconforming items. PVNGS considers other means of identification acceptable when marking on or tagging either the item, the container, or the package containing the item is not practical.

Criterion 16 - Corrective Action

The PVNGS QAPD Section 2.16 establishes the necessary measures to promptly identify, control, document, classify, and correct conditions adverse to quality. The PVNGS QAPD requires personnel to identify known conditions adverse to quality. Reports of conditions adverse to quality are analyzed to identify trends. Significant conditions adverse to quality are documented and reported to responsible management. In the case of suppliers working on safety-related activities or similar situations, PVNGS may delegate specific responsibility for the corrective action program, but PVNGS maintains responsibility for program effectiveness.

In addition, the PVNGS QAPD establishes the necessary interfaces between the QA corrective action program and the non-QA reporting program to identify, evaluate, and report defects and noncompliances to satisfy the applicable requirements of 10 CFR Part 21.

In establishing provisions for corrective action, the PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 16 and the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B.

Criterion 17 - Quality Assurance Records

The PVNGS QAPD Section 2.17 establishes the necessary measures to ensure that sufficient records of items and activities affecting quality are generated, identified, retained, maintained, and retrievable. Regulatory position C.1.a of RG 1.28, Revision 4, provides record retention times for lifetime and nonpermanent records. In establishing the retention time for records, the PVNGS QAPD bases the retention period on regulatory position C.1.a of RG 1.28, Revision 4. For use of electronic records storage and retrieval systems, the PVNGS QAPD complies with NRC guidance in Generic Letter (GL) 88-18, *Plant Record Storage on Optical Disks,* (dated October 20, 1988); Regulatory Issue Summary (RIS) 2000-18, *Guidance on Managing Quality Assurance Records in Electronic Media* (dated October 23, 2000); and associated Nuclear Information and Records Management Association (NIRMA) technical guidelines TG 11-2011, TG 15-2011, and TG 21-2011. It should be noted that the PVNGS QAPD adopts more recent versions of the NIRMA technical guidelines referenced in RIS 2000-18 and endorsed by RG 1.28, Revision 4, Regulatory Position C.1.b.

In establishing provisions for quality assurance records, the PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 17, and the regulatory positions stated in RG 1.28, Revision 4. Use of these standards has been endorsed by the NRC SE for NEI 11-04A as an acceptable method of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4, and the guidance of NQA-1-2008/NQA-1a-2009 in lieu of existing commitment to NRC RG 1.88 and ANSI N45.2.9.

Criterion 18 - Audits

The PVNGS QAPD Sections 2.18 and 5.2 establish the necessary measures to implement audits to verify that activities covered by the PVNGS QAPD are performed in conformance with the established requirements. The effectiveness of the audit program is reviewed as part of the overall review and audit process. The PVNGS QAPD provides for the conduct of periodic internal and external audits. Internal audits are conducted to determine the adequacy of the QA Program and its implementing procedures and to determine if they comply with the PVNGS QAPD requirements. Internal audits are performed at a frequency commensurate with safety significance and in such a manner as to ensure that an audit of all applicable QA program elements is completed for each functional area within a period of two years unless performance dictates that audits should be performed at a different frequency. External audits determine the adequacy of supplier or contractor QA

programs. Responsible management reviews audit results, responds to audit findings, and initiates corrective action where indicated in accordance with the PVNGS Corrective Action Program. Where corrective actions are indicated, documented follow-up of applicable areas through inspection, review, re-audit, or other appropriate means is conducted to verify that corrective actions have been adequately implemented.

In establishing the independent audit program, the PVNGS QAPD adopts the quality standards described in NQA-1-2008, Requirement 18 and the regulatory positions stated in RG 1.28, Revision 4, with alternatives provided in the NEI 11-04A QAPD template. These standards are endorsed by NRC RG 1.28, Revision 4, and the NRC SE for NEI 11-04A as acceptable methods of meeting 10 CFR 50, Appendix B. The PVNGS QAPD adopts NRC RG 1.28, Revision 4, the guidance of NQA-1-2008/NQA-1a-2009, and alternatives provided in NEI 11-04A in lieu of existing commitments to NRC Regulatory Guides 1.33 (ANS 3.2/ANSI N18.7) and 1.144 (ANSI N45.2.12) for audits.

Regulatory Basis for Revised Quality Assurance Program Description

Reference Documents

1. Appendix B to 10 CFR Part 50, *Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants*
2. 10 CFR 71, *Packaging and transportation of radioactive material*, Subpart H, *Quality Assurance*
3. 10 CFR 72, *Licensing requirements for the independent storage of spent nuclear fuel and high-level radioactive waste, and reactor-related greater than Class C waste*, Subpart G, *Quality Assurance*
4. NRC Regulatory Guide 1.28, Revision 4, *Quality Assurance Program Criteria (Design and Construction)*
5. ASME NQA-1-2008/NQA-1a-2009, *Quality Assurance Requirements for Nuclear Facility Applications*
6. NEI 11-04A, Revision 0, *Nuclear Energy Institute, Nuclear Generation Quality Assurance Program Description*
7. NRC Safety Evaluation Report on NEI 11-04, Revision 0, Dated May 9, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML13023A051)
8. NRC Regulatory Guide 1.33, Revision 2, *Quality Assurance Program Requirements (Operation)*
9. ANS 3.2/ANSI N18.7-1976, *Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants*
10. NRC Regulatory Guide 1.58, Revision 1, *Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel*
11. ANSI N45.2.6-1978, *Qualifications Inspection, Examination and Testing Personnel for Nuclear Power Plants*
12. NRC Regulatory Guide 1.146, Revision 0, *Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants*
13. ANSI N45.2.23-1978, *Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants*

14. NRC Regulatory Guide 1.8, Revision1-R, *Qualification and Training of Personnel for Nuclear Power Plants*

15. ANSI/ANS 3.1-1978, *American National Standard for Selection and Training of Nuclear Power Plant Personnel*

16. NRC Safety Evaluation dated March 27, 1998, *Approval of Changes to the Quality Assurance Program Description for the San Onofre Nuclear Generating Station, UNITS 1, 2, AND 3 (TAC NOS. MA1002, MA-0981, MA-0982)*

17. NRC Regulatory Guide 1.64, Revision 2, *Quality Assurance Requirements for the Design of Nuclear Power Plants*

18. ANSI N45.2.11-1974, *Quality Assurance Requirements for the Design of Nuclear Power Plants*

19. NRC Regulatory Guide 1.123, Revision 1, *Quality Assurance Requirements for Control of Procurement of Items and Service for Nuclear Power Plants*

20. ANSI N45.2.13-1976, *Quality Assurance Requirements for Control of Procurement of Items and Service for Nuclear Power Plants*

21. NRC Regulatory Guide 1.38, Revision 2, *Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants*

22. ANSI N45.2.2-1972, *Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants (During the Construction Phase)*

23. NRC Regulatory Guide 1.30, Revision 0, *Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment (Safety Guide 30)*

24. ANSI N45.2.4-1972, *Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations*

25. NRC Regulatory Guide 1.116, Revision 0-R, *Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems*

26. ANSI N45.2.8-1975, *Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants*

27. NRC Regulatory Guide 1.94, Revision 1, *Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants*

28. ANSI N45.2.8-1975, *Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants*

29. NRC Regulatory Guide 1.37, Revision 0, *Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants*

30. ANSI N45.2.1-1973, *Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants*

31. NRC Regulatory Guide 1.39, Revision 2, *Housekeeping Requirements for Water-Cooled Nuclear Power Plants*

32. ANSI N45.2.3-1973, *Housekeeping During the Construction Phase of Nuclear Power Plants*

33. 10 CFR Part 21, *Reporting of Defects and Noncompliance*

34. Proposed Final NRC Generic Letter 88-18, *Guidance on Managing Quality Assurance Records in Electronic Media* (dated October 20, 1988)

35. Regulatory Issue Summary (RIS) 2000-18, *Guidance on Managing Quality Assurance Records in Electronic Media* Generic Letter (GL) 88-18, *Plant Record Storage on Optical Disks* (dated October 23, 2000)

36. Nuclear Information and Records Management Association, Inc. (NIRMA), TG 11-2011, *Authentication of Records and Media*

37. Nuclear Information and Records Management Association, Inc. (NIRMA), TG 15-2011, *Management of Electronic Records*

38. Nuclear Information and Records Management Association, Inc. (NIRMA), TG 21-2011, *Electronic Records Protection and Restoration*

39. NRC Regulatory Guide 1.88, Revision 2, *Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records*

40. ANSI N45.2.9-1974, *Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants*

41. NRC Regulatory Guide 1.144, Revision 1, *Auditing of Quality Assurance Programs for Nuclear Power Plants*

42. ANSI N45.2.12-1978, *Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants*

ATTACHMENT 2

Proposed PVNGS Operations Quality Assurance Program Description
Based Upon NEI 11-04A

(69 Pages Follow)

PVNGS Operations Quality Assurance Program Description (QAPD)

REVISION 0

Originator: _____

Reviewer: _____

Approval: _____

EFFECTIVE DATE: _____

PVNGS Operations Quality Assurance Program Description (QAPD)

REVISION 0

DESCRIPTION OF CHANGES	PAGE
Revision 0	
1. Relocation of QA Program from UFSAR to stand-alone topical report	ALL

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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.

Signed
Randy Edington
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. 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 Appendix A 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 President/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 President and CEO is responsible for all aspects of operation of the PVNGS plants and site. The APS President and CEO is also responsible for all technical and administrative support activities provided by APS and contractors. The APS President and CEO directs the Executive Vice President Nuclear and Chief Nuclear Officer (CNO) in fulfillment of his responsibilities. The APS President and 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 and the Vice President, Regulatory and Oversight. The Director Nuclear Assurance reports to the Vice President, Regulatory and Oversight.

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

The Site General Plant Manager 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 Assurance, are maintained
- administration of nuclear safety culture programs, including the program to investigate, resolve, and document nuclear safety concerns
- 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

2.1.5 Quality Assurance

The PVNGS Nuclear Assurance organization, under the direction of the Director, Nuclear Assurance, 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 Assurance reports to the Vice President, Regulatory and Oversight. The Director, Nuclear Assurance 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 Assurance 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 Assurance may make recommendations to the PVNGS management regarding improving the quality of work processes. The Director, Nuclear Assurance 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 Performance Improvement

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 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

2.1.8 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

2.1.9 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 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

2.1.12 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.

2.1.13 Chemistry

A management position is responsible for:

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

2.1.14 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

2.1.15 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

2.1.16 Operations Support

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 coordinated PVNGS, federal, state, and local government emergency response program for PVNGS
- 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

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.

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.

A grace period of 90 days may be applied to provisions that are required to be performed on a periodic basis, unless otherwise noted. Annual evaluations and audits that must be performed on a triennial basis are examples where the 90 day grace period could be applied. The grace period does not allow the "clock" for a particular activity to be reset forward. The

"clock" for an activity is reset backward by performing the activity early. Audit schedules are based on the month in which the audit starts.

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 2.1.1. 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 Assurance 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 Assurance 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 Assurance and approved by the PVNGS Executive Vice President (CNO) or the Senior 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 Assurance 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 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 Committee (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.

- 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 services from a calibration laboratory, procurement source evaluation and selection measures need not be performed provided each of the following conditions are met:

  - The purchase documents impose any additional technical and administrative requirements, as necessary, to comply with the PVNGS QA program and technical provisions. At a minimum, the purchase documents shall require that the calibration certificates/reports include identification of the laboratory equipment/standards used.

  - The purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.

  - A documented review of the supplier's accreditation will be performed and will include a verification of the following:

    o The calibration laboratory holds a domestic (United States) accreditation by an NRC-approved accrediting body recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA).

    o The accreditation encompasses ANSI/ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories."

    o The published scope of accreditation for the calibration laboratory covers the necessary measurement parameters, range, and uncertainties.

- 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 act ion 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 Assurance.

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 2.1.3 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 1.28, 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 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, and Dry Active Waste Processing Storage 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 4 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:
    - o Nuclear power plant operations
    - o Nuclear engineering
    - o Chemistry and radiochemistry
    - o Metallurgy
    - o Nondestructive testing
    - o Instrumentation and control
    - o Radiological safety
    - o Mechanical engineering
    - o Electrical engineering
    - o Administrative control and quality assurance practices
    - o Training
    - o 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 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:

- 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.

Figure 1 - PVNGS Organization

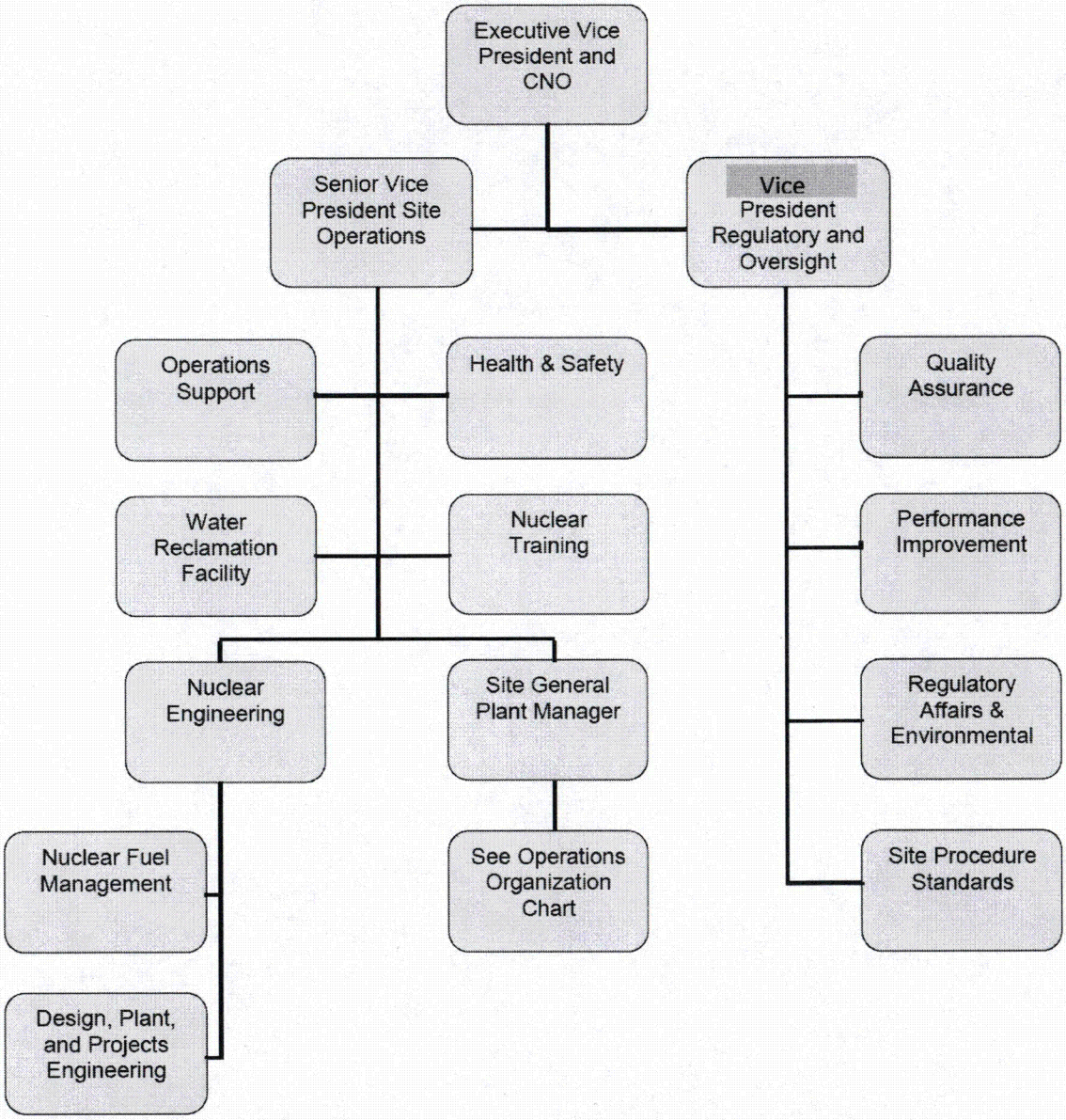
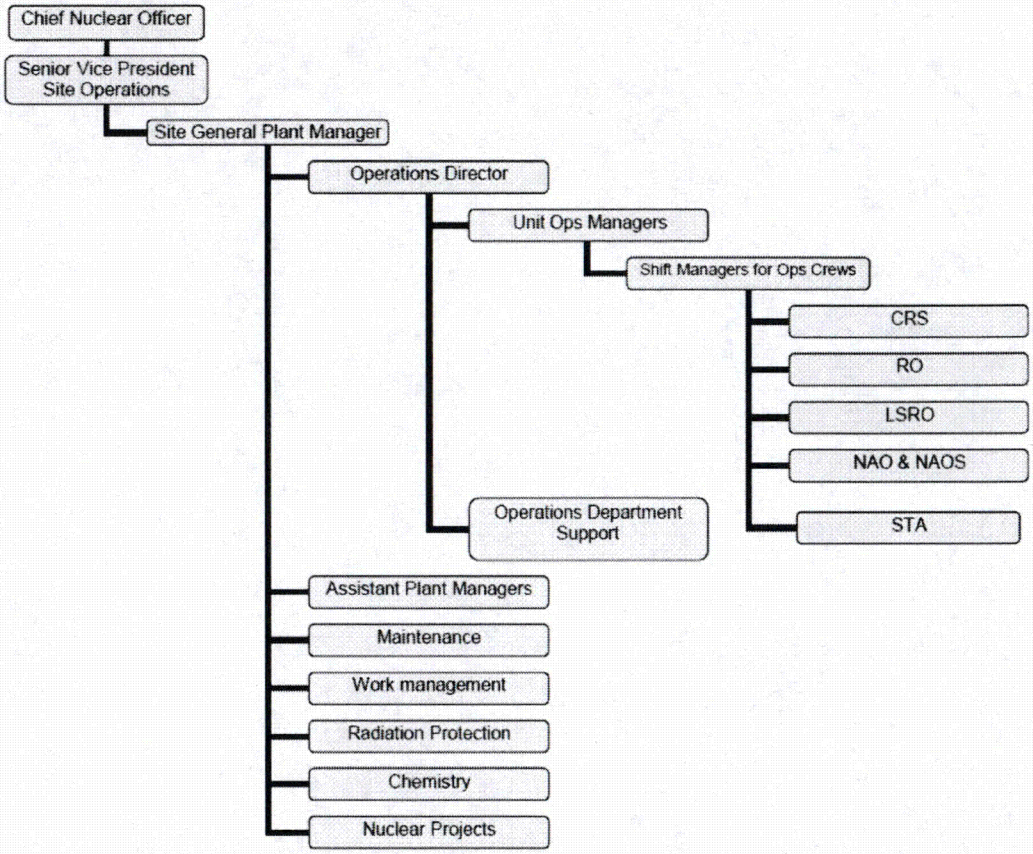


Figure 2 - PVNGS Operations Organization



ATTACHMENT 3

Mark-Ups of Existing QA-Related UFSAR Pages
(Excerpt from LDCR 12-F014)

(379 Pages Follow)

CONFORMANCE TO NRC

REGULATORY GUIDES

REGULATORY GUIDE 1.6: Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems (Revision 0, March 10, 1971)

RESPONSE

The position of Regulatory Guide 1.6 is accepted (refer to section 8.3). Additional references: 7.1.2.13 and 8.1.4.3.

REGULATORY GUIDE 1.7: Control of Combustible Gas Concentrations in Containment Following a Loss-of-Coolant Accident (Revision 0, March 10, 1971)

RESPONSE

The position of Regulatory Guide 1.7 is accepted (refer to subsection 6.2.5). Additional references: 3.11, 6.2.5, 9.3.2.2.2, 12.2.3, and 18.II.B.3.

REGULATORY GUIDE 1.8: Personnel Selection and Training (Revision 1-R, May 1977).

RESPONSE

~~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.~~

~~Regulatory Guide 1.8, Part C, as it pertains to the Radiation Protection Manager, is equivalent to the requirements of~~

PVNGS identifies conformance to the regulatory positions of Regulatory Guide 1.8 (including any exceptions or clarifications) in the PVNGS Operations Quality Assurance Program Description.

CONFORMANCE TO NRC

REGULATORY GUIDES

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.

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

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.

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.

Conformance is discussed in Sections 13.1 and 13.2. Additional references: 12.5.1.1, 14A.21, and 17.2B.

REGULATORY GUIDE 1.9: Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units used as Class 1E Onsite Electric Power Systems at Nuclear Power Stations, (Revision 3, July 1993)

RESPONSE

The position of Regulatory Guide 1.9 is accepted with the following clarifications and exceptions:

A. Clarification: The diesel generator power supplies were originally selected in accordance with R.G. 1.9, Rev. 0.

B. Regulatory Position C. Exception is taken to regulatory endorsement of IEEE Std 387 1984. Palo Verde retains commitments to earlier editions of IEEE Std 387. The original selection and qualification testing of the diesel generator power supplies were performed in accordance with IEEE Std 387-1972. The present design and testing of the diesel generators is performed in accordance with IEEE Std 387-1977. The following table identifies the applicable portions of IEEE Std 387-1977 that are equivalent to the general sections and specific paragraphs of IEEE Std 387-1984 referenced in Regulatory Guide 1.9, Revision 3.

will be in accordance with current NRC regulations and PVNGS Technical Specifications and TRM.

REGULATORY GUIDE 1.17: Protection of Nuclear Power Plants Against Industrial Sabotage (Revision 1, June 1973)

RESPONSE

The position of Regulatory Guide 1.17 is accepted with the following exception to ANSI N18.17-1973 regarding employee screening.

Section 4.3 of ANSI N18.17-1973 addresses employee screening. Section 4.3 has become obsolete with the promulgation of 10CFR73.56, "Personnel Access Authorization Requirements for Nuclear Power Plants." APS complies with the requirements of 10CFR73.56 as described in the PVNGS Security Plan, rather than Section 4.3 of ANSI N18.17-1973. Reference 13.6.2 ~~and 17.2F.3.2~~.

REGULATORY GUIDE 1.18: Structural Acceptance Test for Concrete Primary Reactor Containments (Revision 1, December 28, 1972)

REGULATORY GUIDE 1.20: Vibration Measurements on Reactor Internals (Revision 0, December 29, 1971)

RESPONSE

Refer to 3.9.2.4, 14.2.7, and 14A.3.

REGULATORY GUIDE 1.21: Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants (Revision 1, June 1974)

RESPONSE

The position of Regulatory Guide 1.21 is accepted (refer to section 11.5). Additional references: 4.2.5, 9.3.2.1, 12.3.4, and 12.5.1.3~~, 13.4.4.5, 17.2.6.4.1, and 17.2B~~.

REGULATORY GUIDE 1.22: Periodic Testing of Protection System Actuation Functions (Revision 0, February 17, 1972)

RESPONSE

The position of Regulatory Guide 1.22 is accepted (refer to subsections 7.1.2 and 8.3.1). Also see 7.2.1.1.9, 7.2.2.3.3, 7.3.1, 7.3.2.3.3, and 7.3.5.1.17.

REGULATORY GUIDE 1.23: Onsite Meteorological Programs (Revision 0, February 17, 1972)

RESPONSE

The position of Regulatory Guide 1.23 is accepted (refer to section 2.3). Additional references: 17.2.6.4.1 and 18.III.A.1.1.

REGULATORY GUIDE 1.24: Assumptions Used for Evaluating the Potential Radiological Consequences of a Pressurized Water Reactor Radioactive Gas Storage Tank Failure (Revision 0, March 23, 1972)

RESPONSE

The position of Regulatory Guide 1.24 is accepted (refer to section 15.7 and 5.1.4).

REGULATORY GUIDE 1.25: Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors (Revision 0, March 23, 1972)

RESPONSE

PVNGS deviates from Regulatory Guide 1.25 to allow use of 'peak assembly average fuel pin pressure is < 1200 psig' in place of 'maximum fuel rod pressurization is 1200 psig'. This approach allows a few fuel rods to exceed the 1200 psig maximum pressurization while still maintaining the conservative iodine DF value specified by Regulatory Guide 1.25. This deviation is

acceptable due to the overall conservatisms associated with analyzing the fuel handling accident. This deviation can not be used for fuel that incorporates zirconium diboride pellet coatings (i.e., integrated fuel burnable absorber (IFBA)).

Refer to section 15.7, 1.9.2.4.5, and 9.1.4.6.

REGULATORY GUIDE 1.26: Quality Group Classification and Standards for Water, Steam and Radioactive-Waste-Containing Components of Nuclear Power Plants

DELETE

For operational phase activities, PVNGS identifies conformance to the regulatory positions of Regulatory Guide 1.26 (including any exceptions or clarifications) in the PVNGS Operations Quality Assurance Program Description.

RESPONSE

Quality group classifications and code requirements for each quality group correspond to those indicated in Regulatory Guide 1.26 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.

CONFORMANCE TO NRC

REGULATORY GUIDES

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

DELETE

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.

Equipment classification and code requirements are presented in section 3.2. Additional references: 5.1.4, 5.4.7, 6.2.4.2.2, 6.3.1.3, 9.1.4.6, 9.3.4.6, 9A.8, and 17.2B.

REGULATORY GUIDE 1.27: Ultimate Heat Sink for Nuclear Power Plants (Revision 2, January 1976)

RESPONSE

The position of Regulatory Guide 1.27 is accepted (refer to subsections 9.2.5, 9.1.3, 9.2.1.1, and 3.1.40).

REGULATORY GUIDE 1.28: Quality Assurance Program Requirements (Design and Construction) (Revision 0, June 7, 1972)

RESPONSE

For construction phase activities and prerequisite and phase I startup testing, the position of Regulatory Guide 1.28 is accepted. Also see 17.1 and 17.2. For operations phase activities including phase II through phase IV startup testing, the regulatory position found in Regulatory Guide 1.28 will be replaced by the regulatory position found in Regulatory Guide 1.33 as modified and interpreted by APS in Section 1.8.

For operational phase activities, PVNGS identifies conformance to the regulatory positions of Regulatory Guide 1.28 (including any exceptions or clarifications) in the PVNGS Operations Quality Assurance Program Description.

Additional References: 4.2.5, 5.4.7.1, 6.3.1.3, 9.1.4.6, and 18.II.F.2-3.

REGULATORY GUIDE 1.29: Seismic Design Classification (Revision 1, August 1973)

RESPONSE

For construction phase activities and replacement steam generator construction activities, the position of Regulatory Guide 1.29 is accepted with the following exceptions:

A. Position C.1.d

Systems required for cooling the spent fuel storage pool are required to be designed for the safe shutdown earthquake (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 section 5.4.1.

Seismic classification of structures, systems, and components is presented in section 3.2.

Also see 7.1.2.16. Additional references: 3.7.2.1.2, 3.8.1.2.3, 3.8.3.2.2, 4.2.5, 5.1.4, 5.4, 6.2.4.2.2, 6.3.1.3, 8.3.1.2.2.6, 8.3.2.2.1.5, 9.1.4, 9.3.4.6, 9.5.3.3, and 17.2B.

REGULATORY GUIDE 1.29: Seismic Design Classification

(Revision 3, September 1978)

For operational phase activities, PVNGS identifies conformance to the regulatory positions of Regulatory Guide 1.29 (including any exceptions or clarifications) in the PVNGS Operations Quality Assurance Program Description.

RESPONSE

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 section 5.4.1. Additional references: 3.2, 7.1.2.16, 3.7.2.1.2, 3.8.1.2.3, 3.8.3.2.2, 4.2.5, 5.1.4, 5.4, 6.2.4.2.2, 6.3.1.3, 8.3.1.2.2.6, 8.3.2.2.1.5, 9.1.4, 9.3.4.6, 9.5.3.3, and 17.2B.

REGULATORY GUIDE 1.30: Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment (Revision 0, August 11, 1972)

RESPONSE

The requirements of the referenced standard (ANSI N45.2.4-1972) will be applied to the Bechtel quality program for construction of safety-related items as interpreted in the regulatory position as modified and interpreted below:

A. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures or plans are reviewed for applicability in each case. Installation plans or procedures are also

limited in scope to those actions or activities which are essential to maintain or achieve required quality.

B. Section 3, Preconstruction Verification. The requirements of this section are applied to items which are received and stored prior to installation. They are combined with receiving inspection activities in accordance with ANSI N45.2.2 requirements for items which are installed immediately after receiving inspection.

For operations phase activities that are comparable to activities occurring during the construction phase, the following interpretations apply to the position of Regulatory Guide 1.30:

A. Section 5.2:

The various tests are performed "as appropriate" as determined by PVNGS Engineering Department based upon the significance of the change or modification.

B. Section 6.2.1:

PVNGS utilizes a computer information management system to maintain plant equipment calibration status including the date of calibration and identity of the person that performed the calibration. The computer information management system provides a more reliable and accessible method of documenting plant equipment calibration status than the use of tags or labels affixed to the equipment.

C. Section 6.2.2:

The requirement that systems tests be made to verify that all parts of a system properly coordinate with each other is interpreted as not requiring that an entire system be retested after modification of only a portion of that system. The testing requirements of the Technical Specifications are met for inoperable equipment.

Reference 3.11.2, 7.1.2.6, 7.1.2.17, 8.3.1.2.2.7, 8.3.2.2.1.6, 14.2.7, 17.1, 17.2, and Table 18.II.F.2-3.

REGULATORY GUIDE 1.31: Control of Ferrite Content in Stainless Steel Weld Metal (Revision 3, April 1978)

RESPONSE

The recommendations of Regulatory Guide 1.31 are followed for non-NSSS ESF components except as noted below:

The delta-ferrite determination method specified in Part C is not met. Austenitic stainless steel welding filler materials used in the fabrication and installation of ASME Section III, Class 1, 2, and 3 components are controlled to deposit from 8 to 25% delta-ferrite except for 309 and 309L welding filler materials which are controlled to deposit from 5 to 15% delta-ferrite and are used when welding carbon or low alloy steel to austenitic stainless steel. Welding filler material 309L is used further for the overlay deposit on the carbon or low alloy

CONFORMANCE TO NRC

REGULATORY GUIDES

REGULATORY GUIDE 1.33: Quality Assurance Program Requirements (Operation) (Revision 2, February 1978)

For operational phase activities, PVNGS identifies conformance to the regulatory positions of Regulatory Guide 1.33 (including any exceptions or clarifications) in the PVNGS Operations Quality Assurance Program Description.

RESPONSE

The position of Regulatory Guide 1.33 is accepted with the following exceptions to Regulatory Positions C.2 and C.4:

For Regulatory Position C.2, the APS commitment refers to regulatory guides, and revisions thereof, specifically identified in this FSAR.

For Regulatory Position C.4, the specific audits at C.4.a, C.4.b, and C.4.c shall be performed at a frequency of at least once per 24 months. In addition, a grace period of 90 days beyond the specified frequency shall be permitted for completion of internal audits. When the grace period is utilized, subsequent scheduling for the audit shall be based upon the original due date. This grace period shall not be applied to those audits that have a frequency specifically defined by regulation.

In addition, the following clarification is made in APS' position regarding Regulatory Guide 1.33:

Compliance to ANSI standards referenced throughout ANSI N18.7-1976/ANS-3.2 are addressed separately in APS' response to conformance with the regulatory guides listed in section C.2 of Regulatory Guide 1.33.

CONFORMANCE TO NRC

REGULATORY GUIDES

The following exceptions are taken to ANSI N18.7:

A. Section 3.4.2

The APS commitment on the qualification of personnel who are performing preoperational and startup test functions is found in paragraph 14.2.2.12.

B. Section 5.2.13.1

When purchasing commercial-grade calibration services from certain accredited calibration laboratories, the procurement documents are not required to impose a quality assurance program consistent with ANSI N45.2-1971. Alternative requirements described in UFSAR Section 1.8 for Regulatory Guide 1.123 may be implemented in lieu of imposing a quality assurance program consistent with ANSI N45.2-1971.

In addition, the following interpretations of ANSI N18.7 are made:

A. Section 5.2.2

The requirements of this section are accepted with the following interpretations:

Temporary changes to procedures may be made provided the change is approved by two members of the plant management staff, at least one of whom holds a senior reactor operator license on the unit affected.

Procedural steps traditionally identified as immediate actions are incorporated into standard post-trip actions. Following a manual or automatic reactor trip, standard

post-trip actions will be performed. The reactor operators are expected to know the standard post-trip actions and begin to take action. The control room supervisor shall perform the standard post-trip actions in the order written and go over each step with the control room staff.

B. Section 5.2.13.1

The requirement that changes made to procurement documents be subject to the same degree of control as was used in the preparation of the original documents is applied consistent with the requirements of ANSI N45.2.11, Paragraph 7.2. Minor changes to documents, such as inconsequential editorial corrections or changes to commercial terms and conditions, may not require that the revised document receive the same review and approval as the original documents.

C. Section 5.2.17

The requirements of this section are accepted with the following interpretation:

The requirement that deviations, their cause, and any corrective action completed or planned shall be documented shall apply to significant deviations. Other identified deviations will be documented and corrected. This interpretation is consistent with Appendix B to 10CFR50, Criterion XVI, Corrective Action.

D. Section 5.2.19.1

Preoperational testing (phase I startup testing) addressed in ANSI N18.7, Paragraph 5.2.19.1, will be conducted in accordance with Regulatory Guide 1.68, Revision 0.

E. Section 5.3.9.1

The requirements of this section are accepted with the following interpretation:

Actions identified as immediate operator actions have been standardized in the form of safety function status checks. Safety functions are maintained for all transients when the emergency procedure is implemented. This ensures proper operator response independent of event diagnosis. This approach is consistent with CEN-152, CE Emergency Procedure Guidelines.

Actions identified as subsequent operator action are addressed as a recovery procedure, implemented after event diagnosis. This approach is consistent with CEN-152, CE Emergency Procedure Guidelines.

The specific procedure format and content have been identified in the Emergency Procedure Generation Package and submitted to the NRC for review. This is consistent with NUREG-0899.

F. Section 5.2.15

The requirements of this section are accepted with the following interpretation(s):

The requirement for periodic review of routine plant procedures no less frequently than every two years may be exceeded for routine plant procedures which are used infrequently, when alternative means are provided to ensure review of these procedures prior to use.

Periodic review of plant procedures no less frequently than every two years is not required for routine, frequently-used plant procedures. Periodic audits to satisfy regulatory requirements and commitments include an assessment of a representative sample of related procedures to validate that the procedures are acceptable for use and that the procedure review and revision process is being effectively implemented.

The exceptions to periodic review requirements stated above do not apply to non-routine procedures (such as abnormal operating procedures, emergency operating procedures, alarm response procedures, procedures which implement the Emergency Plan, or procedures which implement the Security Plan). The periodic review requirement for these procedures may be satisfied by the use or review of the procedure during plant operation, training exercise, drill, or by other such review activity which validates acceptability of the procedure, provided the procedure use or review activity is documented.

G. Section 5.2.7

The requirements of this section are accepted with the following interpretations:

Activities occurring during the operational phase that are comparable in nature and extent to related activities occurring during initial plant design and construction' shall be interpreted to mean those activities of such a scale and type that the following conditions are met:

A. The work is to be performed by an outside contractor or owner's service organization not part of the plant organization.

B. The system or area of the plant affected by the work is released to the contractor or service organization during the activity, and, except for radiological protection purposes and other specified controls, effectively ceases to be part of an operating nuclear power plant.

C. The contractor or service organization has been directed in advance of the work that conformance to Regulatory Guide 1.33, ANSI N18.7, and applicable standards referenced in ANSI N18.7 will be required, consistent with the PVNGS UFSAR position on these standards.

The implementation of the positions of Regulatory Guide 1.33 are described in chapters 13 and 17 and the Technical Specifications.

REGULATORY GUIDE 1.36: Nonmetallic Thermal Insulation for Austenitic Stainless Steel (Revision 0, February 23, 1973)

RESPONSE

The position of Regulatory Guide 1.36 is accepted (refer to section 6.1). Also see 5.2.3.2.3. Additional References: 6.3.1, 6.5.2, 4.2.5, 5.1.4, 5.1.5, 5.4.7, 5.2.3.4.1.2.2, and 9.3.4.

REGULATORY GUIDE 1.37: Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants ~~(Revision 0, March 16, 1973)~~

RESPONSE

For operational phase activities, PVNGS identifies conformance to the regulatory positions of Regulatory Guide 1.37 (including any exceptions or clarifications) in the PVNGS Operations Quality Assurance Program Description.

~~The requirements of the referenced standard (ANSI N45.2.1-1973) as modified in the regulatory position are applied to cleaning activities specified or applied by Bechtel to safety-related items as modified and interpreted below:~~

~~A. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard~~

procedures or plans are reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality. This is consistent with Section II, Paragraphs 2 and 3, of ANSI N45.2-1971 which provide for examination, measurement, or testing to assure quality or indirect control by monitoring of processing methods. However, final cleaning or flushing activities are performed in accordance with procedures specific to the system.

Also see 5.2.3.4.1.2.1. Additional References: 4.2.5, 4.5.1.5, 5.1.5, 5.2.3, 5.4.2.4, 5.3.3.5, 5.4.7, 6.1.1.1.3.2, 6.3.1.4, 6.5.2.8, (RA) 7.12.5, 9.3.4, 10.3.6.2, 14.2.7, 17.1, and 17.2.

For operations phase activities that are comparable to activities occurring during the construction phase, the referenced standard (ANSI N45.2.1-1973) as modified by Regulatory Guide 1.37 is accepted as modified below.

A. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many systems and component installations. This results in standard procedures for cleaning, inspection, and testing which meet the requirements of the standard.

B. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures are reviewed for applicability in each case. Cleaning procedures are limited in scope to

those actions or activities which are essential to maintain or achieve required quality. This is consistent with Section 5.2.17, Paragraph 5, of ANSI N18.7-1976 which provides for examination, measurement, or testing to assure quality or indirect control by monitoring of processing methods.

REGULATORY GUIDE 1.38: Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants (Revision 0, March 16, 1973)

RESPONSE

The requirements of the referenced standard (ANSI N45.2.2-1972) as modified and interpreted in the regulatory position are applied to the Bechtel quality program for construction of safety-related items, except as modified and interpreted below:

A. Section 2.4, Personnel Qualification. Personnel performing offsite audits shall be qualified to ANSI N45.2.23. Personnel performing offsite material inspection shall be qualified to ANSI N45.2.6. Personnel performing offsite monitoring activities shall be qualified to ANSI N45.2.23 or ANSI N45.2.6.

B. Section 2.7, Classification of Items. The four-level classification system may not be used explicitly. However, the specific requirements for each classification as specified in the standard are applied

to the items suggested in each classification and for similar items.

C. Section 3.9, Marking. Identification of items, after the outside of the container has been removed, is accomplished in accordance with ANSI N18.7, Section 5.2.13.3.

D. Section 6.2, Storage Areas. Paragraph 6.2.1 requires control and limited access to storage areas. In lieu of and to amplify this paragraph, the following is applied:

"Access to storage areas for levels A, B, and C is controlled by the individual(s) responsible for material storage." Level D items are stored in a site area which has access control consistent with zone IV of ANSI N45.2.3-1973. While the areas may be posted to limit access, other positive controls (other than that for the overall site area) or guards may not be provided.

E. Sections 3.9 and 5.6, and Section A3.9 of Appendix A, Marking. These ANSI N45.2.2 sections control direct marking of austenitic stainless steel and nickel based alloys. Marking is in compliance with the requirements of these sections except that markings may be directly applied using inks controlled so as not to contain more than 200 ppm of inorganic halogens.

Reference 4.2.5, 5.1.4, 5.2.3.4.1.2.2, 6.3.1.3, 9.1.4.6, 17.1A.2, 17.1B, 17.2B, and Table 18.II.F.2-3.

REGULATORY GUIDE 1.38: Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water-Cooled Nuclear Power Plants (Revision 2, May 1977)

RESPONSE

For operations phase activities that are comparable to activities occurring during the construction phase, the position of Regulatory Guide 1.38 is accepted with the following exceptions to the referenced standard (ANSI N45.2.2-1972):

A. Section 2.4, Personnel Qualification. Personnel performing offsite audits shall be qualified to ANSI N45.2.23. Personnel performing offsite material inspection shall be qualified to ANSI N45.2.6. Personnel performing offsite monitoring activities shall be qualified to ANSI N45.2.23 or ANSI N45.2.6. Personnel performing preliminary visual observations (prior to unloading) per Section 5.2.1 of ANSI N45.2.2-1972 need not be qualified to ANSI N45.2.6. Item inspections per Section 5.2.2 of ANSI N45.2.2-1972 are performed by personnel qualified to ANSI N45.2.6. The item inspections also ensure that no damage has occurred during shipping.

B. Section 2.7, Classification of Items. The four-level classification system may not be used explicitly. However, the specific requirements for each

classification as specified in the standard are applied to the items suggested in each classification and for similar items.

C. Section 2.7, Classification of Items. New (unirradiated) fuel elements, fission chamber detectors, and sealed sources containing special nuclear material are classified as level B for the purposes of this standard.

D. Section 3.9, Marking. Identification of items, after the outside of the container has been removed, is accomplished in accordance with ANSI N18.7, Section 5.2.13.3.

E. Section 6.2, Storage Areas. Paragraph 6.2.1 requires control and limited access to storage areas. In lieu of and to amplify this paragraph the following is applied.

"Access to storage areas for levels A, B, and C is controlled by the individual(s) responsible for material storage." Level D items are stored in a site area which has access control consistent with zone IV of ANSI N45.2.3-1973. While the areas may be posted to limit access, other positive controls (other than that for the overall site area) or guards may not be provided.

F. Sections 3.9, 5.6, and Appendix A, Section 3.9, Marking. These ANSI N45.2.2 sections control direct marking of austenitic stainless steel and nickel based alloys. Marking is in compliance with the requirements of these sections except that markings may be directly

applied using inks controlled so as not to contain more than 200 ppm of inorganic halogens.

Reference 4.2.5, 5.1.4, 5.2.3.4.1.2.2, 6.3.1.3, 9.1.4.6, 17.1A.2, 17.1B, 17.2B, and Table 18.II.F.2-3.

REGULATORY GUIDE 1.39: Housekeeping Requirements for Water-Cooled Nuclear Power Plants (Revision 2, September 1977)

RESPONSE

The requirements of the referenced standard (ANSI N45.2.3-1973) are applied to the Bechtel quality program for construction of safety-related items except as modified and interpreted below:

A. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures or plans are reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality.

B. Alternative equivalent zone designations and requirements may be utilized to cover those situations not included in the subject standard. For example, situations in which

shoe covers and/or coveralls are required but material accountability is not.

For operations phase activities that are comparable to activities occurring during the construction phase, the position of Regulatory Guide 1.39 is accepted with the following exception:

Alternative equivalent zone designations and requirements may be utilized to cover those situations not included in the subject standard. For example, situations in which shoe covers and/or coveralls are required but material accountability is not.

Reference 5.3.3.5, 9A.33, 12.5.3.4, 17.1B, 17.1A.2, and 17.2B.

REGULATORY GUIDE 1.40: Qualification Tests of Continuous-Duty Motors Installed Inside the Containment of Water-Cooled Nuclear Power Plants (Revision 0, March 16, 1973)

ESPONSE

Regulatory Guide 1.40 is not applicable to PVNGS as there are no safety-related, continuous-duty motors installed inside the containment. Reference 3.11.2, 7.1.2.18, 8.3.1.2.2.9, and 8.3.2.2.1.8.

REGULATORY GUIDE 1.41: Preoperational Testing of Redundant Onsite Electric Power Systems to Verify Proper Load Group Assignments (Revision 0, March 16, 1973)

REGULATORY GUIDE 1.53: Application of the Single Failure Criterion to Nuclear Power Plant Protection Systems (Revision 0, June 1973)

RESPONSE

The position of Regulatory Guide 1.53 is accepted (refer to section 7.1.2). Additional references: 7.3.5.1.18, 6.3.1.3, 8.3.1.2.2.12, and 8.3.2.2.1.11.

REGULATORY GUIDE 1.54: Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants (Revision 0, June 1973)

DELETE

RESPONSE

PVNGS identifies conformance to the regulatory positions of Regulatory Guide 1.54 (including any exceptions or clarifications) in the PVNGS Operations Quality Assurance Program Description.

The requirements of Regulatory Guide 1.54 and the referenced standard (ANSI N101.4-1972) are included in the APS quality program except 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 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, and Dry Active Waste Processing Storage 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 manufacturer 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,

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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.

Refer to subsection 6.1.2 and section 17.2. Also see section 7.1.2.9. Additional references: 3.8.1, 4.2.5, 5.1.4, 9.1.4.6, 6A.5, and 17.1B.

REGULATORY GUIDE 1.55: Concrete Placement in Category I Structures (Revision 0, June 1973)

RESPONSE

Except as discussed below, concrete is placed in Category I structures in accordance with Regulatory Guide 1.55.

Creep tests are normally performed on prestressed structures only. Loss of prestress through creep is not applicable to nonprestressed structures. Reference section 3.8.1.2.3, 3.8.1.6, and 3.8.3.2.2.

REGULATORY GUIDE 1.56: Maintenance of Water Purity in Boiling Water Reactors (Revision 0, June 1973)

RESPONSE

Not applicable.

REGULATORY GUIDE 1.57: Design Limits and Loading Combinations for Metal Primary Reactor Containment System Components (Revision 0, June 1973)

RESPONSE

Not applicable. Each PVNGS unit utilizes a prestressed concrete primary containment.

REGULATORY GUIDE 1.58: Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel (Revision 1, September 1980)

RESPONSE

The position of Regulatory Guide 1.58 is accepted with the following exceptions:

A. Position C.1

The qualification of personnel who approve preoperational and startup test procedures and test results, and those who direct or supervise the conduct of individual preoperational and startup tests is discussed in paragraph 14.2.2.12. The qualification of other personnel discussed in Position C.1 follows the guidelines of Regulatory Guide 1.8 as discussed in sections 13.1 and 13.2.

B. Position C.6

The specified education and experience recommendation of ANSI N45.2.6-1978 for various levels of inspectors shall not be treated as absolute when other factors provide reasonable assurance that a person can competently perform a particular task. These factors will be documented, with justification by management (on an individual basis), demonstrating that the individual does have equivalent competence to that which would be gained from having the required education and experience.

In addition, the following exceptions are taken to the referenced standard ANSI N45.2.6-1978 are made:

A. The first sentence of Paragraph 3.4 states that a Level III qualified person shall have all the capabilities of a Level II qualified person for the inspection, examination or test category or class in question. APS will qualify Level III persons without the actual hands on experience and capability to perform specific inspections, examinations or tests required of a Level I or II qualified person, and utilize these persons for administrative and supervisory functions including certifying persons at the same or lower level.

B. Paragraph 3.3 states that a Level II qualified person shall have demonstrated experience in certifying lower level qualified persons. APS does not use Level II qualified persons to certify lower level qualified

persons, and does not require Level II qualified persons to demonstrate this capability.

The following interpretation is also made to Regulatory Guide 1.58:

A. Position C.1

For qualification of personnel, (1) who perform or approve operational test procedures and test results, and (2) who direct or supervise the conduct of individual operational tests, the guidelines contained in Regulatory Guide 1.8, Revision 1-R, "Personnel Selection and Training" with the criteria for selection and training contained in ANSI/ANS 3.1-1978, substituted for ANSI-N18.1-1971, will be followed.

See also conformance to Regulatory Guide 1.8: Personnel Selection and Training (Revision 1-R, May 1977).

Reference sections 17.1A.2, 17.1B, 17.2B, and Table 18.II.F.2-3.

REGULATORY GUIDE 1.59: Design Basis Floods for Nuclear Power Plants (Revision 2, August 1977)

RESPONSE

The position of Regulatory Guide 1.59 is accepted (refer to subsection 2.4.2). Additional reference: 3.8.1.2.3.

D. Low Voltage Control Systems

For low voltage protection circuits connected in the containment, redundant protection is provided by a combination of two fuses, a combination of a breaker and a fuse, or two breakers in series where the circuit resistance does not limit the fault current to a level that does not damage the penetration.

E. Instrument Systems

The energy levels in the instrument systems are sufficiently low so that no damage can occur to the containment penetration.

The circuit overload protection system for electric penetration assemblies meets the single failure criterion set forth in IEEE Standard 279-1971.

The overload protection systems do not conform to the online testability, bypassing, or manual initiation criteria of IEEE 279-1971, since these criteria do not apply to these systems.

Reference 3.8.1.2.3, 3.11.2, 7.1.2.22, 8.3.1.2.2.14, and 8A.11.

REGULATORY GUIDE 1.64: Quality Assurance Requirements for the Design of Nuclear Power Plants (Revision 0, October 1973)

RESPONSE

Regulatory Guide 1.64 endorses a superseded draft issue of ANSI N45.2.11. For C-E's program, refer to Section 17.1C. The

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Bechtel program complies with ANSI N45.2.11-1974 as interpreted herein.

A. Section 3.1.

This section implies that all necessary design input (as listed in section 3.2) should be available prior to the start of a design activity. In practice, certain design activities are initiated before the firm input requirements are available. (For example, foundation designs prepared based on preliminary information or equipment sizes and mounting and embedded conduit run based on preliminary estimates of circuit requirements). The design phase QA program is structured to assure that all necessary design input is available before completion of final design of the work affected by the input and that final design input is available for use in verification of the final design.

B. Section 4.1, Design Process General

Paragraph 3 implies traceability back from final design to the source of design input. In practice, a literal interpretation of this is not always possible. For example, final design drawings do not identify the related calculations. This paragraph is interpreted to mean that it shall be possible to relate the criteria used and analyses performed to the final design documents and that record files will permit location of analyses supporting specific design output documents.

Additional references: 3.8.1.2.3, 4.2.5, 5.1.4, 5.4.7.1, 6.3.1.3, 9.1.4.6, 9.3.4.6, 17, and Table 18.II.F.2-3.

REGULATORY GUIDE 1.64: Quality Assurance Requirements for the Design of Nuclear Power Plants (Revision 2, June 1976)

RESPONSE

For operations phase activities that are comparable to activities occurring during the construction phase, the position of Regulatory Guide 1.64 is accepted with the following exception to Position C.2:

Supervisory personnel may perform design verification under exceptional circumstances as documented and approved by the next level of supervision, if:

1. The justification (for design verification by a designer's immediate supervisor) is individually documented and approved in advance, and

2. Quality assurance audits cover frequency and effectiveness of use of supervisors as design verifiers to guard against abuse.

APS interprets ANSI N45.2.11-1974, Sections 3.1 and 4.1, as follows:

A. Section 3.1

This section implies that all necessary design input (as listed in section 3.2) should be available prior to the

start of a design activity. In practice, certain design activities are initiated before the firm input requirements are available. (For example, foundation designs prepared based on preliminary information or equipment sizes and mounting and embedded conduit run based on preliminary estimates of circuit requirements). The design phase QA program is structured to assure that all necessary design input is available before completion of final design of the work affected by the input and that final design input is available for use in verification of the final design.

B. Section 4.1, Design Process General

Paragraph 3 implies traceability back from final design to the source of design input. In practice, a literal interpretation of this is not always possible. For example, final design drawings do not identify the related calculations. This paragraph is interpreted to mean that it shall be possible to relate the criteria used and analyses performed to the final design documents and that record files will permit location of analyses supporting specific design output documents.

References: 3.8.1.2.3, 4.2.5, 5.1.4, 5.4.7.1, 6.3.1.3, 9.1.4.6, 9.3.4.6, 17, and Table 18.II.F.2-3.

REGULATORY GUIDE 1.65: Materials and Inspections for Reactor Vessel Closure Studs (Revision 0, October 1973)

RESPONSE

Not applicable to PVNGS.

REGULATORY GUIDE 1.73: Qualification Tests of Electric Valve Operators Installed Inside the Containment of Nuclear Power Plants (Revision 0, January 1974)

RESPONSE

The position of Regulatory Guide 1.73 is accepted (refer to section 3.11 and 7.1.2.22). Additional references: 5.1.4, 5.4.7.1, 6.2.4.2.2, 7.1.2.24, and 8.3.1.2.2.15.

REGULATORY GUIDE 1.74: Quality Assurance Terms and Definitions (Revision 0, February 1974)

RESPONSE

The position of Regulatory Guide 1.74 is accepted (refer to section 17.2 and 17.16). Additional references: 4.2.5, 5.1.4, 5.4.7.1, 9.1.4.6, 17.1A, 17.1B, and Table 18.II.F.2-3.

REGULATORY GUIDE 1.75: Physical Independence of Electric Systems (Revision 1, January 1975)

REGULATORY GUIDE 1.86: Termination of Operating Licenses for Nuclear Reactors (Revision 0, June 1974)

RESPONSE

The position of Regulatory Guide 1.86 is accepted.

REGULATORY GUIDE 1.87: Construction Criteria for Class 1 Components in Elevated Temperature Reactors (Revision 0, June 1974)

RESPONSE

Not applicable.

~~REGULATORY GUIDE 1.88:~~ ~~Collection, Storage and Maintenance of Nuclear Power Plant Quality Assurance Records (Revision 2, October 1976)~~

~~RESPONSE~~

~~The position of Regulatory Guide 1.88 is accepted with the following exceptions to Section 5.6 of ANSI N45.2.9-1974:~~

~~A. Doors, structure and frames, and hardware shall be designed to comply with the requirements of a minimum 2-hour fire rating. (Section 4.4.1 (c) of Supplement 17S-1 of NQA-1 requires 2-hour rated doors and dampers, and the latest version of Regulatory Guide 1.28 provides no additional guidance in this area.)~~

~~B. Vinyl tile is used on the floor in lieu of a surface sealant.~~

~~C. A roof drainage line penetrating the structure has been plugged to avoid any potential flooding due to rain. There is a floor drain with a vent line located in the center of the room. The vent line to the roof is exclusively for the drain and it does not carry liquids, therefore it does not present any potential flooding problems to the storage room.~~

~~D. PVNGS also provides the following clarification with regard to application of ANSI N45.2.9-1974:~~

~~PVNGS adheres to the guidance of the Standard for classification and retention periods of quality assurance records, unless other more stringent requirements apply or a graded approach as defined in Section 17.2 has been applied to determine the relative value of the record or group of records. When the graded approach is utilized, the extent to which the record maintenance and storage requirements of the Standard apply may be modified.~~

~~For quality assurance records to which the graded approach is not applied, the records shall be maintained and stored consistent with applicable regulatory requirements and the pertinent requirements of R.G. 1.88 and ANSI N45.2.9-1974, with exceptions as noted in A through C above.~~

~~Reference: 17.1, 17.2, and Table 18.II.F.2-3.~~

REGULATORY GUIDE 1.94: Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants ~~(Revision 1, April 1976)~~

RESPONSE

~~For operations phase activities that are comparable to activities during the construction phase, the position of Regulatory Guide 1.94 is accepted (refer to section 3.8).~~

~~Additional references: 17.1 and 17.2~~

REGULATORY GUIDE 1.95: Protection of Nuclear Power Plant Control Room Operators Against an Accidental Chlorine Release (Revision 0, February 1975)

RESPONSE

Regulatory Guide 1.95 is not applicable to PVNGS as there is no gaseous chlorine stored onsite and the nearest railroad route for possible chlorine transportation is several miles away.

REGULATORY GUIDE 1.97: Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident

For operations phase activities, PVNGS identifies conformance to the regulatory positions of Regulatory Guide 1.94 (including any exceptions or clarifications) in the PVNGS Operations Quality Assurance Program Description.

RESPONSE

Information contained in Regulatory Guide 1.112 is utilized as discussed in section 11.3.

REGULATORY GUIDE 1.114: Guidance on Being Operator at the Controls of a Nuclear Power Plant (Revision 1, November 1976

RESPONSE

The position of Regulatory Guide 1.114 is accepted. Reference 13.1.3.1.

REGULATORY GUIDE 1.115: Protection Against Low-Trajectory Turbine Missiles (Revision 1, July 1977)

RESPONSE

The position of Regulatory Guide 1.115 is accepted as described in section 3.5.

~~REGULATORY GUIDE 1.116: Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems (Revision 0-R, May 1977)~~

~~RESPONSE~~

~~For operations phase activities, the position of Regulatory Guide 1.116 is accepted with the following interpretations of ANSI N45.2.8:~~

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~~A. Section 2.3~~

~~Test reports attached to or referenced in data sheets may meet the evaluation requirements of the last paragraph.~~

~~B. Sections 2.2 and 2.3; 5.2 and 5.4~~

~~For application of the provisions of these sections to preoperational and startup testing, the APS position on the applicable revision of Regulatory Guide 1.68, "Preoperational and Initial Startup Test Programs for Water-Cooled Power Reactors," shall take precedence where there is a conflict or difference.~~

~~C. Item 2.9e(6)~~

~~This item shall be interpreted to mean that any work performed without an approved design change shall not be considered complete and acceptable for its intended use until the change is approved, and that the intent of this item will be satisfied provided that such work is performed only with approved procedures and that the activities and the results are documented. Evidence of design change approval shall be required prior to placing the affected item in service.~~

~~D. Section 5~~

~~For the purposes of functional tests addressed by this standard, APS defines completed systems as any system, or portion or component thereof, on which construction is sufficiently complete to allow the required testing,~~

~~and on which further or adjacent construction will not render the results of such testing invalid or indeterminate.~~

~~E. Item 5.1.g~~

~~Traceability as used in this item is considered to be the same as discussed in Section 5.2.13.3 of ANSI N18.7.~~

~~Reference sections 14.2.7, 17.1A.2, 17.1B, and 17.2B.~~

REGULATORY GUIDE 1.117: Tornado Design Classification (Revision 1, April 1978)

RESPONSE

The position of Regulatory Guide 1.117 is accepted to the extent described in sections 3.3 and 3.5, and subsection 9.2.5.4. Also see Regulatory Guide 1.76.

REGULATORY GUIDE 1.118: Periodic Testing of Electric Power and Protection Systems (Revision 1, November 1977)

RESPONSE

The position of Regulatory Guide 1.118 is accepted as described in sections 7.1 and 8.3. Additional references 14.2.7 and Table 18.II.F.2-3.

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REGULATORY GUIDE 1.121: Bases for Plugging Degraded PWR Steam Generator Tubes (Revision 0, August 1976)

RESPONSE

The position of Regulatory Guide 1.121 is accepted. Reference the Technical Specifications.

~~REGULATORY GUIDE 1.123: Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants (Revision 1, July 1977)~~

~~RESPONSE~~

~~For operations phase activities, the position of Regulatory Guide 1.123 is accepted with the following modifications to ANSI N45.2.13-1976:~~

~~A. Section 7.5, Personnel Qualifications. Personnel performing offsite audits shall be qualified to ANSI N45.2.23. Personnel performing offsite material inspection shall be qualified to ANSI N45.2.6. Personnel performing offsite monitoring activities shall be qualified to ANSI N45.2.23 or ANSI N45.2.6.~~

~~B. Section 3.2.3~~

~~The requirements of this section are accepted with the following exception:~~

~~When purchasing commercial grade calibration services from calibration laboratories accredited by a nationally-recognized accrediting body, the procurement documents are not required to~~

~~impose a quality assurance program consistent with ANSI N45.2-1971. Nationally-recognized accrediting bodies include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology (NIST) and other accrediting bodies recognized by NVLAP via a Mutual Recognition Arrangement (MRA). In such cases, accreditation may be accepted in lieu of the Purchaser imposing a QA Program consistent with ANSI N45.2-1971, provided all the following are met:~~

~~1. The accreditation is to ANSI/ISO/IEC 17025.~~

~~2. The accrediting body is either NVLAP or the American Association for Laboratory Accreditation (A2LA) based upon A2LA continued NVLAP recognition through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement.~~

~~3. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.~~

~~4. The purchase documents impose additional technical and administrative requirements, as necessary, to satisfy APS QA Program and technical requirements. The purchase documents shall specifically require that the calibration certificate or report will include identification of the equipment and/or standards used.~~

~~5. The purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.~~

Information contained in Regulatory Guide 1.140 is utilized as discussed in sections 9.4 and 11.3, and in table 1.8-3.

Additional references: 9A.38 and 14.2.8.

REGULATORY GUIDE 1.141: Containment Isolation Provisions for Fluid Systems (Revision 0, April 1978)

RESPONSE

The position of Regulatory Guide 1.141 is accepted (refer to subsection 6.2.4) except for the following. An exception is taken to Regulatory Guide 1.141 for the CVCS charging line containment isolation valve CHA-HV-524. This valve does not meet the guidance of Section 4.2.2 of ANSI N271-1976 which requires all power-operated isolation valves to be capable of remote manual actuation from the control room. The power supply for this valve is removed by locking open its breaker at MCC PHA-M3520. The restoration of the power supply requires local operator action at the MCC. This exception to lock open valve CHA-HV-524 ensures that a flow path is available for charging or auxiliary spray flow by preventing inadvertent operation of the valve.

REGULATORY GUIDE 1.143: Design Guidance for Radioactive Waste Management Systems Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants (Revision 0, July 1978)

RESPONSE

the PVNGS Operations Quality Assurance Program Description.

PVNGS accepts the position of Regulatory Guide 1.143 including implementation of quality assurance requirements for the radwaste management systems (refer to sections 9.3, 11.2, 11.3, 11.4, and ~~17.2~~; Additional references: 3.2.2 (Table 3.2-1), 6.2.4.2.2, 11.5.4.2, and 11A.1) with the following exceptions:

A. Position B, (Discussion) - For the purpose of this guide the radwaste systems do not include instrumentation and sampling systems beyond the first root valve.

B. Position B - The instrument and controls of the gaseous radioactive waste processing system satisfy the requirements of Section 7.2 of ANSI/ANS-55.4-1979 referenced by Regulatory Guide 1.143, Rev. 1, with the following exception:

The system gas analyzer, as specified in Table 6, will not record the H_2% by volume. It is assumed that the gaseous radwaste system will contain > 4% H_2 by volume whenever the system is in service. Monitoring the potentially explosive mixture will be based upon this assumption and the measured O_2 concentration by the gas analyzers.

C. Position C, Paragraph 1.1.3

The turbine building, which houses most of the steam generator blowdown system, is a Seismic Category II braced steel and concrete structure with a design that has been shown not to collapse under SSE loads. The

turbine building has no means of containing the maximum liquid inventory contained in the potentially radioactive portions of the steam generator blowdown system. This potential for liquid/gaseous release is less than that resulting from failure of the refueling water tank analyzed in subsection 15.7.3 where the radiological consequences have been determined to be less than 1% of the 10CFR100 limits.

D. Position C, Paragraph 1.2.1

High level alarms on tanks in the radwaste building alarm in the radwaste control room instead of the main control room. A common radwaste alarm sounds in the main control room for any alarm that exists in the radwaste control room. No tank has a local alarm as the tank overflows are hardpiped to sumps avoiding local uncontrolled spillage.

E. Position C, Paragraph 1.2.3

The blowdown flashtank, (SCN-X01) in the turbine building, does not have an elevated threshold to catch potential leakage. However, because this tank operates at an elevated temperature and pressure, any leakage would be initially visible as steam. Liquid leaks would be collected by the turbine building drain system, which can be routed to the liquid radwaste system.

F. Position C, Paragraph 4.3

Pressure testing (hydrostatic or equivalent pneumatic) is conducted using the applicable ASME or ANSI code, but in no case less than one and one-half times the line design pressure for hydrostatic testing and no less than 1.2 times design pressure for pneumatic testing of the GRS for a minimum of 10 minutes as required by the above codes.

G. Position C, Paragraphs 5.1.2 and 5.2.4

The reinforced concrete design of these structures is in accordance with American Concrete Standard ACI 318 in lieu of ACI 349-76. Structures containing radwaste systems are analytically verified to withstand SSE loads without collapse.

H. Position C, Paragraph 1.1.2

"Materials for pressure retaining components" will be met for Chemical Waste (CM) system, except that ferritic ductile cast iron that meets the requirement of ASTM A-395 may be substituted for low carbon steel components where the maximum service temperature is 200°F and the maximum service pressure is 200 psig. Welding shall not be permitted on any ductile iron component.

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~~REGULATORY GUIDE 1.144:~~ ~~Auditing of Quality Assurance Program for Nuclear Power Plants (Revision 1, September 1980)~~

~~RESPONSE~~

~~The requirements of the referenced standard (ANSI N45.2.12-1977) as modified and interpreted in the position of Regulatory Guide 1.144 are applied to the APS quality assurance program for operations phase activities, with the following exceptions:~~

~~A. Section 4.3.1 requires that a brief preaudit conference be conducted with cognizant organization management. A formal preaudit conference may not be required for some routine internal audits where informal preaudit communication is determined to be adequate. The manager of the auditing organization will monitor the performance of audits, through review of audit reports, to ensure that informal preaudit communication is utilized only in cases where such informal communication is adequate.~~

~~B. Section 4.5.1 states that any "adverse findings" shall be reviewed and investigated to determine and schedule appropriate corrective action including action to prevent recurrence. Consistent with the PVNGS position established in section 1.8 for Regulatory Guide 1.33, PVNGS requires determination of root cause and actions to prevent recurrence for significant conditions adverse to quality that are identified during audits. This~~

~~interpretation is consistent with Appendix B to 10CFR50, Criterion XVI, Corrective Action.~~

~~C. A grace period of 90 days beyond the specified frequency shall be permitted for completion of supplier annual evaluations and supplier audits. When the grace period is utilized, subsequent scheduling for the evaluation or audit shall be based upon the original due date. This grace period shall not be applied to evaluations or audits that have a frequency specifically defined by regulation.~~

~~Reference: 17.1, 17.2, and Table 18.II.F.2-3.~~

~~D. Regulatory Guide 1.144, Section C.3.b(2)~~

~~The Requirements of this section are accepted with the following interpretation.~~

~~When purchasing commercial grade calibration services from calibration laboratories accredited by a nationally-recognized accrediting body, the accreditation process and accrediting body may be credited with carrying out a portion of the Purchaser's duties of verifying acceptability and effective implementation of the calibration service supplier's quality assurance program. Nationally-recognized accrediting bodies include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology (NIST) and other accrediting bodies recognized by NVLAP via a Mutual Recognition Arrangement (MRA).~~

~~In lieu of performing an audit, accepting an audit by another licensee, or performing a commercial-grade supplier survey, a documented review of the supplier's accreditation shall be performed by the Purchaser. This review shall include, at a minimum, all of the following:~~

~~1. The accreditation is to ANSI/ISO/IEC 17025.~~

~~2. The accrediting body is either NVLAP or the American Association for Laboratory Accreditation (A2LA) based upon A2LA continued NVLAP recognition through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement.~~

~~3. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.~~

REGULATORY GUIDE 1.145: Atmospheric Dispersion Models for Potential Accident Consequence Assessment at Nuclear Power Plants (November 1982)

RESPONSE

Information contained in Regulatory Guide 1.145 is utilized as discussed in section 2.3.

~~REGULATORY GUIDE 1.146:~~ ~~Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (Revision 0, August 1980)~~

~~RESPONSE~~

~~The requirements of the referenced standard (ANSI N45.2.23-1978) as modified and interpreted in the position of Regulatory Guide 1.146 are applied to the quality assurance program with the following modifications:~~

~~A. At paragraph 2.2.1 of ANSI N45.2.23: Orientation of auditors is provided to produce a working knowledge and understanding of ANSI N18.7, ANSI N45.2.12, this standard, and the auditing organization's procedures for implementing audits and reporting results.~~

~~B. At paragraph 2.3.4 of ANSI N45.2.23: 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 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".~~

~~Reference 17.1 and 17.2.~~

REGULATORY GUIDE 1.147: Inservice Inspection Code Case Acceptability ASME Section XI Division 1

RESPONSE

The position of Regulatory Guide 1.147 is accepted. Code Cases that are actually used will be identified in the applicable Inservice Inspection Programs. Reference 5.2.1.2.

REGULATORY GUIDE 1.155: Station Blackout
Revision 0, August 1988

The position of Regulatory Guide 1.155 is accepted as described in Table 1.8-4. The compliance of PVNGS to Regulatory Guide 1.155 is based on the following significant issues:

a. A minimum emergency diesel generator (EDG) reliability target of 0.95 per demand for each EDG has been selected and a reliability program is in place to monitor and maintain this reliability level.

   1. Regulatory Guide 1.155 section 1.1.1 (NUMARC 87-00 sections 3.2.3, 3.2.4) - Exception is taken to monitoring failures based on 20, 50, and 100 demands. Since the Maintenance Rule has been accepted and utilized for system reliability monitoring, Maintenance Rule EDG Performance Criteria (PC) for Reliability has been set to meet the overall goal of EDG targeted reliability of 0.95.

   2. Section 1.1.2 – Exception is taken to averaging a nuclear unit's failures based on 20, 50, and 100 demands. Per the Maintenance Rule, monitoring and tracking of failures is performed per train to avoid

masking a poor performing EDG. Also 20, 50, and 100 demands are not used per the Maintenance Rule PC.

3. Section 1.1.3 – Comparison on average nuclear unit EDG reliability is not performed per 20, 50, and 100 demands, but per the Maintenance Rule PC.

4. Section 1.2 (various NUMARC 87-00 App. D sections) – Exceptions are taken to:

   a. NUMARC various App. D sections – General exception is taken to counting 20, 50, and 100 demands. Per Maintenance Rule PC, overall target meets Regulatory Guide 1.155 and NUMARC 87-00 target of 0.95.

   b. NUMARC 87-00 section D 2.2 – Exception is taken to counting start demands and load-run demands separately. All engine starts are counted as demands (no separating start demands and load-run demands).

   c. NUMARC 87-00 sections D 2.2.2, 2.2.3, 2.3.4, 2.3.5, 2.4.2, 2.4.3 – Exception is taken to monitoring failures to 50 and 100 demands per the Maintenance Rule PC. In addition, the Corrective Action Program performs monitoring of failures and maintenance performance under these NUMARC sections.

   d. NUMARC D 2.4.4 – Exception is taken to requirements for a problem diesel and

accelerated testing based on the Maintenance Rule and Corrective Action Program providing monitoring of failures and maintenance performance.

e. NUMARC D 2.4.5 - Exception is taken to requirements from exceeding failure trigger values. The Maintenance Rule and Corrective Action Program provide monitoring of failures and maintenance performance.

f. NUMARC D 2.4.6 - Exception is taken to requirements to retain demands and failures, corrective actions etc. for 50 and 100 demands. Since the Maintenance Rule PC and Corrective Action Program is used to track and monitor EDG performance, 50 and 100 demands are not specifically tracked.

g. NUMARC D 2.4.7 - Exception is taken to reporting to the NRC all failures/demands per 20, 50, and 100 demands. Exception is taken to the 20, 50, and 100 demand trigger values.

b. The minimum acceptable station blackout (SBO) coping duration was determined to be 16 hours. Studies and analyses have been performed to demonstrate the capability of withstanding and recovering from a station blackout event of 16 hour duration.

c. An onsite Alternate AC (AAC) power system has been installed to provide power to plant loads that have been

determined to be important to the mitigation of a station blackout event. This system is manually started and can be connected to the affected nuclear unit within one hour of the onset of a SBO. The AAC power system is inspected and tested periodically to demonstrate its availability and reliability. Further discussion of the AAC power system is provided in Section 8.3.1.1.10.

d. A minimum reliability target of 0.95 per demand for the AAC power system has been selected and a reliability program is in place to monitor and maintain this reliability level.

e. Procedures and training have been established for operator actions necessary to cope with a station blackout event.

f. Quality assurance activities have been implemented as applicable for the non-safety related systems and equipment installed and dedicated for the operation of the AAC power source. Further discussion of the quality assurance program for SBO is provided in ~~Section 17.2F.6~~.

the PVNGS Operations Quality Assurance Program Description.

section states that "A summary of 10 CFR 72.48 evaluations for activities *implemented* under 10 CFR 72.48 must be provided to NRC… The 10 CFR 72.48 reporting requirement (every 24 months) is identical to that for UFSAR updates such that licensees and CoC holders may provide these reports to NRC on the same schedule." (emphasis added).

10 CFR 72.48 evaluation summary reports will include a summary of all 10 CFR 72.48 evaluations that were performed for the stated time period, regardless of the implementation status for the change, test, or experiment that was evaluated.

REGULATORY GUIDE 4.1: Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants (Revision 1, April 1975)

RESPONSE

The position of Regulatory Guide 4.1 is accepted. ~~Reference: 13.4.5 and 17.2.B.~~

REGULATORY GUIDE 8.2: Guide for Administrative Practices in Radiation Monitoring (Revision 0, February 2, 1973)

RESPONSE

The position of Regulatory Guide 8.2 is accepted (refer to subsections 12.1.1, 12.3.4, 11.5.1.1.3, and sections 12.5 and 13.2).

Insert New
Appendix 1B

APPENDIX 1B
HISTORICAL REGULATORY GUIDE INFORMATION FROM CHAPTER 1

HISTORICAL

REGULATORY GUIDE 1.28: Quality Assurance Program Requirements (Design and Construction) (Revision 0, June 7, 1972)

RESPONSE
For construction phase activities and prerequisite and phase I startup testing, the position of Regulatory Guide 1.28 is accepted. Also see 17.1 and 17.2. For operations phase activities including phase II through phase IV startup testing, the regulatory position found in Regulatory Guide 1.28 will be replaced by the regulatory position found in Regulatory Guide 1.33 as modified and interpreted by APS in Section 1.8. Additional References: 4.2.5, 5.4.7.1, 6.3.1.3, 9.1.4.6, and 18.II.F.2-3.

HISTORICAL

REGULATORY GUIDE 1.30: Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment (Revision 0, August 11, 1972)

RESPONSE
The requirements of the referenced standard (ANSI N45.2.4-1972) will be applied to the Bechtel quality program for construction of safety-related items as interpreted in the regulatory position as modified and interpreted below:

A. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures or plans are reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality.

B. Section 3, Preconstruction Verification. The requirements of this section are applied to items which are received and stored prior to installation.

They are combined with receiving inspection activities in accordance with ANSI N45.2.2 requirements for items which are installed immediately after receiving inspection.

For operations phase activities that are comparable to activities occurring during the construction phase, the following interpretations apply to the position of Regulatory Guide 1.30:

A. Section 5.2:
The various tests are performed "as appropriate" as determined by PVNGS Engineering Department based upon the significance of the change or modification.

B. Section 6.2.1:
PVNGS utilizes a computer information management system to maintain plant equipment calibration status including the date of calibration and identity of the person that performed the calibration. The computer information management system provides a more reliable and accessible method of documenting plant equipment calibration status than the use of tags or labels affixed to the equipment.

C. Section 6.2.2:
The requirement that systems tests be made to verify that all parts of a system properly coordinate with each other is interpreted as not requiring that an entire system be retested after modification of only a portion of that system. The testing requirements of the Technical Specifications are met for inoperable equipment.

Reference 3.11.2, 7.1.2.6, 7.1.2.17, 8.3.1.2.2.7, 8.3.2.2.1.6, 14.2.7, 17.1, 17.2, and Table 18.II.F.2-3.

HISTORICAL

REGULATORY GUIDE 1.33: Quality Assurance Program Requirements (Operation) (Revision 2, February 1978)

RESPONSE

The position of Regulatory Guide 1.33 is accepted with the following exceptions to Regulatory Positions C.2 and C.4:

For Regulatory Position C.2, the APS commitment refers to regulatory guides, and revisions thereof, specifically identified in this FSAR.

For Regulatory Position C.4, the specific audits at C.4.a, C.4.b, and C.4.c shall be performed at a frequency of at least once per 24 months. In addition, a grace period of 90 days beyond the specified frequency shall be permitted for completion of internal audits. When the grace period is utilized, subsequent scheduling for the audit shall be based upon the original due date. This grace period shall not be applied to those audits that have a frequency specifically defined by regulation.

In addition, the following clarification is made in APS' position regarding Regulatory Guide 1.33:

> Compliance to ANSI standards referenced throughout ANSI N18.7-1976/ANS-3.2 are addressed separately in APS' response to conformance with the regulatory guides listed in section C.2 of Regulatory Guide 1.33.

The following exceptions are taken to ANSI N18.7:

> A. Section 3.4.2
>
> The APS commitment on the qualification of personnel who are performing preoperational and startup test functions is found in paragraph 14.2.2.12.
>
> B. Section 5.2.13.1
>
> When purchasing commercial-grade calibration services from certain accredited calibration laboratories, the procurement documents are not required to impose a quality assurance program consistent with ANSI N45.2-1971. Alternative requirements described in UFSAR Section 1.8 for Regulatory Guide 1.123 may be implemented in lieu of imposing a quality assurance program consistent with ANSI N45.2-1971.

In addition, the following interpretations of ANSI N18.7 are made:

> A. Section 5.2.2

The requirements of this section are accepted with the following interpretations:

Temporary changes to procedures may be made provided the change is approved by two members of the plant management staff, at least one of whom holds a senior reactor operator license on the unit affected.

Procedural steps traditionally identified as immediate actions are incorporated into standard post-trip actions. Following a manual or automatic reactor trip, standard post-trip actions will be performed. The reactor operators are expected to know the standard post-trip actions and begin to take action.

The control room supervisor shall perform the standard post-trip actions in the order written and go over each step with the control room staff.

B. Section 5.2.13.1

The requirement that changes made to procurement documents be subject to the same degree of control as was used in the preparation of the original documents is applied consistent with the requirements of ANSI N45.2.11, Paragraph 7.2. Minor changes to documents, such as inconsequential editorial corrections or changes to commercial terms and conditions, may not require that the revised document receive the same review and approval as the original documents.

C. Section 5.2.17

The requirements of this section are accepted with the following interpretation:

The requirement that deviations, their cause, and any corrective action completed or planned shall be documented shall apply to significant deviations. Other identified deviations will be documented and corrected. This interpretation is consistent with Appendix B to 10CFR50, Criterion XVI, Corrective Action.

D. Section 5.2.19.1

Preoperational testing (phase I startup testing) addressed in ANSI N18.7, Paragraph 5.2.19.1, will be conducted in accordance with Regulatory Guide 1.68, Revision 0.

E. Section 5.3.9.1

The requirements of this section are accepted with the following interpretation:

Actions identified as immediate operator actions have been standardized in the form of safety function status checks. Safety functions are maintained for all transients when the emergency procedure is implemented. This ensures proper operator response independent of event diagnosis. This approach is consistent with CEN-152, CE Emergency Procedure Guidelines.

Actions identified as subsequent operator action are addressed as a recovery procedure, implemented after event diagnosis. This approach is consistent with CEN-152, CE Emergency Procedure Guidelines.

The specific procedure format and content have been identified in the Emergency Procedure Generation Package and submitted to the NRC for review. This is consistent with NUREG-0899.

F. Section 5.2.15

The requirements of this section are accepted with the following interpretation(s):
The requirement for periodic review of routine plant procedures no less frequently than every two years may be exceeded for routine plant procedures which are used infrequently, when alternative means are provided to ensure review of these procedures prior to use.

Periodic review of plant procedures no less frequently than every two years is not required for routine, frequently-used plant procedures. Periodic audits to satisfy regulatory requirements and commitments include an assessment of a representative sample of related procedures to validate that the procedures are acceptable for use and that the procedure review and revision process is being effectively implemented.

The exceptions to periodic review requirements stated above do not apply to non-routine procedures (such as abnormal operating procedures, emergency operating procedures, alarm response procedures, procedures which implement the Emergency Plan, or procedures which implement the Security Plan). The periodic review requirement for these procedures may be satisfied by the use or review of the procedure during plant operation, training exercise, drill, or by other such review activity which validates acceptability of the procedure, provided the procedure use or review activity is documented.

G. Section 5.2.7

The requirements of this section are accepted with the following interpretations:

Activities occurring during the operational phase that are comparable in nature and extent to related activities occurring during initial plant design and construction' shall be interpreted to mean those activities of such a scale and type that the following conditions are met:

A. The work is to be performed by an outside contractor or owner's service organization not part of the plant organization.

B. The system or area of the plant affected by the work is released to the contractor or service organization during the activity, and, except for radiological protection purposes and other specified controls, effectively ceases to be part of an operating nuclear power plant.

C. The contractor or service organization has been directed in advance of the work that conformance to Regulatory Guide 1.33, ANSI N18.7, and Applicable standards referenced in ANSI N18.7 will be required, consistent with the PVNGS UFSAR position on these standards.

The implementation of the positions of Regulatory Guide 1.33 are described in chapters 13 and 17 and the Technical Specifications.

HISTORICAL

REGULATORY GUIDE 1.37: Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants (Revision 0, March 16, 1973)

RESPONSE

The requirements of the referenced standard (ANSI N45.2.1-1973) as modified in the regulatory position are applied to cleaning activities specified or applied by Bechtel to safety-related items as modified and interpreted below:

> A. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures or plans are reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality. This is consistent with Section II, Paragraphs 2 and 3, of ANSI N45.2- 1971 which provide for examination, measurement, or testing to assure quality or indirect control by monitoring of processing methods. However, final cleaning or flushing activities are performed in accordance with procedures specific to the system.

Also see 5.2.3.4.1.2.1. Additional References: 4.2.5, 4.5.1.5, 5.1.5, 5.2.3, 5.4.2.4, 5.3.3.5, 5.4.7, 6.1.1.1.3.2, 6.3.1.4, 6.5.2.8, (RA) 7.12.5, 9.3.4, 10.3.6.2, 14.2.7, 17.1, and 17.2.

For operations phase activities that are comparable to activities occurring during the construction phase, the referenced standard (ANSI N45.2.1-1973) as modified by Regulatory Guide 1.37 is accepted as modified below.

> A. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many systems and component

installations. This results in standard procedures for cleaning, inspection, and testing which meet the requirements of the standard.

B. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures are reviewed for applicability in each case. Cleaning procedures are limited in scope to those actions or activities which are essential to maintain or achieve required quality. This is consistent with Section 5.2.17, Paragraph 5, of ANSI N18.7-1976 which provides for examination, measurement, or testing to assure quality or indirect control by monitoring of processing methods.

HISTORICAL

REGULATORY GUIDE 1.38: Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants (Revision 0, March 16, 1973)

RESPONSE
The requirements of the referenced standard (ANSI N45.2.2-1972) as modified and interpreted in the regulatory position are applied to the Bechtel quality program for construction of safety-related items, except as modified and interpreted below:

A. Section 2.4, Personnel Qualification. Personnel performing offsite audits shall be qualified to ANSI N45.2.23. Personnel performing offsite material inspection shall be qualified to ANSI N45.2.6. Personnel performing offsite monitoring activities shall be qualified to ANSI N45.2.23 or ANSI N45.2.6.

B. Section 2.7, Classification of Items. The four-level classification system may not be used explicitly. However, the specific requirements for each classification as specified in the standard are applied to the items suggested in each classification and for similar items.

C. Section 3.9, Marking. Identification of items, after the outside of the container has been removed, is accomplished in accordance with ANSI N18.7, Section 5.2.13.3.

D. Section 6.2, Storage Areas. Paragraph 6.2.1 requires control and limited access to storage areas. In lieu of and to amplify this paragraph, the following is applied:
"Access to storage areas for levels A, B, and C is controlled by the individual(s) responsible for material storage." Level D items are stored in a site area which has access control consistent with zone IV of ANSI N45.2.3-1973. While the areas may be posted to limit access, other positive controls (other than that for the overall site area) or guards may not be provided.

E. Sections 3.9 and 5.6, and Section A3.9 of Appendix A, Marking. These ANSI N45.2.2 sections control direct marking of austenitic stainless steel and nickel based alloys. Marking is in compliance with the requirements of these sections except that markings may be directly applied using inks controlled so as not to contain more than 200 ppm of inorganic halogens.

Reference 4.2.5, 5.1.4, 5.2.3.4.1.2.2, 6.3.1.3, 9.1.4.6, 17.1A.2, 17.1B, 17.2B, and Table 18.II.F.2-3.

HISTORICAL

REGULATORY GUIDE 1.39: Housekeeping Requirements for Water-Cooled Nuclear Power Plants (Revision 2, September 1977) [Historical]

RESPONSE
The requirements of the referenced standard (ANSI N45.2.3-1973) are applied to the Bechtel quality program for construction of safety-related items except as modified and interpreted below:

A. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique; however, standard procedures or plans are reviewed for applicability in each case. Installation plans or procedures are also

limited in scope to those actions or activities which are essential to maintain or achieve required quality.

B. Alternative equivalent zone designations and requirements may be utilized to cover those situations not included in the subject standard. For example, situations in which shoe covers and/or coveralls are required but material accountability is not.
For operations phase activities that are comparable to activities occurring during the construction phase, the position of Regulatory Guide 1.39 is accepted with the following exception:

Alternative equivalent zone designations and requirements may be utilized to cover those situations not included in the subject standard. For example, situations in which shoe covers and/or coveralls are required but material account-ability is not.

Reference 5.3.3.5, 9A.33, 12.5.3.4, 17.1B, 17.1A.2, and 17.2B.

HISTORICAL

REGULATORY GUIDE 1.58: Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel (Revision 1, September 1980) [Historical]

RESPONSE
The position of Regulatory Guide 1.58 is accepted with the following exceptions:

A. Position C.1
The qualification of personnel who approve preoperational and startup test procedures and test results, and those who direct or supervise the conduct of individual preoperational and startup tests is discussed in paragraph 14.2.2.12. The qualification of other personnel discussed in Position C.1 follows the guidelines of Regulatory Guide 1.8 as discussed in sections 13.1 and 13.2.

B. Position C.6
The specified education and experience recommendation of ANSI N45.2.6-1978 for various levels of inspectors shall not be treated as absolute when other factors

provide reasonable assurance that a person can competently perform a particular task. These factors will be documented, with justification by management (on an individual basis), demonstrating that the individual does have equivalent competence to that which would be gained from having the required education and experience.

In addition, the following exceptions are taken to the referenced standard ANSI N45.2.6-1978 are made:

A. The first sentence of Paragraph 3.4 states that a Level III qualified person shall have all the capabilities of a Level II qualified person for the inspection, examination or test category or class in question. APS will qualify Level III persons without the actual hands on experience and capability to perform specific inspections, examinations or tests required of a Level I or II qualified person, and utilize these persons for administrative and supervisory functions including certifying persons at the same or lower level.

B. Paragraph 3.3 states that a Level II qualified person shall have demonstrated experience in certifying lower level qualified persons. APS does not use Level II qualified persons to certify lower level qualified persons, and does not require Level II qualified persons to demonstrate this capability.

The following interpretation is also made to Regulatory Guide 1.58:

A. Position C.1
For qualification of personnel, (1) who perform or approve operational test procedures and test results, and (2) who direct or supervise the conduct of individual operational tests, the guidelines contained in Regulatory Guide 1.8, Revision 1-R, "Personnel Selection and Training" with the criteria for selection and training contained in ANSI/ANS 3.1-1978, substituted for ANSI-N18.1-1971, will be followed.

See also conformance to Regulatory Guide 1.8:

Personnel Selection and Training (Revision 1-R, May 1977).

Reference sections 17.1A.2, 17.1B, 17.2B, and Table 18.II.F.2-3.

HISTORICAL

REGULATORY GUIDE 1.64: Quality Assurance Requirements for the Design of Nuclear Power Plants (Revision 0, October 1973) [Historical]

RESPONSE
Regulatory Guide 1.64 endorses a superseded draft issue of ANSI N45.2.11. For C-E's program, refer to Section 17.1C. The Bechtel program complies with ANSI N45.2.11-1974 as interpreted herein.

A. Section 3.1.
This section implies that all necessary design input (as listed in section 3.2) should be available prior to the start of a design activity. In practice, certain design activities are initiated before the firm input requirements are available. (For example, foundation designs prepared based on preliminary information or equipment sizes and mounting and embedded conduit run based on preliminary estimates of circuit requirements). The design phase QA program is structured to assure that all necessary design input is available before completion of final design of the work affected by the input and that final design input is available for use in verification of the final design.

B. Section 4.1, Design Process General
Paragraph 3 implies traceability back from final design to the source of design input. In practice, a literal interpretation of this is not always possible. For example, final design drawings do not identify the related calculations. This paragraph is interpreted to mean that it shall be possible to relate the criteria used and analyses performed to the final design documents and that record files will permit location of analyses supporting specific design output documents.

Additional references: 3.8.1.2.3, 4.2.5, 5.1.4, 5.4.7.1, 6.3.1.3, 9.1.4.6, 9.3.4.6, 17, and Table 18.II.F.2-3.

HISTORICAL

REGULATORY GUIDE 1.64: Quality Assurance Requirements for the Design of Nuclear Power Plants (Revision 2, June 1976)

RESPONSE
For operations phase activities that are comparable to activities occurring during the construction phase, the position of Regulatory Guide 1.64 is accepted with the following exception to Position C.2:

Supervisory personnel may perform design verification under exceptional circumstances as documented and approved by the next level of supervision, if:

1. The justification (for design verification by a designer's immediate supervisor) is individually documented and approved in advance, and

2. Quality assurance audits cover frequency and effectiveness of use of supervisors as design verifiers to guard against abuse.

APS interprets ANSI N45.2.11-1974, Sections 3.1 and 4.1, as follows:

A. Section 3.1

This section implies that all necessary design input (as listed in section 3.2) should be available prior to the start of a design activity. In practice, certain design activities are initiated before the firm input requirements are available. (For example, foundation designs prepared based on preliminary information or equipment sizes and mounting and embedded conduit run based on preliminary estimates of circuit requirements).

The design phase QA program is structured to assure that all necessary design input is available before completion of final design of the work affected by the input and that final design input is available for use in verification of the final design.

B. Section 4.1, Design Process General

Paragraph 3 implies traceability back from final design to the source of design input. In practice, a literal interpretation of this is not always possible. For example, final design drawings do not identify the related

calculations. This paragraph is interpreted to mean that it shall be possible to relate the criteria used and analyses performed to the final design documents and that record files will permit location of analyses supporting specific design output documents.

References: 3.8.1.2.3, 4.2.5, 5.1.4, 5.4.7.1, 6.3.1.3, 9.1.4.6, 9.3.4.6, 17, and Table 18.II.F.2-3.

HISTORICAL

REGULATORY GUIDE 1.74: Quality Assurance Terms and Definitions (Revision 0, February 1974)

RESPONSE
The position of Regulatory Guide 1.74 is accepted (refer to section 17.2 and 17.16). Additional references: 4.2.5, 5.1.4, 5.4.7.1, 9.1.4.6, 17.1A, 17.1B, and Table 18.II.F.2-3.

HISTORICAL

REGULATORY GUIDE 1.88: Collection, Storage and Maintenance of Nuclear Power Plant Quality Assurance Records (Revision 2, October 1976) [Historical]

RESPONSE
The position of Regulatory Guide 1.88 is accepted with the following exceptions to Section 5.6 of ANSI N45.2.9-1974:

A. Doors, structure and frames, and hardware shall be designed to comply with the requirements of a minimum 2-hour fire rating. (Section 4.4.1 (c) of Supplement 17S-1 of NQA-1 requires 2-hour rated doors and dampers, and the latest version of Regulatory Guide 1.28 provides no additional guidance in this area.)

B. Vinyl tile is used on the floor in lieu of a surface
sealant.

C. A roof drainage line penetrating the structure has been plugged to avoid any potential flooding due to rain. There is a floor drain with a vent line located in the center of the room. The vent line to the roof is exclusively for the drain and it does not carry

liquids, therefore it does not present any potential flooding problems to the storage room.

D. PVNGS also provides the following clarification with regard to application of ANSI N45.2.9-1974: PVNGS adheres to the guidance of the Standard for classification and retention periods of quality assurance records, unless other more stringent requirements apply or a graded approach as defined in Section 17.2 has been applied to determine the relative value of the record or group of records. When the graded approach is utilized, the extent to which the record maintenance and storage requirements of the Standard apply may be modified.

For quality assurance records to which the graded approach is not applied, the records shall be maintained and stored consistent with applicable regulatory requirements and the pertinent requirements of R.G. 1.88 and ANSI N45.2.9-1974, with exceptions as noted in A through C above.

Reference: 17.1, 17.2, and Table 18.II.F.2-3.

HISTORICAL

REGULATORY GUIDE 1.116: Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems (Revision 0-R, May 1977) [Historical]

RESPONSE
For operations phase activities, the position of Regulatory Guide 1.116 is accepted with the following interpretations of ANSI N45.2.8:

A. Section 2.3
Test reports attached to or referenced in data sheets may meet the evaluation requirements of the last paragraph.

B. Sections 2.2 and 2.3; 5.2 and 5.4
For application of the provisions of these sections to preoperational and startup testing, the APS position on the applicable revision of Regulatory Guide 1.68, "Preoperational and Initial Startup Test Programs for Water-Cooled Power Reactors," shall take precedence where there is a conflict or difference.

C. Item 2.9e(6)
This item shall be interpreted to mean that any work performed without an approved design change shall not be considered complete and acceptable for its intended use until the change is approved, and that the intent of this item will be satisfied provided that such work is performed only with approved procedures and that the activities and the results are documented. Evidence of design change approval shall be required prior to placing the affected item in service.

D. Section 5
For the purposes of functional tests addressed by this standard, APS defines completed systems as any system, or portion or component thereof, on which construction is sufficiently complete to allow the required testing, and on which further or adjacent construction will not render the results of such testing invalid or indeterminate.

E. Item 5.1.g
Traceability as used in this item is considered to be the same as discussed in Section 5.2.13.3 of ANSI N18.7.

Reference sections 14.2.7, 17.1A.2, 17.1B, and 17.2B.

HISTORICAL

REGULATORY GUIDE 1.123: Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants (Revision 1, July 1977) [Historical]

RESPONSE
For operations phase activities, the position of Regulatory Guide 1.123 is accepted with the following modifications to ANSI N45.2.13-1976:

A. Section 7.5, Personnel Qualifications. Personnel performing offsite audits shall be qualified to ANSI N45.2.23. Personnel performing offsite material inspection shall be qualified to ANSI N45.2.6. Personnel performing offsite monitoring activities shall be qualified to ANSI N45.2.23 or ANSI N45.2.6.

B. Section 3.2.3

The requirements of this section are accepted with the following exception:

When purchasing commercial grade calibration services from calibration laboratories accredited by a nationally recognized accrediting body, the procurement documents are not required to impose a quality assurance program consistent with ANSI N45.2-1971. Nationally-recognized accrediting bodies include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology (NIST) and other accrediting bodies recognized by NVLAP via a Mutual Recognition Arrangement (MRA). In such cases, accreditation may be accepted in lieu of the Purchaser imposing a QA Program consistent with ANSI N45.2-1971, provided all the following are met:

1. The accreditation is to ANSI/ISO/IEC 17025.
2. The accrediting body is either NVLAP or the American Association for Laboratory Accreditation (A2LA) based upon A2LA continued NVLAP recognition through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement.
3. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.
4. The purchase documents impose additional technical and administrative requirements, as necessary, to satisfy APS QA Program and technical requirements. The purchase documents shall specifically require that the calibration certificate or report will include identification of the equipment and/or standards used.
5. The purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.

HISTORICAL

REGULATORY GUIDE 1.144: Auditing of Quality Assurance Program for Nuclear Power Plants (Revision 1, September 1980) [Historical]

RESPONSE
The requirements of the referenced standard (ANSI N45.2.12-1977) as modified and interpreted in the position of Regulatory Guide 1.144 are applied to the APS quality

assurance program for operations phase activities, with the following exceptions:

A. Section 4.3.1 requires that a brief preaudit conference be conducted with cognizant organization management. A formal preaudit conference may not be required for some routine internal audits where informal preaudit communication is determined to be adequate. The manager of the auditing organization will monitor the performance of audits, through review of audit reports, to ensure that informal preaudit communication is utilized only in cases where such informal communication is adequate.

B. Section 4.5.1 states that any "adverse findings" shall be reviewed and investigated to determine and schedule appropriate corrective action including action to prevent recurrence. Consistent with the PVNGS position established in section 1.8 for Regulatory Guide 1.33, PVNGS requires determination of root cause and actions to prevent recurrence for significant conditions adverse to quality that are identified during audits. This interpretation is consistent with Appendix B to 10CFR50, Criterion XVI, Corrective Action.

C. A grace period of 90 days beyond the specified frequency shall be permitted for completion of supplier annual evaluations and supplier audits. When the grace period is utilized, subsequent scheduling for the evaluation or audit shall be based upon the original due date. This grace period shall not be applied to evaluations or audits that have a frequency specifically defined by regulation.

Reference: 17.1, 17.2, and Table 18.II.F.2-3.

D. Regulatory Guide 1.144, Section C.3.b(2)
The Requirements of this section are accepted with the following interpretation.

When purchasing commercial grade calibration services from calibration laboratories accredited by a nationally-recognized accrediting body, the accreditation process and accrediting body may be credited with carrying out a portion of the Purchaser's duties of verifying acceptability and

effective implementation of the calibration service supplier's quality assurance program. Nationally-recognized accrediting bodies include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology (NIST) and other accrediting bodies recognized by NVLAP via a Mutual Recognition Arrangement (MRA).

In lieu of performing an audit, accepting an audit by another licensee, or performing a commercial-grade supplier survey, a documented review of the supplier's accreditation shall be performed by the Purchaser. This review shall include, at a minimum, all of the following:

1. The accreditation is to ANSI/ISO/IEC 17025.
2. The accrediting body is either NVLAP or the American Association for Laboratory Accreditation (A2LA) based upon A2LA continued NVLAP recognition through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement.
3. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

HISTORICAL

REGULATORY GUIDE 1.146: Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (Revision 0, August 1980) [Historical]

RESPONSE
The requirements of the referenced standard (ANSI N45.2.23-1978) as modified and interpreted in the position of Regulatory Guide 1.146 are applied to the quality assurance program with the following modifications:

A. At paragraph 2.2.1 of ANSI N45.2.23: Orientation of auditors is provided to produce a working knowledge and understanding of ANSI N18.7, ANSI N45.2.12, this standard, and the auditing organization's procedures for implementing audits and reporting results.

B. At paragraph 2.3.4 of ANSI N45.2.23: 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 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".

Reference 17.1 and 17.2.

southwest penetration areas contain cable for separation groups A and C, at two levels each located in a separate area. Raceway separation criteria, as described in this section, apply in routing cable through the penetration areas. Non-safety-related penetration assemblies are located in each of the four areas.

8.3.1.4.2 Administrative Responsibilities and Controls for Assuring Separation Criteria

The cable and raceway channel identification described in paragraph 8.3.1.3 facilitates and ensures the maintenance of separation in the routing of cables and the connection of control boards and panels. At the time of the cable routing assignment during design, those responsible for cable and raceway scheduling check to ensure that the separation group designation in the cable number is compatible with a single-line diagram load group designation. Extensive use of computer facilities assists in ensuring separation. Each cable and raceway is identified in the computer program, and the identification includes the applicable separation group designation. Auxiliary programs are made available specifically to ensure that cables of a particular separation group are routed through the appropriate raceways. The routing is also confirmed by ~~quality control~~ personnel during installation to be consistent with the design document. Color identification of equipment and cabling (refer to paragraph 8.3.1.3) assists field personnel in this effort.

inspection

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Table 9B.3-1

COMPARISON OF PALO VERDE NUCLEAR GENERATING STATION TO APPENDIX A OF NRC BRANCH TECHNICAL POSITION APCSB 9.5-1 (Sheet 13 of 69)

C. QUALITY ASSURANCE PROGRAM

APPLICATION DOCKETED BUT CONSTRUCTION PERMIT NOT RECEIVED AS OF 7/1/76	PLANTS UNDER CONSTRUCTION AND OPERATING PLANTS	PVNGS POSITION AND BASIS FOR NONCOMPLIANCE ITEMS
Quality assurance (QA) programs of applicants and contractors should be developed and implemented to assure that the requirements for design, procurement, installation, and testing and administrative controls for the fire protection program for safety-related areas as defined in this Branch Position are satisfied. The program should be under the management control of the QA organization. The QA program criteria that applies to the fire protection program should include the following: 1. Design Control and Procurement Document Control Measures should be established to assure that all design-related guidelines of the Branch Technical Position are included in design and procurement documents and that deviations therefrom are controlled. 2. Instructions, Procedures, and Drawings Instructions, tests, administrative controls, fire drills, and training that govern the fire protection program should be prescribed by documented instructions, procedures, or drawings and should be accomplished in accordance with these documents. 3. Control of Purchased Material, Equipment, and Services Measures should be established to assure that purchased material, equipment, and services conform to the procurement documents.	Same Implementation of the quality assurance program for fire protection is consistent with NRC Branch Technical Position APCSB 9.5-1, Appendix A, Section C, "Quality Assurance Program". Fire protection features required to protect safety-related structures, systems, and components are within the scope of the PVNGS Quality Assurance Program for the operational phase. APS implements the fire protection QA program through approved procedures, instructions, and drawings in accordance with the requirements of the PVNGS Operations Quality Assurance Program Description.	APS has developed and implemented a fire protection QA program, as described in the PVNGS Operations Quality Assurance Plan, Appendix E-1. The fire protection QA program is consistent with NRC Branch Technical Position APCSB 9.5-1, Appendix A, Section C, "Quality Assurance Program." Fire protection features required to protect safety-related structures, systems, and components are within the scope of the fire protection QA program. 1. Design Control and Procurement Document Control Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1. 2. Instruction, Procedures, and Drawings Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1. 3. Control of Purchased Material, Equipment, and Services Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1.

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Table 9B.3-1

COMPARISON OF PALO VERDE NUCLEAR GENERATING STATION TO APPENDIX A OF NRC BRANCH TECHNICAL POSITION APCSB 9.5-1 (Sheet 14 of 69)

C. QUALITY ASSURANCE PROGRAM

APPLICATION DOCKETED BUT CONSTRUCTION PERMIT NOT RECEIVED AS OF 7/1/76	PLANTS UNDER CONSTRUCTION AND OPERATING PLANTS	PVNGS POSITION AND BASIS FOR NONCOMPLIANCE ITEMS
4. Inspection A program for independent inspection of activities affecting fire protection should be established and executed by, or for, the organization performing the activity to verify conformance with documented installation drawings and test procedures for accomplishing the activities.		4. Inspection Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1.
5. Test and Test Control A test program should be established and implemented to assure that testing is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. The tests should be performed in accordance with written test procedures; test results should be properly evaluated and acted upon.		5. Test and Test Control Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1.
6. Inspection, Test, and Operation Status Measures should be established to provide for the identification of items that have satisfactorily passed required tests and inspections.		6. Inspection, Test, and Operation Status Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1.

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Table 9B.3-1

COMPARISON OF PALO VERDE NUCLEAR GENERATING STATION TO APPENDIX A OF NRC BRANCH TECHNICAL POSITION APCSB 9.5-1 (Sheet 15 of 69)

C. QUALITY ASSURANCE PROGRAM

APPLICATION DOCKETED BUT CONSTRUCTION PERMIT NOT RECEIVED AS OF 7/1/76	PLANTS UNDER CONSTRUCTION AND OPERATING PLANTS	PVNGS POSITION AND BASIS FOR NONCOMPLIANCE ITEMS
7. Nonconforming Items Measures should be established to control items that do not conform to specified requirements to prevent inadvertent use of installation.		7. Nonconforming Items Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1.
8. Corrective Action Measures should be established to assure that conditions adverse to fire protection, such as failures, malfunctions, deficiencies, deviations, defective components uncontrolled combustible material and non-conformances are promptly identified, reported, and corrected.		8. Corrective Action Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1.
9. Records Records should be prepared and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the fire protection program.		9. Records Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1.
10. Audits Audits should be conducted and documented to verify compliance with the fire protection program including design and procurement documents, instructions, procedures and drawings, and inspection and test activities.		10. Audits Refer to the PVNGS Operations Quality Assurance Plan, Appendix E-1.

CHAPTER 13
CONDUCT OF OPERATIONS
CONTENTS

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CONTENTS (cont)

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FIGURES

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13. CONDUCT OF OPERATIONS

13.1 ORGANIZATIONAL STRUCTURE OF APPLICANT

13.1.1 MANAGEMENT AND TECHNICAL SUPPORT ORGANIZATION

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 facility. APS provides a staff of personnel that either conducts these operations or provides support services for operations. Members of the management and technical support organization staff may be located onsite or offsite.

This section provides information relative to the management and technical support organizations, their functions and responsibilities, and qualifications of personnel. Specific organizational responsibilities relating to quality assurance (QA) are specified in the Operations Quality Assurance Plan (section 17.2).

13.1.1.1 Design and Operating Responsibilities

The design and operating responsibilities can be divided into three categories: design and construction activities (project phase), preoperational activities, and technical support for operation.

Project design, construction and preoperational activities are complete for all three units. The full power license for Unit Three was received in 1987. The sections describing the project phase and preoperational activities have been relocated to Appendix 13B due to the historical status of their content.

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The executive vice president, nuclear and CNO, reports directly to the chief executive officer of APS, and is responsible to provide leadership to the Nuclear Generation organization and overall management of the activities related to the operation, maintenance, and modification of the Palo Verde Nuclear Generating Station, including the entire owner controlled property.

The executive vice president, nuclear and CNO, has overall responsibility to ensure that all PVNGS activities, including operation, maintenance, and modification of the units are performed in strict compliance with regulatory requirements, consistent with the requirements for protection of the health and safety of the general public and company personnel, and in accordance with company policy.

The overall organizational structure, reporting relationships, and responsibilities for management and technical support of the facility are described in the PVNGS Operations Quality Assurance Program Description (QAPD).

The onsite operating organization and its responsibilities and authorities are further described in UFSAR Section 13.1.2, the Unit Technical Specifications, and station administrative procedures.

ORGANIZATIONAL STRUCTURE

OF APPLICANT

13.1.1.1.1 Technical Support for Operations

The executive vice president, nuclear and chief nuclear officer (CNO), and the chief executive officer of Arizona Public Service Company (APS), are the corporate officers responsible for providing management and technical support services for PVNGS. The executive vice president, nuclear and CNO, has been delegated corporate responsibility for overall plant nuclear safety, and has established direct report groups and departments as discussed in section 13.1.1.2.

13.1.1.2 Licensee Organizational Arrangement

The executive vice president, nuclear and CNO, reports directly to the APS chief executive officer and president. The executive vice president, nuclear and CNO has the overall responsibility and authority for the operation and technical support of PVNGS. The executive vice president, nuclear and CNO, and the nuclear organization have the overall responsibility and authority to ensure that all activities associated with APS' nuclear facilities are carried out with the highest standards of safety and ensuring the station is operated in accordance with the licenses granted by the USNRC, the Technical Specifications, and the requirements and commitments stated in the Updated Final Safety Analysis Report (UFSAR).

The nuclear organization includes the positions for activities affecting safety of the nuclear power plant. Lines of authority, responsibility, and communication are defined and

these relationships are documented and updated, as appropriate. The following paragraphs provide a functional description of departmental responsibilities and reporting relationships at a high level. Further details regarding authorities, responsibilities, and communications within the nuclear organization are described in station procedures and other appropriate forms of documentation such as organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions.

13.1.1.2.1 Executive Vice President, Nuclear and Chief Nuclear Officer (CNO). The executive vice president, nuclear and CNO, is responsible for the overall operation of the three PVNGS units. Additional discussion of this position is provided in paragraph 13.1.2.2.

13.1.1.2.2 Vice President, Nuclear Engineering. The vice president, nuclear engineering, is responsible to the senior vice president, site operations, for the overall direction, administration, and supervision of the engineering organizations. The nuclear engineering organizations provide support and assistance to the PVNGS generating units and other site facilities in the area of engineering including: design engineering for modifications; engineering evaluations support; performance monitoring and optimization; configuration management, including maintenance and control of the plant design basis; cyber security; and nuclear fuel management.

Responsibilities for those reporting directly to the vice president, nuclear engineering, are outlined in the following paragraphs.

13.1.1.2.2.1 Director, Design Engineering. The director, design engineering, is responsible to the vice president, nuclear engineering, for providing design engineering programs and directing technical resources to maintain the design basis, provide for configuration maintenance, develop plant design modifications, and provide technical analysis, in support of plant operations and maintenance. Specific implementing responsibilities may be appropriately delegated within the PVNGS nuclear organization.

13.1.1.2.2.2 Director, Nuclear Fuel Management. The director, nuclear fuel management, is responsible to the vice president, nuclear engineering, for fuel management and core analysis for PVNGS. The director, nuclear fuel management, provides nuclear fuel design, contracting and utilization expertise; nuclear fuel core, and plant transient and accident analysis; operational reactor engineering support; alternative core operating strategies, and spent fuel storage. Specific responsibilities may be delegated to leaders reporting to the director, nuclear fuel management.

13.1.1.2.2.3 Director, Project Engineering. The director, project engineering, reports to the vice president, nuclear engineering, and is responsible for overall management and

success of assigned engineering projects. Responsibilities include the three functional areas of equipment design and fabrication; coordination of on-site modifications; and development of requests for funding and management of the approved funding for assigned projects. Specific responsibilities may be appropriately delegated to leaders reporting to the director, project engineering, or other cognizant organizations providing support for assigned projects.

13.1.1.2.2.4 Director, Plant Engineering. The director, plant engineering, is responsible to the vice president, nuclear engineering, for directing technical resources in support of equipment root cause failure analysis. The director, plant engineering responsibilities also include providing technical support for performance monitoring to assure proper functioning of the nuclear plant systems and components, including implementation and monitoring of programs related to aging management and life extension. The director, plant engineering also is responsible for the control of software and data for plant digital process control and monitoring systems. Specific implementing responsibilities may be appropriately delegated within the PVNGS nuclear organization.

13.1.1.2.2.5 Director, Engineering Programs and Support. The director, engineering programs and support, is responsible to the vice president, nuclear engineering, for providing

programs and directing technical resources in support of in-service inspection and in-service testing (ASME Section XI and OM Code), equipment qualification, 10 CFR 50 Appendix J containment inspection and testing, performance of nondestructive examinations (NDE), erosion/corrosion monitoring, and probabilistic risk analysis. The director, engineering programs and support, is also responsible for providing programs for ensuring that inspections are performed as required.

13.1.1.2.3 Vice President, Operations Support.

The Vice President, Operations Support, reports to the senior vice president, site operations. The vice president, operations support is responsible for records management (storage, retrieval, distribution and document drawing control/maintenance); procurement and stores; the security, fire protection and emergency preparedness programs; implementation of programs for fire protection; and for information technology support for PVNGS. Responsibilities for those reporting directly to the vice president, operations support are outlined in the following paragraphs.

13.1.1.2.3.1 Director, Nuclear Security Division. The director, nuclear security division, is responsible to the vice president, operations support, for the areas of security operations, security training and self assessments, access authorization, fitness for duty, and security program

standards. Specific responsibilities may be delegated to leaders reporting to the director, nuclear security division.

13.1.1.2.3.2 Manager, Fire Protection. The manager, fire protection is responsible to the vice president, operations support, for areas of fire protection related to the power block, critical support structures, systems and components; and the independent spent fuel storage facility. Specific responsibilities may be delegated to individuals reporting to the manager, fire protection. Fire protection for ancillary and other site buildings may be delegated to other support organizations.

13.1.1.2.3.3 Director, Supply Chain. The director, supply chain reports to the vice president, operations support, and is responsible for nuclear and support area contract formation and administration, material procurement and material control, including the QC receiving inspection functions.

13.1.1.2.3.4 Director, Emergency Planning. The director, emergency planning, reports to the vice president, operations support and is responsible for developing and maintaining a coordinated PVNGS, federal, state, and local government emergency response program for PVNGS.

13.1.1.2.3.5 Manager, Emergency Planning. The manager, emergency planning, reports to the director, emergency planning and is responsible for developing and maintaining a coordinated

PVNGS, federal, state, and local government emergency response program for PVNGS.

13.1.1.2.3.6 Manager, Support Services. The manager, support services reports to the vice president, operations support, and is responsible for development, maintenance and administration of the PVNGS document and record control programs. Responsibilities include providing document and record control programs that provide for the distribution of approved documents, drawings, procedures, instructions, and manuals and that provide for the collection, maintenance, and storage of records in accordance with approved written procedures and instructions which conform to the regulatory requirements and policy of APS.

13.1.1.2.3.7 Palo Verde Information Services. The Palo Verde Information Services group is directed by the information services manager. The information services manager is a matrix position reporting to the vice president, operations support. The Palo Verde Information Services Group is delegated information services functions for PVNGS including the maintenance of non-process computer networks and software, database design and administration, data security, and program management for the PVNGS non-process software quality assurance program described in Section 17.2G.

13.1.1.2.4 Director, Nuclear Assurance. The director, nuclear assurance, reports to the senior vice president,

regulatory and oversight. The director, nuclear assurance, is responsible for development of the operations QA program and to verify effective implementation. The director, nuclear assurance, directs the activities of the PVNGS Nuclear Assurance Department, and has overall responsibility for the QA program including audits, assessments and quality verification.

The director, nuclear assurance, has been given the authority, by the executive vice president, nuclear and CNO, to maintain open lines of communication with individuals and groups having responsibilities related to the operation of PVNGS to ensure that policies and requirements of the operations QA program are properly interpreted and adequately implemented, and to determine the effectiveness of the operations QA program. The director, nuclear assurance, has the authority to cross organizational lines to identify quality problems, to initiate, recommend, or provide solutions and to verify implementation of solutions. The director, nuclear assurance, has been given the authority, by the executive vice president, nuclear and CNO, to stop activities and/or the use or further processing of materials that are not in conformance with specified quality requirements and/or the provisions of the operations QA program. This authority is exercised through established procedures.

Reporting to the director, nuclear assurance, are nuclear assurance department leaders, who are delegated specific responsibilities assigned to the nuclear assurance organization.

13.1.1.2.4.1 PVNGS Nuclear Assurance Organization

The PVNGS nuclear assurance organization is under the supervision and direction of the director, nuclear assurance. General responsibilities of the organization include assuring that programs, processes, and activities associated with general station procedures, plant operations, and maintenance are effectively implemented to support safe and reliable electrical power production. The scope of these oversight and review activities includes the operations program, control and manipulation of the reactor plant, technical specifications and surveillance testing program, transient, special and off-normal evolutions, emergency and abnormal operating procedures, system status, operator training and qualification, performance of maintenance, testing and retest work control, measuring and test equipment controls, material control, maintenance rule implementation, inspections, and outage coordination. The nuclear assurance organization is responsible for assuring that programs, processes, and activities associated with engineering and support are effectively implemented to support safe and reliable plant operations. The scope of these oversight and review activities includes design control and plant modifications, plant performance monitoring, reactor engineering and special nuclear materials, software control, document control, ASME section XI program, ASME OM Code program, procurement (including receiving inspection and warehouse storage, handling, and shipping controls), chemistry controls, radiological controls, dosimetry, occupational radiation safety, radwaste, radiological effluent, emergency

preparedness, security, training, fire protection and fitness for duty.

The nuclear assurance organization is also responsible for assuring that programs, processes, and activities for audits, independent safety reviews, corrective actions, problem identification, problem resolution, operating experience review, and trend analysis are effectively implemented to support safe and reliable plant operations.

Specific quality assurance program responsibilities assigned to the PVNGS Nuclear Assurance organization are described in Section 17.2.

13.1.1.2.5 Senior Vice-President, Regulatory and Oversight.

The senior vice president, regulatory and oversight reports to the executive vice president, nuclear and CNO, and is delegated the overall responsibility for licensing and regulatory compliance functions, non-radiological environmental programs, site programs, the operating experience program, and the programs for corrective action and trending of conditions adverse to quality as described in the PVNGS quality assurance program for operations. Responsibilities also include the appropriate integration and alignment of oversight functions such that performance improvement and quality assurance resources are efficiently and effectively utilized to support continuous improvement in nuclear plant operations and support activities. These responsibilities are appropriately delegated to the directors and department leaders reporting to the senior

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vice president, regulatory and oversight, such that the authority and independence of the director, nuclear assurance, are maintained.

13.1.1.2.5.1 Director, Nuclear Regulatory Affairs and Environmental. The director, nuclear regulatory affairs and environmental, reports to the senior vice president, regulatory and oversight, and is assigned overall responsibility for nuclear and environmental licensing and compliance programs. This position is responsible to monitor nuclear safety, engineering, operating, and environmental activities to assure actions are within plant licensing and design bases and comply with applicable regulations. This position is also responsible for interface with state and federal regulatory agencies on nuclear and environmental licensing and compliance matters. Specific responsibilities may be delegated to leaders reporting to the director, nuclear regulatory affairs and environmental.

13.1.1.2.5.1.1 Nuclear Regulatory Affairs Department.

The department leader, nuclear regulatory affairs, reports to the director, nuclear regulatory affairs and environmental, and is responsible for developing technical license document changes, maintaining specific licensing documents, developing responses to NRC requests, submitting routine regulatory agency reports, and developing strategies for addressing NRC issues. The department leader, nuclear regulatory affairs, is also responsible to advise PVNGS management on regulatory issues to promote station compliance, minimize violations and open items,

and prudently commit resources to resolve regulatory concerns. The regulatory affairs department shall serve as the focal point for direct communications with NRC personnel. Specific responsibilities may be delegated to leaders reporting to the department leader, nuclear regulatory affairs. Specific responsibilities associated with quality assurance program requirements are further described in the PVNGS quality assurance program for operations in section 17.2.

13.1.1.2.5.1.2 Environmental Department.

The department leader, environmental, reports to the director, nuclear, regulatory affairs and environmental, and is responsible for direction, administration and supervision of matters associated with federal, state, and non-radiological local environmental safety requirements. The department leader, environmental, is also responsible to advise PVNGS management on non-radiological environmental regulatory issues to promote station compliance, minimize violations and open items, and to prudently commit resources to resolve regulatory concerns.

13.1.1.2.5.2 Performance Improvement Department.

The director, performance improvement, reports to the senior vice president, regulatory and oversight, and is responsible for direction, administration and supervision of the operating experience program and the programs for corrective action and trending of conditions adverse to quality as described in the PVNGS quality assurance program for operations. The director,

performance improvement is also responsible for collecting and reporting of PVNGS site performance information. Specific responsibilities associated with quality assurance program requirements are further described in the PVNGS quality assurance program for operations in section 17.2.

13.1.1.2.5.3 Palo Verde Communications Department.

The director, generation communications, reports to the executive vice president, nuclear and CNO, and is responsible for interfacing with the PVNGS and APS management teams to develop and deliver communications both internally and externally.

13.1.1.2.6 Employee Concerns Department

The employee concerns department is directed by the employee concerns department leader who reports to the senior vice president, regulatory and oversight. The employee concerns department is responsible to investigate, resolve, and document concerns reported to the employee concerns department.

13.1.1.2.7 Director, Strategic and Long Range Planning.

The director, strategic and long range planning, reports to the executive vice president, nuclear and CNO and is responsible for the PVNGS budget process including coordinating the preparation and reporting of actual and budgeted data for all project operations and maintenance (O&M); capital; nuclear fuels costs; providing cost, estimating, and scheduling support to all PVNGS departments; analyzing budget and work schedule

variances; long range planning; and preparing financial packages for Engineering and Operations (E&O) Committee review and approval.

13.1.1.2.8 Other Departments. Other corporate resources may be utilized by the nuclear organization as described in the following paragraphs.

13.1.1.2.8.1 Palo Verde Human Resources. The human resources group is managed by the director, Palo Verde human resources, who is matrixed to the executive vice president, nuclear and CNO. The Palo Verde human resources group is responsible for employee relations support, staffing, and compensation services for PVNGS.

13.1.1.2.8.2 Director, Executive Projects. The director, executive projects, reports to the executive vice president, nuclear and CNO. Responsibilities of the director, executive projects, include implementation of strategies, processes and programs to optimize site long range plans and manage various executive level projects.

13.1.1.2.8.3 Director, Site Programs. The director, site programs, reports to the senior vice president, regulatory and oversight. The director, site programs, is responsible for providing the overall infrastructure and administrative controls for managing PVNGS site programs, processes, and procedures. The director, site programs, is also responsible

for maintaining the business processes and infrastructure to support this function.

13.1.1.2.8.3.1 Department Leader, Site Procedure Standards. The department leader, site procedure standards, reports to the director, site programs. The department leader, site procedure standards, is responsible for development and maintenance of the standards for PVNGS programs and procedures. In this capacity, the site procedure standards organization is delegated responsibility by the senior vice president, site operations, to assure that the preparation, review, and approval of PVNGS programs and procedures are carried out as specified by Section 13.5.1, Preparation of Procedures. The site procedure standards organization also assists the Nuclear Operations and Maintenance organizations in preparing, reviewing, and maintaining their procedures. Responsibility and authority for approval of Maintenance and Operating procedures is delegated to department leaders and section leaders within the Site Procedure Standards Organization. In this capacity, the Procedure Standards Organization is functionally responsible to the operations and maintenance directors for the technical accuracy and overall quality of procedures it develops and approves.

13.1.1.3 Qualifications

Members of the management and technical support organization staff providing technical and operational support and not in the nuclear production organization, who perform activities

such as reactor design, facility design, design review and design approval, possess a combination of education, experience, and skills commensurate with their level of responsibility and meet the requirements of ANSI 3.1-1978.

Qualifications of nuclear plant personnel and PVNGS compliance with any exceptions to ANSI/ANS-3.1-1978, are discussed in subsection 13.1.3.

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13.1.2 OPERATING ORGANIZATION

PVNGS Nuclear Operations, under the direction of the senior vice president, site operations, has direct line responsibility for the operation of PVNGS. Specific organizational responsibilities relating to quality assurance are specified in the Operations Quality Assurance Plan (section 17.2).

13.1.2.1 Onsite Operating Organization

The PVNGS Onsite Operating organization is divided into seven main groups which report to the Senior Vice President, Site Operations.

Each group is divided into subordinate departments and sections. The seven groups are as follows:

- Operations
- Maintenance
- Work Management
- Radiation Protection
- Chemistry

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The responsibilities and authorities of key members of the operating organization are described in this section. The following APS positions have the responsibility and authority for directing or placing a PVNGS unit in a reduced power or shutdown condition to ensure nuclear safety:

- executive vice president and CNO
- senior vice president site operations
- site general plant manager
- operations director
- unit operations managers
- shift managers
- control room supervisors
- control room operators

13.1.2.1 Executive Vice President and CNO is responsible for:

- overall plant nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the plant to ensure nuclear safety;
- ensuring that all PVNGS activities, including operation, maintenance, and modification of the units and related nuclear facilities are performed in strict compliance with regulatory requirements, consistent with the requirements for protection of the health and safety of the general public and company personnel, and in accordance with company policy;

This position fulfills the role of the corporate officer described at 5.2.1.c of the PVNGS Unit Technical Specifications.

13.1.2.2 The Senior Vice President Site Operations is responsible for:

- overall PVNGS site and plant management, including operations of the nuclear power plants, spent fuel storage facility, and water reclamation facility
- providing technical and engineering support for operations, maintenance, and modification of the power plants and facilities located at the plant site
- establishing and administering policies, providing procedures, and maintaining standards of performance that ensure safe operation
- ensuring site operations are in compliance with requirements of the operating license, applicable regulations, and regulatory commitments

13.1.2.3 The Site General Plant Manager has direct line responsibility for operation and maintenance of the PVNGS nuclear plants and is responsible for direction of plant operations.

This position fulfills the role of the Plant Manager as described in 5.2.1.b. of the PVNGS Unit Technical Specifications.

13.1.2.4 The Operations Director is responsible for:

- approving operational programs and procedures
- managing and directing safe operation of the facility in accordance with regulatory requirements, the Operating Licenses, and company policies, programs, and procedures
- providing programs for ensuring that surveillance testing is performed as required

13.1.2.5 Units 1, 2, and 3 Operations Managers are responsible for:

- conducting unit operations in a safe manner in accordance with the technical specifications and station procedures
- supervising the activities of the operating personnel
- coordinating the activities and performance of the shift managers to ensure that the conduct of the operating staff is consistent with protection of the health and safety of the public and is in compliance with all applicable rules, regulations, and procedures
- ensuring that identified plant deficiencies receive the appropriate work priority to maintain plant safety and reliability
- reviewing various operating logs and records for accuracy, completeness, adherence to applicable administrative procedures, regulations and technical specifications, and to maintain current knowledge of plant activities

This position satisfies the requirements of the Operations Department Leader as described in the PVNGS Unit Technical Specifications. This position will hold a senior reactor operator license to satisfy the requirements of the PVNGS Unit Technical Specifications 5.2.2.d.

13.1.2.6 Operating Shift Crews

Normally during non-outage periods, operating crews will be manned on a five shift, self-relieving 5-crew basis. An operating crew for each unit will normally consist of a shift manager and control room supervisor (who will possess senior reactor operator licenses), two reactor operators (who will possess reactor operator licenses), and four non-licensed operators (nuclear auxiliary operators). The minimum shift operating crew composition for various modes of operation is described in the PVNGS Unit Technical Specifications and in section 18.I.A.1.3.

A site Fire Department of at least five members shall be maintained onsite at all times. Fire Department composition may be less than the minimum requirements for a period of time not to exceed two hours in order to accommodate unexpected absence of fire department members, provided immediate action is taken to restore the fire department manning to minimum requirements.

The Fire Department shall not include the Shift Manager, the STA, nor the 3 other members of the minimum shift crew necessary for safe shutdown of the unit and any personnel required for other essential functions during a fire emergency. One Reactor Operator is assigned to support the Fire Department as the Fire Team Advisor.

13.1.2.6.1 Shift Managers are responsible for the safe operation of the unit during their assigned shifts.

13.1.2.6.2 Control Room Supervisors are responsible to provide a backup to the shift manager and supervise shift personnel in the conduct of operations.

13.1.2.6.3 Limited Senior Reactor Operator (LSRO) for Refueling. The limited senior reactor operator (LSRO) for refueling is responsible to the shift manager for directly supervising core alterations and those specific evolutions or work activities that could result in core alterations.

This individual will be a senior reactor operator conditionally licensed for refueling operations and who has no concurrent duties when performing functions of the LSRO. A fully-licensed senior reactor operator with no concurrent duties may perform the functions of the LSRO.

13.1.2.6.4 Reactor Operators are responsible for:

- operating and directing operations of mechanical, electrical, and reactor systems from the control room
- reactor safety in accordance with Technical Specifications, company policies, and procedures

13.1.2.6.5 Nuclear Auxiliary Operators are responsible, under the direction of the control room supervisor, for operating plant systems and assisting in fueling handling operations, as directed.

13.1.2.6.6 Shift Technical Advisor is responsible for:

- providing advisory technical support to the Shift Manager in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to safe operation
- meeting qualification requirements specified by the Commission Policy Statement on Engineering Expertise on Shift

- Water Reclamation Facility
- Nuclear Training

The unit onsite operating organization and its responsibilities and authorities are further discussed in Section 13.1.2.2, the Unit Technical Specifications, and station administrative procedures.

13.1.2.2 Station Personnel Responsibilities and Authorities

13.1.2.2.1 Executive Vice President, Nuclear and Chief Nuclear Officer (CNO)

The executive vice president, nuclear and CNO, reports directly to the chief executive officer of APS, and is responsible to provide leadership to the Nuclear Generation organization and overall management of the activities related to the operation, maintenance, and modification of the Palo Verde Nuclear Generating Station, including the entire owner controlled property.

The executive vice president, nuclear and CNO, has overall responsibility to ensure that all PVNGS activities, including operation, maintenance, and modification of the units are performed in strict compliance with regulatory requirements, consistent with the requirements for protection of the health and safety of the general public and company personnel, and in accordance with company policy.

The executive vice president, nuclear and CNO, is also responsible to control and coordinate the activities of owner

and contract organizations at the PVNGS site to assure that those activities support the protection of the health and safety of the public and site personnel, safe and reliable operation, maintenance, and modification of the units and site facilities, and quality program requirements, including approved policies, programs, and procedures.

Priorities and directions are communicated to the site general plant manager, the senior vice president, site operations and the vice president, nuclear engineering. Specific responsibilities associated with activities related to the operation, maintenance, and modification of PVNGS are delegated to leaders reporting to the executive vice president, nuclear and CNO.

The following APS personnel have the responsibility and authority for directing or placing a PVNGS Unit in a reduced power or shutdown condition to ensure nuclear safety: executive vice president, nuclear and CNO; senior vice president, site operations; site general plant manager; director, operations; unit department leaders, operations; shift manager; control room supervisor; and control room operator.

13.1.2.2.1.1 Senior Vice President, Site Operations. The senior vice president, site operations is responsible for plant management, work management, water reclamation facility operations, industrial health and safety programs, and nuclear training activities for PVNGS. As such, he is responsible to establish and administer policies, provide procedures, and

maintain standards of performance that ensure safe operation of the site. This position is also responsible to ensure site operations are in compliance with requirements of the operating license, applicable regulations, and regulatory commitments. Reporting directly to the senior vice-president, site operations are vice president, nuclear engineering; vice president, operations support; the site general plant manager, water reclamation facility plant manager, director, nuclear training, and department leader, industrial health and safety.

13.1.2.2.1.2 Site General Plant Manager. The site general plant manager, is responsible to the senior vice president, site operations, for the overall day-to-day station operations. Reporting to the site general plant manager are the director, operations; director, maintenance; director work management; director, nuclear projects; radiation protection manager; assistant plant manager and department leader, chemistry. The operations department leaders, under the direction of the operations director, are responsible for operations of their assigned unit.

13.1.2.2.1.2.1 Director, Operations. The director, operations reports to the site general plant manager and is responsible to approve operational programs and procedures, and to manage and direct the safe, efficient operation of Units 1, 2, and 3 in accordance with regulatory requirements, the Operating Licenses, and approved company policies, programs, and procedures. The Director, Operations responsibilities also

include providing programs for ensuring that surveillance testing is performed as required.

Responsibility and authority for approval of operational procedures is delegated to department leaders and section leaders within the Site Procedure Standards Organization. In this capacity, the Procedure Standards Organization is functionally responsible to the operations director for the technical accuracy and overall quality of procedures it develops and approves. Specific responsibilities may be delegated to leaders reporting to the director, operations.

13.1.2.2.1.2.2 Department Leaders Units 1, 2, and 3, Operations. The department leaders Units 1, 2, and 3, Operations are responsible to the director, operations, for the conduct of unit operations in a safe and efficient manner in accordance with the technical specifications and station procedures. Each Unit's operations department leader supervises the activities of the units operating personnel. The department leaders Units 1, 2, and 3, coordinate the activities and performance of the shift managers to ensure that the conduct of the operating staff is consistent with protection of the health and safety of the public and is in compliance with all applicable rules, regulations and procedures. The department leaders Units 1, 2, and 3, ensure that identified plant deficiencies receive the appropriate work priority to maintain plant reliability. The department leaders Units 1, 2, and 3, review various operating logs and records for accuracy, completeness, adherence to applicable

administrative procedures, regulations and technical specifications, and to maintain current knowledge of plant activities. This position will hold a senior reactor operator license on PVNGS. The holder of the senior reactor operator license shall direct the licensed activities of the licensed operators.

13.1.2.2.1.2.3 Shift Managers. The Shift Managers are responsible to the operations department leader for the safe, reliable, and efficient operation of the unit during the assigned shift.

13.1.2.2.1.2.3.1 Control Room Supervisors. The control room supervisor provides a backup to the shift manager and supervises shift personnel in conduct of operations as assigned.

13.1.2.2.1.2.3.2 Limited Senior Reactor Operator for Refueling. The limited senior reactor operator (LSRO) for refueling is the individual in the containment building directly responsible to the shift manager. The LSRO will directly supervise all core alterations and those specific evolutions or work activities that lead to core alterations. This individual will be a senior reactor operator conditionally licensed for refueling operations. A fully-licensed senior reactor operator with no concurrent duties [sometimes referred to as a refueling senior reactor operator (RSRO)] may also perform this function as needed.

13.1.2.2.1.2.3.3 Reactor Operator. The reactor operator operates and directs operations of mechanical, electrical, and reactor systems from the control room in a safe and efficient manner to assure maximum unit electrical generation. The reactor operator, reporting to the control room supervisor, is responsible for reactor safety in accordance with Technical Specifications, company policies and procedures to ensure the health and safety of the public.

13.1.2.2.1.2.3.4 Nuclear Auxiliary Operator and Auxiliary Operator, Senior. The nuclear auxiliary operator and auxiliary operator, senior are responsible, under the direction of the control room supervisor, for operating auxiliary systems and assisting in the refueling of the plant as directed.

13.1.2.2.1.2.3.5 Operations Support Department Leaders. Operations support department leaders report to the director, operations. The operations support department leaders manage the operations support staff to ensure that the Operations department is provided with quality procedures, Shift Technical Advisor support, and training support that meet requirements and departmental needs. One of these positions is responsible for the operations work planning and scheduling function which supports efficient use of Operations department resources within PVNGS work management processes. The operations support department leaders also provide support to the operations director in resolving Operations department technical and programmatic issues.

13.1.2.2.1.2.3.6 Fuel Handling Supervisor. The fuel handling supervisor (FHS) is the individual in the fuel building directly responsible to the shift manager. The FHS will directly supervise all nuclear fuel movement in the spent fuel pool to include the Cask Load Pit and Transfer Canal. This individual will be trained and qualified in equipment, systems and procedures that are applicable to the movement of fuel in the spent fuel pool. A fully-licensed senior reactor operator with no concurrent duties [sometimes referred to as a refueling senior reactor operator (RSRO)] or a limited senior reactor operator (LSRO) may also perform this function.

13.1.2.2.1.3 Director, Maintenance. The Director, Maintenance reports to the site general plant manager and is responsible to manage and direct maintenance, modification, and support activities in Units 1, 2, and 3, and site facilities. The director, maintenance, is also responsible to ensure that the PVNGS units are maintained and modified in strict compliance with regulatory requirements and consistent with requirements for public health and safety, to manage and provide programs and procedures for control of plant maintenance, and for managing technical resources in support of plant operations and maintenance. Responsibility and authority for approval of maintenance procedures is delegated to department leaders and section leaders within the Site Procedure Standards Organization. In this capacity, the Procedure Standards Organization is functionally responsible to the maintenance director for the technical accuracy and overall

quality of procedures it develops and approves. Specific responsibilities may be delegated to leaders reporting to the director, maintenance.

13.1.2.2.1.4 Director, Work Management. The Director, Work Management, reports to the site general plant manager and is responsible for development of 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; and the day-to-day scheduling of unit activities. Specific responsibilities may be delegated to leaders reporting to the director, work management.

13.1.2.2.1.5 Radiation Protection Manager. The radiation protection manager reports to the site general plant manager. This position is also known as the director, radiation protection or director, site radiation protection, and these titles may be used interchangeably throughout the UFSAR and Technical Specifications. This position 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. The director is also responsible to take timely actions to correct substandard performance within the radiation protection program. Specific responsibilities may be delegated to leaders reporting to the radiation protection manager.

13.1.2.2.1.6 Department Leader, Chemistry. The department leader, chemistry, reports to the site general plant manager and is responsible for the overall direction of plant chemistry activities for PVNGS. These responsibilities include systems chemistry control, chemical and radiochemical sampling and analysis. Specific responsibilities may be delegated to the leaders reporting to the department leader, chemistry.

13.1.2.2.1.7 Plant Manager, Water Reclamation Facility. The plant manager, WRF reports to the senior vice president, site operations and is responsible for the maintenance and operation of the WRF and the incoming pipeline, for supply of site water and chemicals, for management of underground piping projects, and for maintenance and testing activities as delegated. Activities are coordinated with the Work Management Department.

13.1.2.2.1.8 Director, Nuclear Training. The director, nuclear training, reports to the senior vice president, site operations and is responsible for the preparation, coordination, and conduct of PVNGS training. Responsibilities include providing health services support for operational

activities. Specific responsibilities may be delegated to leaders reporting to the director, nuclear training.

13.1.2.2.1.9 Assistant Plant Managers. The assistant plant managers report to the site general plant manager. Each assistant plant manager is responsible for outage coordination and equipment reliability improvement activities for a single Palo Verde unit. Assistant plant managers work in concert with the other site organizations to ensure the overall implementation of on-line, planned outage, and forced outage work activities are completed efficiently and without compromising plant or personnel safety. The assistant plant managers assist the site general plant manager in developing and/or reviewing strategic plans and actions to improve overall work performance and enhance the reliable operation of plant equipment.

13.1.2.2.1.10 Director, Nuclear Projects. The director, nuclear projects, reports to the site general plant manager and is responsible for the overall management and quality of assigned maintenance and modification activities. Specific responsibilities include the planning, scheduling, and implementation of assigned maintenance and modification activities, including the management of resources and funding for performance of assigned maintenance and modification activities. Specific responsibilities may be appropriately delegated to leaders reporting to the director, nuclear projects, or other cognizant organizations providing support.

13.1.2.3 Operating Shift Crews

Normally during non-outage periods, operating crews will be manned on a five shift, self-relieving 5 crew basis.

An operating crew for each unit will normally consist of a shift manager and control room supervisor (who will possess senior reactor operator licenses), two reactor operators (who will possess reactor operator licenses), and four non-licensed operators (either nuclear auxiliary operators or auxiliary operator, seniors). The minimum shift operating crew composition for various modes of operation is as described in the PVNGS Technical Specifications and UFSAR section 18.I.A.1.3. A site Fire Department of at least five members shall be maintained onsite at all times[(a)]. The Fire Department shall not include the Shift Manager, the STA, nor the 3 other members of the minimum shift crew necessary for safe shutdown of the unit and any personnel required for other essential functions during a fire emergency. One Reactor Operator is assigned to support the Fire Department as the Fire Team Advisor.

a. Fire Department composition may be less than the minimum requirements for a period of time not to exceed two hours in order to accommodate unexpected absence of fire department members provided immediate action is taken to restore the fire department within the minimum requirements.

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13.1.3 QUALIFICATIONS OF NUCLEAR PLANT PERSONNEL

13.1.3.1 Qualification Requirements

The station technical specifications, specific regulations, and the recommendations of Regulatory Guide 1.8, Personnel Selection and Training, and ANSI/ANS 3.1-1978, Selection and Training of Nuclear Power Plant Personnel, are used as the basis for establishing minimum qualifications for nuclear power plant personnel; with the exception of operator license applicants. For those individuals not already qualified by experience and training/education in the designated craft or discipline, and for which ANSI/ANS 3.1-1978 permits the use of related training to meet certain qualifications (e.g., sections 3.2.4 and 5.3.1-5.3.4), appropriate training shall be provided to develop the proficiency required for safe and competent job performance. Note that there is no specific time correlation for the duration of this training when used in lieu of the education or experience specified in the Standard.

The education and experience eligibility requirements for operator license applicants, and changes thereto, shall be those previously reviewed and approved by the NRC, specifically those referenced in letter 102-04930-GRO/TNW/RJR, dated April 25, 2003.

The Shift Technical Advisor shall have a bachelor's degree or equivalent in a scientific or engineering discipline with specific training in plant design and plant operating characteristics, including transients and accidents.

Other specific exceptions and clarifications to ANSI/ANS 3.1-1978 are as follows:

A. Exception is taken to the educational requirements of ANSI/ANS 3.1, paragraph 4.6.1 *Engineer in Charge*. Equivalent technical expertise is demonstrated by possession of a Professional Engineering License; or successful completion of the Engineer in Training examination; or successful completion of 80 semester credit hours of technical portions of an engineering or physical science program; or a combination of any Bachelor's Degree and a current or previously held Senior Reactor Operator License.

B. 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 temporary position of LSRO.

C. The radiation protection manager shall have a bachelor's degree or equivalent as described in the PVNGS commitment to Regulatory Guide 1.8. In addition to the bachelor's degree or equivalent, the radiation protection manager shall also have the required 5 years of related experience discussed in ANSI/ANS 3.1-1978, Section 4.4.4, paragraph 2.

D. Exception is taken to the experience requirement of ANSI/ANS 3.1-1978, paragraph 4.4.5 for the nuclear

assurance department leaders. They are not required to have one year of experience within the QA/nuclear assurance organization.

E. The director, nuclear assurance, shall have broad experience and formal training in the performance of quality assurance and quality control activities, including inspection and testing. They shall be capable of planning and providing supervision to nuclear assurance personnel who may be engaged in inspecting, testing, reviewing, evaluating, and auditing the adequacy of activities to accomplish quality assurance program objectives.

The director, nuclear assurance, shall have a bachelor's degree in science or engineering or the equivalent of a bachelor's degree as described in the PVNGS commitment to Regulatory Guide 1.8. In addition to the bachelor's degree or equivalent, the nuclear assurance director shall have at least 4 years of quality assurance or operations supervisory experience. At least two years of the required experience shall be nuclear power plant experience. As discussed in ANS 3.1-1978, Section 4.4.5, at least one year of the required experience shall be supervisory or management experience in overall implementation of a quality assurance program.

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The station training programs and associated Training Program Descriptions further describe the minimum qualifications for key nuclear power plant personnel.

13.1.3.2 Qualification of Plant Personnel

Resumes of the appointees to key plant managerial positions and shift manager level are on file for review and are not included here.

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13.2 TRAINING PROGRAM

Personnel to staff PVNGS are selected to ensure they will have the qualifications necessary to satisfactorily perform their assigned functions. To augment the formal education, training and experience of station personnel, training programs have been instituted for site employees and contract personnel. The Director, Nuclear Training has overall responsibility for the conduct and administration of training programs for the staff of PVNGS.

Refer to the PVNGS Operations Quality Assurance Program Description ~~UFSAR Section 17.2F. Quality Augmented Programs (17.2F.1 Quality Assurance for Fire Protection, 17.2F.3 Quality Assurance for Security, and 17.2F.4 Quality Assurance for Emergency Plans and Equipment)~~ for other training program requirements and associated responsibilities.

The Plant Manager, Water Reclamation Facility has the overall responsibility for the conduct and administration of the Water Reclamation Facility training programs.

Training program content is described in training program descriptions.

13.2.1 TECHNICAL TRAINING PROGRAMS:

Technical training programs for the staff of PVNGS have been developed based on a systematic approach to training as defined by 10CFR55.4.

The technical training programs include those listed in 10CFR50.120, "Training and qualification of nuclear power plant personnel" and these programs are periodically evaluated by the National Nuclear Accrediting Board (NNAB).

The Director, Nuclear Training has direct responsibility for administration of the training programs identified in 10CFR50.120, "Training and qualification of nuclear power plant personnel."

13.2.2 GENERAL TRAINING DESCRIPTION

13.2.2.1 Types of Training

Station personnel may be qualified through formal education and experience, formal job training, related technical training, on-the-job training, or a combination thereof.

13.2.2.2 Qualification of Personnel

Personnel training and qualification is delineated in training program descriptions or administrative procedures. The Nuclear Training Department assists each unit staff organization in the development of training and the maintenance of personnel qualifications. Site personnel and their leaders are responsible to ensure they are qualified prior to performing assigned tasks.

13.2.2.3 General Employee Training

Site access training meets the requirements delineated in ANSI/ANS 3.1-1978 and is provided to long-term site employees and to all personnel prior to their being granted unescorted access to restricted areas. This training is implemented using industry guidance and regulatory requirements and includes topics such as instruction on evacuation signals, evacuation routes, and procedures for reporting a fire. The course requires satisfactory completion of written or computer-aided examination.

Radiological protection training which addresses the topics and requirements of Regulatory Guide 8.27 is provided to personnel prior to their being granted unescorted access to radiological

controlled areas. The course requires satisfactory completion of a written or computer-aided examination.

Temporary personnel receive training based on the access level required and their knowledge and experience, as validated by written or computer-aided examination.

13.2.3 FIRE PROTECTION TRAINING

13.2.3.1 General Employee Fire Protection Training

As a portion of General Employee Training, station personnel are trained in the following aspects of fire protection:

- Station Fire Protection Program
- Station Evacuation Routes
- Fire Reporting Procedures
- Job Related Fire Prevention and Suppression
- Control of Ignition Sources

13.2.3.2 Fire Department Training

The Fire Department training program ensures that the capability to fight potential fires is established and maintained. The program consists of initial classroom instruction followed by periodic classroom training, firefighting practice, and fire drills. The program is based on specific 10CFR50, Appendix R training requirements and selected recommended practices by the National Fire Protection Association (NFPA) Standard (1987) 1001 for the equipment and practices applicable to the PVNGS Fire Department for Firefighter Level I.

TRAINING

Periodic classroom refresher training sessions are held to repeat the classroom instruction for all fire department members over a 24 month period. Changes to the fire protection program and plant changes impacting fire response capability are reviewed as necessary in the training sessions. Senior fire department members receive instruction in incident command.

Practice sessions are held for each shift fire department on fighting fires similar to those expected in nuclear power plants. These sessions provide Fire Department members with experience in actual fire extinguishment and use of self contained breathing apparatus under strenuous conditions encountered in firefighting. These practice sessions are provided at least once per year for each fire department member.

Fire department drills are performed at regular intervals not exceeding 3 months for each shift. Each fire department member is encouraged to participate in each drill, but is required to participate in at least 2 drills per year.

A sufficient number of these drills, but not less than one for each fire department shift per year, are unannounced to determine the firefighting readiness of the fire department, shift fire captain, and fire protection systems and equipment.

At least one drill per year is performed on a "backshift" for each fire department shift. The drills are pre-planned to establish the training objectives of the drill and shall be critiqued to determine how well the training objectives have been met.

Unannounced drills are planned and critiqued by the fire training officer or designee. Performance deficiencies of a fire department shift or individual fire department members are remedied by scheduling additional training for the department or

individual. Unsatisfactory drill performance is followed by a repeat drill within 30 days.

At 3 year intervals, a randomly selected unannounced drill is critiqued by qualified individuals independent of the PVNGS Fire Department staff. A copy of the written report of each critique is available for review.

Fire drills as a minimum include the following:

A. Assessment of fire alarm effectiveness, time required to notify and dispatch the fire department, and selection, placement, and use of equipment, as well as firefighting tactics and strategies.

B. Assessment of each fire department member's knowledge of his or her role in the firefighting strategy for the area assumed to contain the fire. Assessment of the fire department member's conformance with established firefighting procedures and use of firefighting equipment.

C. The simulated use of firefighting equipment required to cope with the situation and type of fire selected for the drill. The area and type of fire chosen for the drill differ from those used in the previous drill so that fire department members are trained in fighting fires in various plant areas. The situation selected simulates the size and arrangement of a fire that could reasonably occur in the area selected, allowing for fire development due to the time required to respond, obtain equipment, and size up the fire, and assuming loss of automatic suppression capability.

D. Assessment of the shift fire captain's direction of the fire suppression activities as to thoroughness, accuracy, and effectiveness.

Individual records of training provided to each fire department member are maintained for at least 3 years to ensure that each member receives training in all parts of the training program. Retraining or broadened training is scheduled for all fire department members whose performance records show deficiencies.

The Fire Department training program also includes training for personnel who inspect and test fire protection equipment, to ensure that they are certified to perform that work. The training consists of on-the-job training conducted by qualified Fire Department personnel. Written records of each individual's qualifications are maintained.

The Fire Department training program includes hazardous materials handling training. The program is based on the requirements of OSHA 29CFR1910.120, for the equipment and practices applicable to the PVNGS Fire Department. Training will consist of initial classroom and practical sessions, followed by annual refresher training.

13.2.3.3 Security Department Fire Protection Training

Instruction is provided for security personnel that addresses (a) entry procedures for outside fire departments, (b) crowd control for people exiting the station, and (c) procedures for reporting potential fire hazards observed when touring the facility.

is described in the PVNGS Operations Quality Assurance Program Description (QAPD).

13.4 REVIEW AND AUDIT

Operating phase activities that affect nuclear safety are reviewed and audited. The review and audit program is implemented prior to initial fuel loading and ~~ensures proper review and evaluation of facility operations, proposed changes, tests and experiments, as well as unplanned events. The program is conducted following the recommendations of Regulatory Guide 1.33, Quality Assurance Program Requirements (Operation), as discussed in Section 1.8. The executive vice president, nuclear and CNO has overall responsibility for safe operation of PVNGS.~~

~~The site general plant manager has onsite responsibility for safe operation of PVNGS. He is kept abreast of each unit's operating conditions by the onsite directors and department leaders who are knowledgeable and experienced in their areas of job responsibility. The directors and department leaders perform timely and continuing monitoring of operating and maintenance activities as part of their normal job duties.~~

~~In addition, a formal review and audit program is carried out for changes to systems, procedures, tests, and experiments, and for the after-the-fact review and evaluation of unplanned events that affect nuclear safety. This program is implemented through staff technical reviews, the Plant Review Board (PRB), independent safety reviews, and an Offsite Safety Review Committee (OSRC).~~

13.4.1 STAFF TECHNICAL REVIEWS

13.4.1.1 Proposed modifications to unit nuclear safety-related structures, systems and components shall be designed by a qualified individual/organization. Each such modification shall be reviewed by an individual/group other than the individual/group which designed the modification, but who may be from the same organization as the individual/group which designed the modification. Proposed modifications to nuclear safety-related structures, systems and components shall be approved prior to implementation by the Department Leader, Operations; or by the Director, Operations as designated by the Site General Plant Manager.

13.4.1.1.1 Modifications to the CPC Addressable Constants based on information obtained through the Plant Computer - CPC data link shall not be made without prior approval of the PRB.

13.4.1.2 Individuals responsible for reviews performed in accordance with 13.4.1.1 shall be identified in station procedures. Each such review shall include a determination of whether or not additional, cross-disciplinary, review is necessary. If deemed necessary, such review shall be performed by the appropriate designated review personnel.

13.4.1.3 The Radiation Protection Manager shall assure the performance of a review by a qualified individual/organization of every unplanned onsite release of radioactive material to the environs including the preparation and forwarding of

reports covering the evaluation, recommendations and disposition of the corrective action to prevent recurrence.

13.4.2 ONSITE REVIEW

13.4.2.1 Onsite review is performed by the Plant Review Board (PRB), which has the responsibility to advise the Site General Plant Manager on all matters relating to nuclear safety. The PRB members collectively possess the type and degree of expertise required to properly review proposed changes to systems, procedures, tests, experiments, and unplanned events that affect nuclear safety. The PRB maintains written minutes of each meeting, which are reviewed by the Offsite Safety Review Committee.

13.4.2.2 The PRB shall be composed of at least seven members from the Palo Verde management staff. These positions will be designated in writing by the Site General Plant Manager. The Site General Plant Manager shall designate the Chairman and designated alternate in writing. The chairman and designated alternate may be from outside the members provided that they meet the requirements of 4.7.1 of ANSI/ANS 3.1, 1978.

13.4.2.3 All alternate members shall be appointed in writing by the PRB Chairman to serve on a temporary basis; however, no more than two alternates shall participate as voting members in PRB activities at any one time.

13.4.2.4 The PRB shall meet at least once per calendar month and as convened by the PRB Chairman or designated alternate.

13.4.2.5 The quorum of the PRB, necessary for the performance of the PRB responsibility and authority provisions contained herein, shall consist of the Chairman or a designated alternate and a majority of the members including alternates.

13.4.2.6 The PRB shall be responsible for:

a. Review of all proposed changes to the Unit Technical Specifications.

b. Investigation of all violations of the Unit Technical Specifications including the preparation and forwarding of reports covering evaluation and recommendations to prevent recurrence to the Offsite Safety Review Committee (OSRC).

c. Review of REPORTABLE EVENTS. Each REPORTABLE EVENT shall be reviewed by the PRB, and the results of this review shall be submitted to the Chairman, Offsite Safety Review Committee and the Site General Plant Manager.

d. Review of unit operations to detect potential nuclear safety hazards.

e. Performance of special reviews, investigations or analyses and reports thereon as requested by the Site General Plant Manager or PRB Chairman.

f. Review and documentation of judgment concerning prolonged operation in bypass, channel trip, and/or repair of defective protection channels of process variables placed in bypass since the last PRB meeting.

g. Review and acceptance of changes to the Offsite Dose Calculation Manual (ODCM).

h. Review and acceptance of the following changes as required by other plant documents or previous commitments:

- Changes to the Process Control Program.
- Major changes to radioactive liquid, gaseous, and solid waste treatment systems.
- Changes to the Core Protection Calculator (CPC) addressable constants as described at 13.4.1.1.1.
- Changes to the snubber accessibility/inaccessibility designation

13.4.2.7 The PRB shall:

a. Render determinations in writing with regard to whether or not each item considered under Section 13.4.2.6.b requires a license amendment.

b. Provide written notification within 24 hours to the executive vice president nuclear and CNO, senior vice president site operations, and OSRC of disagreement between the PRB and the site general plant manager; however, the site general plant manager shall have responsibility for resolution of such disagreements.

13.4.2.8 The PRB shall maintain written minutes of each PRB meeting that, at a minimum, document the results of all PRB activities performed as required by the provisions of section 13.4.2. Copies shall be provided to the executive vice president nuclear and CNO, site general plant manager, and the OSRC.

13.4.3 INDEPENDENT REVIEW

13.4.3.1 Independent Review is performed by the Offsite Safety Review Committee (OSRC). The Offsite Safety Review Committee is an independent, offsite committee to provide the executive vice president, nuclear and CNO, with an independent senior management assessment of the PVNGS activities, placing particular emphasis on those activities which may affect the long term safe and reliable operation of the facility. The OSRC shall function to provide independent review and shall be responsible for the audit of designated activities in the areas of:

a. nuclear power plant operations

b. nuclear engineering

c. chemistry and radiochemistry

d. metallurgy

e. instrumentation and control

f. radiological safety

g. mechanical and electrical engineering

h. quality assurance practices

13.4.3.2 The OSRC shall consist of the OSRC Chairman and a minimum of four OSRC members. The Chairman and members are designated by the executive vice president, nuclear and CNO, and shall have the qualifications that meet the requirements of Section 4.7 of ANSI/ANS 3.1; 1978.

13.4.3.3 Consultants shall be utilized as determined by the OSRC Chairman to provide expert advice to the OSRC.

13.4.3.4 The OSRC shall review:

a. The program established to implement the requirements of 10 CFR 50.59 to ensure that activities completed under the provisions of 10 CFR 50.59 have been correctly evaluated and determined to not require a license amendment;

b. Proposed changes to procedures, equipment, systems or facilities that require a license amendment as defined in 10 CFR 50.59;

c. Proposed tests or experiments that require a license amendment as defined in 10 CFR 50.59;

d. Proposed changes to Technical Specifications or the Operating License;

e. Violations of codes, regulations, orders, Technical Specifications, license requirements, or of internal procedures or instructions having nuclear safety significance. The OSRC Chairman shall be notified within 24 hours of a Technical Specification Safety Limit Violation.

f. Significant operating abnormalities or deviations from normal and expected performance of unit equipment that affect nuclear safety;

g. All REPORTABLE EVENTS requiring 24 hours written notification;

h. All recognized indications of an unanticipated deficiency in some aspect of design or operation of structures, systems, or components that could affect nuclear safety; and

i. Reports and meeting minutes of the PRB.

13.4.3.5 Audits of unit activities shall be performed under the cognizance of the OSRC. The audit program scope is described in section 13.4.5.

13.4.3.6 The OSRC shall report to and advise the executive vice president, nuclear and CNO, on those areas of responsibility specified in 13.4.3.4 and 13.4.3.5.

13.4.3.7 Records of OSRC activities shall be prepared and maintained. Report of reviews and audits shall be forwarded to the executive vice president, nuclear and CNO, with distribution to the management positions responsible for the areas audited.

13.4.3.8 All alternate members shall be appointed in writing by the OSRC Chairman to serve on a temporary basis; however, no more than two alternates shall participate as voting members in OSRC activities at any one time.

13.4.3.9 The OSRC shall meet at least once per six months.

13.4.3.10 The quorum of the OSRC necessary for the performance of the OSRC review and audit functions of 13.4.3 shall consist of the Chairman or his designated alternate and

at least four OSRC members including alternates. No more than a minority of the quorum shall have line responsibility for operation of the unit.

13.4.4 INDEPENDENT SAFETY REVIEWS

13.4.4.1 The Nuclear Assurance Department shall perform independent safety reviews. Independent safety reviews shall selectively examine plant operating characteristics, NRC issuances, industry advisories, Licensee Event Reports, and other sources of plant design and operating experience information, including plants of similar design, which may indicate areas for improving plant safety.

13.4.4.2 Personnel assigned to perform independent safety reviews shall be located onsite and shall meet one of the following minimum education and experience requirements:

- A Bachelor's Degree in engineering or in a related field with at least 3 years of related experience.
- At least 8 years of related experience.

13.4.4.3 Independent safety reviews shall include surveillance of selected plant activities to detect potential nuclear safety hazards, to provide independent verification that activities are performed correctly, and to provide recommendations for reducing human errors as much as practical. Personnel assigned to perform independent safety reviews shall have access to the unit and unit records as necessary to perform evaluations and assessments. Independent safety review activities shall not include sign-off responsibility such that

those personnel assigned to perform independent safety reviews become involved in the operating organization.

13.4.4.4 Written records of independent safety reviews shall be maintained. As a minimum, these records shall include the results of activities conducted, any recommendations made, and assessment of plant operations related to the reviews performed.

13.4.4.5 Detailed recommendations for revised procedures, equipment modifications, maintenance activities, operations activities, or other means of improving plant safety that result from independent safety reviews shall be forwarded to the management position responsible for the area reviewed. Summary reports of independent safety review activities and the status of resulting recommendations shall be forwarded periodically to the executive vice president, nuclear and CNO, and the Chairman, Offsite Safety Review Committee (OSRC).

13.4.5 AUDIT PROGRAM

A comprehensive program of planned and documented audits is carried out to verify compliance with, and effectiveness of, implementation of the administrative controls and QA program and to assist the Offsite Review Committee (OSRC) in the execution of its responsibility for independent review of operating activities that affect nuclear safety.

The audit scope shall include those program area audits required by regulation or regulatory commitment. Audits of the program areas described in this section shall be performed at a

frequency not to exceed 24 months, more frequently as performance dictates, or as noted to meet specific regulations or commitments.

a. The performance of activities required by the operational quality assurance program to meet the requirements of 10CFR50, Appendix B.

b. Programs for spray pond monitoring, primary coolant sources outside of containment, and the backup method for determining subcooling margin as described in UFSAR 13.5.

c. Deleted

d. The Process Control Program and implementing procedures for processing and packaging of radioactive wastes.

e. Secondary Water Chemistry Program described in the unit technical specifications.

f. The Radiation Protection Program and the In-Plant Radiation Monitoring Program described in UFSAR 13.5.

g. Access authorization as required by 10 CFR 73.56(n).

h. The conformance of unit operations to the provisions contained in the unit technical specifications and applicable license conditions.

i. The performance, training, and qualifications of the unit staff.

j. Results of actions taken to correct deficiencies occurring in unit equipment, structures, systems, or methods of operation that affect nuclear safety.

k. Radioactive Effluent Controls, Radiological Environmental Monitoring, and the Offsite Dose Calculation Manual, as follows:

- Offsite Dose Calculation Manual and implementing procedures.
- Radioactive Effluent Controls Program as described in the unit technical specifications.
- Radiological Environmental Monitoring Program and results thereof.
- The performance of activities required by the quality assurance program for effluents and environmental monitoring to meet the provisions of NRC Regulatory Guide 1.21, Revision 1, June 1974 and NRC Regulatory Guide 4.1, Revision 1, April 1975.

l. Security and Safeguards Contingency programs per 10 CFR 73.55(m), 10 CFR 73, Appendix C, and 10 CFR 50.54(p)(3&4), at least every 24 months, or more frequently when necessary to meet these regulations.

m. Fitness-for-duty (FFD) program as required by 10 CFR 26.41 and 26.203(f).

n. Emergency Planning at least once every 24 months using the performance-based option permitted by 10 CFR 50, Appendix E and 10 CFR 50.54(t), or more frequently when necessary to meet these regulations.

o. The Fire Protection Program, as follows:

- Fire protection equipment and program, including implementing procedures, by qualified Nuclear Assurance personnel utilizing either qualified offsite licensee personnel or an outside fire protection consultant, at least once per 24 months.
- Fire protection equipment and program implementation, utilizing an outside fire protection consultant, at least every third year.

p. Any area of unit operation considered appropriate by the OSRC or the executive vice president, nuclear and CNO, as specified.

A grace period of 90 days beyond the specified frequency is permitted for completion of internal audits. When the grace period is utilized, subsequent scheduling for the audit shall be based upon the original due date. This grace period shall not be used to extend audit frequencies beyond a frequency that is specifically defined by regulation (i.e., code of federal regulations or CFR).

Audits are performed in accordance with approved procedures. Audit assignments are such that the audit team members will not perform audits of activities for which they have immediate responsibility.

Written reports of audits are reviewed by the OSRC and by appropriate members of management, including those having responsibility in the area audited. Appropriate and timely follow-up action, including reaudit of deficient areas as

appropriate, is taken to ensure overall effectiveness of the review and audit program. Specific requirements for implementation of the audit program for the operations phase are discussed in the Operations QA Program (UFSAR section 17.2).

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The PVNGS Operations Quality Assurance Program Description (QAPD)

13.5 PLANT PROGRAMS AND PROCEDURES

This section describes administrative and operating procedures that will be used by the operating organization to ensure that routine operating, off-normal, and emergency activities affecting nuclear safety are conducted in a safe manner.

The administrative procedures for Palo Verde Nuclear Generating Station (PVNGS) will be consistent with recommendations contained in Regulatory Guide 1.33, Appendix A, as discussed in section 1.8 and the unit technical specifications.

13.5.1 PREPARATION OF PROCEDURES

Cognizant station supervisors are responsible for initiating, preparing, and controlling station procedures consistent with their responsibilities and for ensuring that work is performed in accordance with the latest applicable approved documents. Review of these procedures is accomplished by station staff personnel; review for nuclear safety aspects will be as described in section 13.4.

13.5.1.1 The senior vice president, site operations, or his designee shall assure that each procedure and program required by Technical Specifications or other procedures which affect nuclear safety, and changes thereto, is prepared by a qualified individual/organization. Each such procedure, and changes thereto, shall be reviewed by an individual/group other than the individual/group which prepared the procedure, or changes thereto, but who may be from the same organization as the individual/group which prepared the procedure, or changes thereto.

13.5.1.2 Each program or procedure, and changes thereto, shall be reviewed as specified in 13.5.1 and approved prior to implementation. Program, administrative, and implementing procedures shall be approved by the senior vice president, site operations, or designated alternate who is at supervisory level or above.

13.5.1.3 Individuals responsible for reviews performed in accordance with 13.5.1 shall be identified in station procedures. Each such review shall include a determination of whether or not additional, cross-disciplinary, review is necessary. If deemed necessary, such review shall be performed by the appropriate designated review personnel.

13.5.1.4 Proposed tests and experiments which affect station nuclear safety and are not addressed in the UFSAR or Technical Specifications shall be reviewed by the senior vice president, site operations, or his designee.

13.5.1.5 Programs and procedures shall be reviewed periodically in accordance with the provisions of the operations quality assurance program (UFSAR 17.2) as set forth in administrative procedures.

13.5.1.6 Temporary changes to procedures above may be made provided:

a. The intent of the original procedure is not altered.

b. The change is approved by two members of the plant supervisory staff, at least one of whom is a shift manager

or control room supervisor with an SRO on the affected unit.

c. The change is documented, reviewed, and approved in accordance with 13.5.1.2 within 14 days of implementation.

Temporary changes to station procedures will be governed by administrative controls in an administrative control procedure.

13.5.1.7 Phase I - IV tests described in the UFSAR that are performed by the plant operations staff shall be approved by the Department Leader, Systems Engineering or individuals designated by the executive vice president, nuclear and CNO. Test results shall be approved by the Department Leader, System Engineering or his designee.

13.5.1.8 Administrative Procedures

The following are descriptions of administrative procedures that will be prepared for PVNGS:

A. Procedures for Shift Managers and Operators

1. Senior reactor operator's authority and responsibilities

a. Describes senior reactor operator's duties, responsibilities, and authority.

2. Reactor operator's authority and responsibilities

a. Describes the reactor operator's duties, responsibilities, and authority.

3. Conduct of operations

   a. Procedures are written to implement the administrative requirements of the Technical Specifications concerning licensed personnel on shift. These procedures will include provisions of 10CFR50.54 (i) through (m).

   b. The "at the controls" area of the control room is defined in Palo Verde procedures.

B. Special Orders of a Transient or Self-Canceling Nature

Special orders will be written to issue instructions which have short-term applicability and which require dissemination. These orders will be reviewed on at least an annual basis for the purpose of purging and updating.

C. Equipment Control Procedures

Equipment control procedures are written to provide control over the status of station equipment, purchased material, and nonconforming material. Such procedures will include:

1. Work authorization
2. Control of purchased material, equipment, and services
3. Handling, storage, and shipment of materials
4. Nonconforming materials, parts, components, or operations.

D. Control of Maintenance and Modifications

Maintenance of equipment important to safety is accomplished in accordance with written procedures. Certain minor maintenance actions of a routine nature, the performance of which is covered in the normal job qualification of the performing personnel, may be accomplished without written procedures. Such procedures are described in paragraph 13.5.2.2. Modification of equipment important to safety is accomplished in accordance with written procedures.

E. Surveillance Test Schedule

The surveillance test schedule is based on the surveillance requirements established in the Technical Specifications and provides means for tracking the performance of the surveillance tests.

F. Log Book Usage and Control

Log book usage and control is incorporated in instructions to operators covered under listing A above.

G. Temporary Procedures

Temporary procedures are issued as required to provide instructions for certain jobs that are of a limited duration and of a one-time-only nature. These procedures are reviewed in accordance with section 13.5.1.

H. Fire Protection Procedures

Fire protection procedures are written delineating the fire protection organization and programs for fire prevention and fire fighting.

I. Crane Operating Procedures

Administrative controls governing crane operation will be established prior to fuel loading and will include a requirement that crane operators who operate cranes over fuel pools will be qualified and conduct themselves in accordance with the guidelines of ANSI B30.2-1976 (Chapter 2-3).

13.5.2 OPERATING AND MAINTENANCE PROCEDURES

13.5.2.1 Control Room Operating Procedures

Procedure content and format for operating and emergency procedures are in accordance with Regulatory Guide 1.33, Appendix A, as discussed in section 1.8. Classification of procedures that are performed by operators in the control room are as follows:

A. General Operating Procedures - Procedures that provide instructions for the following integrated operations of the plant:

1. Cold Shutdown to Hot Standby
2. Reactor Startup
3. Turbine Startup and Generator Synchronization
4. Power Operations

5. Plant Shutdown to Hot Standby
6. Operation at Hot Standby
7. Hot Shutdown to Cold Shutdown
8. Refueling and Core Alterations

B. System Procedures - Procedures that provide instructions for energizing, startup, shutdown, and changing modes of operation of the following systems important to safety:

1. Reactor Coolant System
2. Control Rod Drive System
3. Shutdown Cooling System
4. Safety Injection System
5. Essential Cooling Water System
6. Essential Spray Pond System
7. Containment Ventilation System
8. Spend Fuel Pool Purification and Cooling System
9. Main Steam System
10. Feedwater System
11. Auxiliary Feedwater System
12. Plant Cooling Water System
13. Turbine Cooling Water System
14. Nuclear Cooling Water System
15. Chemical and Volume Control System
16. Auxiliary Building Heating and Ventilation System

17. Control Room Heating and Ventilation System
18. Radwaste Building Heating and Ventilation System
19. Instrument Air System
20. AC Electrical System
21. DC Electrical System
22. Emergency Diesel Generator System

C. Abnormal Operating Procedures - Procedures that specify operator actions for restoring an operating variable to its normal controlled value when it departs from its normal range or to restore normal operating conditions following a transient. The following are addressed:

1. Loss of Instrument Air
2. Loss of Electrical Power
3. Loss of Condenser Vacuum
4. Loss of Cooling Water
5. CEA Malfunctions
6. Emergency Boration
7. Fire in Control Room or Forced Evacuation of Control Room
8. Turbine and Generator Trips
9. Malfunction of Automatic Reactivity Control System
10. Acts of Nature
11. Irradiated Fuel Damage While Refueling
12. Excessive Reactor Coolant Leakage

13. Reactor Coolant Pump Emergencies
14. Loss of Letdown Flow
15. Loss of Annunciators
16. Main Feedwater Pump Trips
17. Main Condenser Tube Rupture
18. Inadvertent Engineered Safety Feature Actuations
19. Loss of Heating and Ventilation Systems
20. Loss of Spent Fuel Pool Cooling

D. Emergency Procedures - Procedures that direct actions necessary for the operators to mitigate the consequences of transients and accidents that cause plant parameters to exceed reactor protective system or engineered safety features actuation setpoints or transients during lower modes of operation. The following conditions are addressed:

1. Standard post-trip actions in the form of safety functions
2. Reactor Trip
3. Loss of Coolant
4. Steam Generator Tube Rupture
5. Excessive Steam Demand
6. Loss of Feedwater
7. Loss of Core Coolant Flow
8. Loss of Electrical Power

9. Loss of Shutdown Cooling

Operators will perform emergency and recovery procedures as described in the procedure generation package submitted to the NRC in accordance with LLIR, Item I.C.1 (NUREG-0737 response)

E. Alarm Response Procedures

Alarm response procedures will be indexed according to main control board section and alarm module number. Each alarm procedure will also include exact terminology of the alarm window.

F. Temporary Procedures

Temporary procedures will be developed as needed and will be for a certain job and duration.

G. Preparation of Procedures

Required operating procedures will be available for use 60 days prior to fuel loading. The development of most operating procedures will be completed prior to system testing so that these procedures may also be tested.

13.5.2.2 Other Procedures

Other procedures are provided in the following areas:

A. Station Radiation Protection Procedures

Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained, and adhered to for all operations involving personnel radiation exposure. Station radiation protection procedures are

designed to limit and control radiation exposures and the spread of contamination as well as to meet the requirements of 10CFR20.1001-20.2401 and ALARA philosophy. Radiation protection procedures are discussed in subsection 12.5.3.

B. Emergency Preparedness Procedures

Emergency preparedness procedures are provided to implement the provisions of the emergency plan (refer to section 13.3). They provide for assignment of responsibilities, instructions to employees, procedures for coping with emergencies, and mobilization of offsite assistance where necessary. Procedures in this area are detailed in the emergency plan.

C. Instrument Calibration and Test Procedures

Instrument calibration and test procedures are provided to detail step-by-step methods for calibration and test, acceptance criteria, and testing intervals performed by instrument personnel.

D. Chemical-Radiochemical Control Procedures

Chemical-radiochemical control procedures provide for instructions to accomplish various chemical and radiochemical analyses, sampling techniques, and to maintain coolant chemistry within required limits. These procedures apply to work performed by chemistry personnel.

E. Radioactive Waste Management Procedures

Radioactive waste management procedures provide instructions for the handling and processing of radioactive waste. These procedures apply to station operators and others who are involved in handling radioactive waste. Procedures in this area include the procedures that implement the process control program and those procedures for:

1. Gaseous radwaste processing
2. Liquid radwaste processing
3. Radwaste solidification
4. Solid radwaste handling
5. Radwaste shipment

Changes to the Process Control Program shall become effective after review and acceptance by the PRB (refer to subsection 13.4.2.6.h) and approval by the radiation protection manager.

Documentation of changes to the Process Control Program shall contain sufficient information to support the change together with the appropriate analyses or evaluations justifying the change and a determination that the change will maintain overall conformance of the solidified waste product to existing requirements of Federal, State, or other applicable regulations.

F. Maintenance and Modification Procedures

Maintenance procedures provide detailed instructions for the accomplishment of important maintenance functions as well as for major evolutions performed by station maintenance personnel. Procedures for major repair or replacement of equipment and schedules for preventive maintenance are provided.

G. Material Control Procedures

Material control procedures are developed to provide for procurement, documentation, and control of those safety-related materials and components including spare and replacement parts necessary for operation, refueling, maintenance, and modification.

H. Station Security Procedures

Station security procedures provide for the implementation of the security plan (refer to section 13.6).

I. Not Used.

J. Fire Protection Procedures

Fire protection procedures are provided to instruct applicable station personnel in methods of fire prevention, fire fighting, and maintenance of fire protection equipment. Procedures provide specific instructions to members of the fire department in fire fighting techniques. In addition, fire protection procedures implement the fire protection TLCOs, Actions,

and TSRs contained in the Technical Requirements Manual (TRM).

K. Settlement Monitoring Program Procedures

A written procedure(s) shall be established, implemented, and maintained covering the Settlement Monitoring Program implementation. PVNGS shall maintain a settlement monitoring program throughout the life of the plant in accordance with the program described per Section 2.5.4.13 or another NRC approved program.

L. CEA Reactivity Integrity Program Procedures

Written procedure(s) shall be established, implemented, and maintained covering the CEA Reactivity Integrity Program implementation. PVNGS shall, after initial fuel load and after each reload, meet the applicability requirements of the NRC approved Startup Testing Activity Reduction Program (STAR) described in WCAP-17787 or perform worth measurements of all full-strength CEA groups to address Section 4.2.2 of the PVNGS SER dated November 11, 1981.

M. Fuel Assembly Surveillance Program Procedures

A written procedure(s) shall be established, implemented, and maintained covering the Fuel Assembly Surveillance Program implementation. PVNGS shall perform a fuel assembly surveillance program in conformance with the program discussed in Section 4.2.4 of the PVNGS SER dated November 11, 1981.

N. In-Plant Radiation Monitoring Program Procedures

Procedures will be provided for implementation of the in-plant radiation monitoring program. This program will ensure the capability to accurately determine the airborne iodine concentration in vital areas under accident conditions. This program shall include training of personnel, procedures for monitoring, and provisions for maintenance of sampling and analysis equipment.

O. Procedures for the Backup Method for Determining Subcooling Margin

Procedures shall be provided and maintained for a program which will ensure the capability to accurately monitor the reactor coolant system subcooling margin. This program shall include the procedures for monitoring and the training of personnel.

P. Spray Pond Monitoring Procedures

A procedure(s) shall be provided for a program which will identify and describe the parameters and activities used to control and monitor the essential spray pond and piping. The program shall be conducted in accordance with station procedures.

Q. Radioactive Effluent Controls and Radiological Environmental Monitoring Procedures

Procedures shall be provided for the radioactive effluent controls and the radiological environmental monitoring programs described in the unit technical

PLANT PROGRAMS AND PROCEDURES

specifications and the Offsite Dose Calculation Manual (ODCM).

CONTENTS (cont)

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Quality Assurance requirements for the Operations Phase are described in the PVNGS Operations Quality Assurance Program Description (QAPD).

17.2 QUALITY ASSURANCE DURING THE OPERATIONS PHASE

DELETE

17.2.0 INTRODUCTION

Arizona Public Service Company (APS) is responsible for the operation and maintenance of the Palo Verde Nuclear Generating Station (PVNGS). The Quality Assurance Plan (the Plan) contained herein describes the formal and comprehensive plan which has been established to assure compliance with Title 10 of the Code of Federal Regulations (CFR) and commitments associated with those NRC Regulatory Guides cited in Appendix 17.2B to this Plan during the operation of PVNGS. This Plan serves as the PVNGS Updated Final Safety Analysis Report (UFSAR) Section 17.2 and supersedes all previous Quality Assurance Plans and manuals.

This Quality Assurance Plan describes how the Quality Assurance Program is to be implemented with due regard to the health and safety of the public and the personnel onsite.

Section 17.2.1 describes the organizations responsible for implementation of the Quality Assurance Program.

Section 17.2.2 provides an overview of the Quality Assurance Program.

Section 17.2.3 describes the Control of Station Activities. This section addresses quality related activities which are within the scope of the Quality Assurance Program.

Section 17.2.4 describes the Control of Quality Verifications and Self-Assessments.

Section 17.2.5 addresses the identification and disposition of conditions adverse to quality associated with all aspects of

the QA Program. In addition, this section contains the controls provided for evaluating all conditions adverse to quality and determining what corrective actions should be taken to preclude their recurrence.

Section 17.2.6 describes the control of documents and records. Activities and items within the scope of the QA Plan will require documents which control activities and records which will serve as a historical reference.

Changes to the quality assurance program description in the FSAR will be made in accordance with 10CFR50.54(a). It should be noted that FSAR Section 17.2 does not contain all the quality assurance commitments that are subject to control in accordance with 10CFR50.54(a). Additional sections of the FSAR that contain quality assurance requirements include:

- Section 1.8 for commitments, alternatives, and exceptions to the quality assurance regulatory guides and standards listed in Appendix 17.2B.
- Table 3.2-1 and section 3.6 for information regarding the classification of structures, systems, and components within the scope of the quality assurance program.
- Section 13.1 for the organizational structure and specific quality assurance responsibilities of the organizations addressed therein.
- Section 13.4 for commitments pertaining to reviews and audits.

- Section 13.5 for commitments pertaining to procedural coverage, control of procedures, procedure reviews, and procedural approvals.
- Section 18.I.B.1 for Independent Safety Review commitments provided in response to the recommendations of NUREG-0737.

17.2.0.1 Quality Assurance Program Policy Statement

One of the fundamental aspects of any Quality Assurance (QA) Program is that the individuals performing the work determine the level of quality that is achieved. Though plans, procedures, and instructions are a basic part of any quality program, it should be recognized that people make quality happen. Each individual, when properly trained and motivated, must achieve the highest quality of performance of which he or she is capable.

PVNGS is maintained and operated in such a manner as to ensure the health and safety of the public and the personnel onsite. One way to accomplish this critical objective is to have an aggressive and comprehensive quality assurance program in place for those activities which can impact nuclear safety and quality.

The executive vice president, nuclear and CNO, has directed the establishment of a formal and comprehensive quality assurance program at PVNGS. This program places accountability for quality on all personnel at PVNGS. In addition, it emphasizes the creation of an atmosphere in the workplace where reporting

and resolution of conditions adverse to quality are encouraged and expected at all levels.

The PVNGS Quality Assurance Program includes this QA Plan and the associated procedures and instructions which implement the Plan requirements. The QA Plan identifies those Quality Assurance Regulatory Guides, Standards, and Codes that shall be implemented to satisfy the requirements of 10CFR50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Facilities."

Quality assurance objectives shall not be subordinate to cost or schedule objectives. To ensure compliance with the QA Plan requirements, independent verifications and assessments shall be conducted to provide management a measure of the program's effectiveness and adequacy in meeting the requirements of the QA Plan and its implementing procedures and instructions.

Conflicts involving implementation of the requirements of the Quality Assurance Program shall be resolved by the Director, nuclear assurance, or, if deemed necessary, the executive vice president, nuclear and CNO. In those instances when APS has delegated responsibility for implementation of parts of the Quality Assurance Program to contractors, APS retains responsibility for adequacy of the overall program.

17.2.1 ORGANIZATION

The general organizational structure responsible for implementation of the Quality Assurance Program is described in Section 13.1. This section sets forth specific

responsibilities relative to quality assurance for various organizations and key personnel within those organizations. The implementing procedures identify interface requirements and are presented in more depth than are necessarily described herein.

It is the responsibility of PVNGS Leaders (i.e., officers, directors, managers, department leaders, section leaders, and team leaders) to create an atmosphere in the workplace where reporting and resolution of conditions adverse to quality is encouraged at all levels.

PVNGS Leaders give full support to the Quality Assurance Program described herein, thereby assuring that all work performed under their cognizance will conform to and support the requirements of the program. PVNGS Leaders are charged with the responsibility and authority to ensure that quality related activities are completed with the highest standards of safety and have the authority to allocate resources in their areas of responsibility to achieve this objective. They also have the responsibility to stop PVNGS activities within their area of responsibility which are not accomplished in compliance with applicable license and/or regulatory requirements.

17.2.1.1 APS Chief Executive Officer and President

The chief executive officer and president of APS has the overall responsibility for the engineering, design, procurement, construction, repair, modification, maintenance, refueling, inservice inspection and operation of PVNGS.

Execution of these responsibilities, including the responsibility for developing and ensuring the implementation of the PVNGS Quality Assurance Program, is delegated to the executive vice president, nuclear and CNO.

17.2.1.2 Executive Vice President, Nuclear and CNO

The Executive Vice President, Nuclear and CNO, reports directly to the APS Chief Executive Officer and President. The Executive Vice President, Nuclear and CNO is responsible for the engineering, design, procurement, construction, repair, modification, maintenance, refueling, inservice inspection and operation of PVNGS, and ensures that appropriate policies are provided for these activities.

As such, the executive vice president, nuclear and CNO has the authority to stop unsatisfactory work and control further processing, delivery, or installation of nonconforming material. The executive vice president, nuclear and CNO, reviews the status and adequacy of the QA Program by reviewing reports prepared by the director, nuclear assurance, at least annually. Responsibility for the operation of PVNGS, engineering and design support, construction of major modifications, records management during the operations phase, and proper implementation of the QA Program for these activities is delegated to the direct reports of the executive vice president, nuclear and CNO. The responsibility to establish, maintain, and verify proper implementation of the Quality Assurance Program is delegated to the Director, Nuclear Assurance. The executive vice president, nuclear and CNO,

shall retain the responsibility for assuring that the authority and independence of the director, nuclear assurance, are such that he/she can effectively assure the conformance to quality requirements and is independent of undue influences and responsibilities for schedules and costs.

17.2.1.3 Senior Vice-President, Site Operations

The senior vice president, site operations reports to the executive vice president, nuclear and CNO, and is responsible to ensure that PVNGS is operated and maintained in a safe, reliable, and efficient manner in accordance with corporate policies and all applicable laws, regulations, licenses, and technical requirements.

The senior vice president, site operations is responsible for the following major functions:

A. Operating and maintaining PVNGS.

B. Planning and scheduling unit activities.

C. Providing functional support required for operation and maintenance, such as plant wide chemical, radiological services, waste disposal, maintenance planning, engineering support, materials, document controls, records management, security and fire protection service etc.

D. Assuring standardization of procedures and practices among the units.

E. Providing formal training programs.

F. Initiating unit shutdown when warranted.

G. Implementation of programs for industrial health and safety.

H. Providing and maintaining the surveillance test program.

To execute these responsibilities, the senior vice president, site operations is supported by the staff described in section 13.1.

17.2.1.4 Nuclear Support Organizations

Nuclear Support functions include the management of the licensing, safety, and other functions that support the safe, reliable and efficient operation of PVNGS. Responsibilities for these functions are distributed to various supporting organizations at the PVNGS.

These organizations and management positions are charged with the responsibility and authority to ensure that quality related activities are completed with the high standards of safety, and have the authority to allocate resources in their area of responsibility to achieve this objective. Each PVNGS Leader gives full support to the Quality Assurance Program described herein, thereby assuring that work performed under their cognizance will conform to and support the requirements of the Plan.

The following paragraphs describe specific positions and responsibilities for certain support functions.

QUALITY ASSURANCE DURING THE OPERATIONS PHASE

17.2.1.4.1 Director, Nuclear Regulatory Affairs and Environmental. The director, nuclear regulatory affairs and environmental is responsible for:

A. Maintaining the licensing basis and identifying new NRC requirements and PVNGS commitments. Tracking compliance with these requirements and commitments.

B. The on-site environmental licensing activities.

C. Providing principal interface with the NRC and INPO.

D. Programs to comply with NRC reporting requirements.

E. The program for safety evaluations associated with changes to PVNGS.

F. Initiating unit shutdown recommendations when warranted by a safety concern.

G. Establishing lines of communication for recognition and evaluation of industry nuclear safety matters.

Specific responsibilities and authorities related to quality assurance are delegated to leaders reporting to the director, nuclear regulatory affairs and environmental, as described in the text of the PVNGS quality assurance program.

17.2.1.4.2 Director, Nuclear Security Division. The director, Nuclear Security Division, is responsible for:

A. Implementation of programs for on-site security.

B. Implementation of programs for plant staff reliability and fitness for duty.

17.2.1.4.3 Director, Supply Chain. The director, supply chain is responsible for:

A. Implementation of programs for control, handling, shipping, and storage of materials.

B. Implementation of programs for controlling procurement of materials and services.

17.2.1.4.4 Manager, Fire Protection. The manager, fire protection is responsible to the vice president, operations support, for areas of fire protection related to the power block, critical support structures, systems and components; and the independent spent fuel storage facility. Specific responsibilities may be delegated to individuals reporting to the manager, fire protection. Fire protection for ancillary and other site buildings may be delegated to other support organizations.

17.2.1.4.5 Department Leader, Employee Concerns Nuclear Training. The employee concerns department leader is responsible to investigate, resolve, and document concerns reported to the employee concerns department.

17.2.1.4.6 Director, Nuclear Training. The nuclear training director is responsible for health

services for PVNGS, to include medical examinations in support of operational activities.

17.2.1.4.7 Director, Performance Improvement. The Director, Performance Improvement reports to the Senior Vice President, Regulatory and Oversight, and is responsible for the following:

A. Initiating unit shutdown recommendations when warranted by a safety concern.

B. Establishing programs for the review, evaluation, and communication of in-house and industry operating experience information.

C. Establishment and overall implementation of the programs for the identification, correction and trending of conditions adverse to quality.

Specific responsibilities and authorities related to quality assurance are delegated to leaders reporting to the director, performance improvement, as described in the text of the PVNGS quality assurance program.

17.2.1.5 Vice President, Nuclear Engineering

The vice president, nuclear engineering, reports directly to the senior vice president, site operations, and is responsible to provide engineering services to assure uniform technical and regulatory adequacy of all aspects of nuclear activities to provide safe, reliable, and efficient operations in accordance with corporate policies and all applicable laws, regulations, and licenses.

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The vice president, nuclear engineering, is responsible for the following major functions:

A. Providing system, Inservice Inspection (ISI), Nondestructive Examination (NDE), component, and design engineering services.

B. Providing technical engineering documents such as calculations, material evaluations and analysis, design drawings, and specification validation criteria.

C. Maintaining the engineering design bases for PVNGS.

D. Managing major site related construction, modifications, and/or installation of structures, systems, and components that represent physical changes or additions to PVNGS facilities.

E. Tracking and evaluating equipment failures.

F. Providing technical and engineering support for PVNGS.

G. Providing nuclear fuel procurement and related engineering activities.

H. Developing and maintaining a Quality Classification List.

I. Developing and maintaining the equipment qualification program.

J. Providing configuration control.

K. Performing material evaluations and analysis.

L. Preparing replacement material procurement specifications.

M. Providing and maintaining test programs.

N. Implementing the cyber security program.

To execute these responsibilities, the Vice President, Nuclear Engineering, is supported by the staff described in section 13.1.

17.2.1.6 Director, Nuclear Assurance The Director, Nuclear Assurance, has the functional authority, independence, and responsibility to assure the effective implementation of and compliance to the Quality Assurance Program. Consistent with this authority is the responsibility to document interpretations of those activities to which this Plan applies and the extent to which the Plan applies to those activities. The Director, Nuclear Assurance, has no unrelated duties that would preclude the appropriate attention to the primary responsibility of verifying effective implementation of the Quality Assurance Program.

The director, nuclear assurance, reports directly to the senior vice president, regulatory and oversight. The director, nuclear assurance, is responsible to ensure that an appropriate Quality Assurance Program, the scope of which includes all the items and activities that affect safety and quality, is established and implemented in accordance with the requirements of this Plan. The director, nuclear assurance, reviews PVNGS activities with the goal of identifying areas where changes

could lead to improvements in nuclear safety and/or quality. The director, nuclear assurance, has the authority to cross organizational lines to identify quality problems; to initiate, recommend, or provide solutions; and to verify implementation.

Specific responsibilities of the director, nuclear assurance, include the following:

A. Developing the operations QA Program criteria and updating the Operations Quality Assurance Program Description in the UFSAR.

B. Developing audit, review, independent inspection, and assessment programs for quality-related activities within the scope of the PVNGS Operations Quality Assurance Program.

C. Verifying the effective implementation of the PVNGS QA program through performance of audit, review, independent inspection, and assessment functions and advising management of the status of program implementation.

D. Initiating and/or verifying corrective action as necessary to resolve significant QA Program implementation problems.

E. Assuring work is stopped on nonconforming materials or activities if:

- continued work may jeopardize nuclear safety;

- other corrective action processes are ineffective in protecting the health and safety of the public and/or plant personnel;
- continued work will require significant rework or repair to backfit corrective action; or
- an organization, department, group, section, or individual by a repetitive failure to comply with technical or administrative controls, contributes to a condition that is a significant QA program deficiency.

F. Initiating unit shutdown recommendations when warranted by a safety concern.

G. Reviewing changes to the quality classification assigned to systems, equipment, and components, as identified in table 3.2-1.

H. Reviewing and accepting, as required, quality-related procurement documents, procedures, instructions, and other quality-related documents, to provide assurance that QA requirements are being incorporated and/or adhered to.

I. Reviewing supplier and contractor quality assurance programs for compliance with regulatory requirements and the requirements of the PVNGS Operations Quality Assurance Program.

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J. Accepting supplier and contractor quality assurance programs, when required by the PVNGS Operations Quality Assurance program.

K. Verifying through audits or surveys conducted by PVNGS or others, that activities of suppliers are in compliance with the requirements of their QA programs.

L. Maintaining an awareness of QA requirements, practices, and experiences throughout the nuclear power industry and providing a working interface and line of communication with other divisions, appropriate industry representatives, and regulatory groups on QA matters.

M. Maintaining an awareness of quality-related activities as they pertain to the operation of PVNGS by reviewing audit reports, corrective action reports, correspondence from the NRC, inspection report responses, and other selected documents.

N. Establishing an indoctrination and training program for Nuclear Assurance personnel and providing input for QA indoctrination of personnel outside of the Nuclear Assurance organization. Verifying that adequate quality training programs are developed and implemented for each organizational unit performing a quality-related function.

O. Assisting in the development and preparation of procedures controlling the activities of PVNGS

personnel and the quality of off-site activities related to PVNGS startup and operations.

P. Reviewing reports of significant conditions adverse to quality and verifying that events reportable to the NRC are promptly investigated and corrected in a manner such that the probability of recurrence of such events is reduced.

Q. Deleted

R. Issuing periodic reports and other quality-related information to the executive vice president, nuclear and CNO, and appropriate company management to inform them of QA activities and the status of quality-related activities.

S. Reporting potentially significant quality-related matters, orally or in writing, to the organizational unit concerned, and the executive vice president, nuclear and CNO, as appropriate.

T. Performing independent safety reviews of plant activities to detect potential nuclear safety hazards, to provide independent verification that activities are performed correctly, and to provide recommendations for reducing human errors as much as practical.

The director, nuclear assurance, gives full support to the Quality Assurance Program described herein, thereby assuring

that all work performed under their cognizance will conform to and support the requirements of the Plan.

This position is charged with the responsibility and authority to ensure that quality related activities are completed with the highest standards of safety and has the authority to allocate resources in this area to achieve this objective. To execute these responsibilities, the Director, Nuclear Assurance, delegates and assigns Nuclear Assurance organization responsibilities to the Nuclear Assurance Department Leaders.

Members of the Nuclear Assurance staff routinely participate in Unit scheduling and Plant status meetings to ensure that the Nuclear Assurance organization is apprised of activities being performed, and that adequate Nuclear Assurance staffing is available to perform the necessary verifications consistent with their importance to safety.

17.2.1.7 All PVNGS Employees

All PVNGS employees are responsible for:

A. Achieving acceptable quality during the performance of work activities.

B. Accomplishing work activities in accordance with instructions, procedures, and drawings.

C. Stopping work activities and informing their leaders when it appears that adherence to a procedure is not possible or may result in an unsafe condition.

D. Promptly identifying and reporting safety and quality deficiencies via the site corrective action program.

17.2.2 QUALITY ASSURANCE PROGRAM

17.2.2.1 General

The PVNGS Quality Assurance (QA) Program has been established to control the activities performed by or for PVNGS within the scope of the Quality Assurance Plan. The scope of the QA Program is defined by table 3.2-1 of the UFSAR and section 17.2.2.2 of this Plan. The Quality Assurance Plan is the highest level document which describes the Quality Assurance Program. The term "Program" as used herein includes subtier policies, program procedures, administrative control procedures, and implementing procedures and instructions. Adherence to the requirements of the Quality Assurance Program is mandatory for all PVNGS organizations and for all external organizations working under the direct control of the PVNGS Quality Assurance Program.

The Quality Assurance Plan is the primary document which establishes the policies, goals, and objectives of the Quality Assurance Program. Individuals throughout the PVNGS organization are responsible for the quality of items and/or activities within their area of accountability. The Quality Assurance Program describes the processes to measure the degree to which the quality level of an item or activity has been achieved.

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The key elements of the QA program include a defined scope, a planned methodology of quality level management, a process for documenting nonconformances and corrective actions, an indoctrination and training program, and provisions for Quality and Safety Reviews. The principles which establish the QA Program will be controlled by this QA Plan which is authorized by the executive vice president, nuclear and CNO, and accepted by the NRC.

17.2.2.2 Quality Assurance Scope

The scope of the PVNGS Quality Assurance Plan includes, but is not limited to, items and activities related to safe nuclear plant operation, and protection of personnel and the public. To ensure consistency in identifying items and activities within the scope of this Plan, a classification process has been developed and is controlled through PVNGS Administrative Control Procedures. This process relies on the use of the terms "Quality Class Q", "quality augmented," "quality related," and "non-quality related."

17.2.2.2.1 Items

Items to which this Plan applies are designated as Quality Class Q (which includes safety related and additional items as designated by Senior Management) or quality augmented (QAG). The definitions of these terms are provided in Appendix 17.2C of this Plan. A quality classification process for items has been developed and is controlled through PVNGS Administrative Control procedures. This classification process produces a

quality classification list which identifies the permanent plant structures, systems, and components that are within the scope of this Plan and their specific classifications. New items to which this Plan applies shall be added to the quality classification list.

The classification of parts, materials, and consumable items (such as chemicals, radwaste liners, diesel fuel, etc.) and the technical and quality requirements shall be specified, documented, and approved as part of the procurement process.

This Plan may be applied to items, parts, and materials other than those designated as "Quality Class Q" or "quality augmented" as specified by PVNGS Senior Management.

17.2.2.2.2 Activities

Activities to which this Plan applies are designated as "quality related." Quality related activities are performed under suitable environmental conditions using special equipment, skills, and processes as necessary. These activities include but are not limited to:

A. Support activities such as, system/component/part classification; operating experience assessment; design, maintenance of environmental and fire protection qualification; core design and associated safety analysis; procurement; fabrication; handling; shipping; storage; cleaning; erecting; installing; testing; repairing; training; welding; inservice

inspection; heat treatment; document control; and records management.

B. Operational activities, such as normal, abnormal, and emergency operation; chemistry control; core performance monitoring; operational advice; equipment control; surveillance testing; inservice testing; maintenance; housekeeping; fire protection; security; ALARA; radiological controls; radiological environmental monitoring; radwaste preparation for shipment; radwaste shipment; fuel handling/refueling; technical specification compliance; and emergency preparedness.

C. Assurance activities, such as audits; document reviews; inspections; monitors; nondestructive testing; and safety reviews.

D. Procedure compliance is considered within QA Plan scope regardless of quality classification.

The above activities are controlled through the use of approved documents which are, as a minimum, consistent with the requirements of this Plan, the Operating Licenses, the Updated Final Safety Analysis Report, specific Regulatory Guides (to the extent referenced in Appendix 17.2B of this Plan), and other regulatory commitments.

A specific task or tasks associated with the above activities shall be classified as either within the scope of this Plan or not depending upon:

- statements within the text and the Regulatory Guides identified in Appendix 17.2B of this Plan;
- the relationship of the task(s) to the safe operation of the facility;
- the relationship of the task(s) to the protection of personnel from the effects of radiation;
- the relationship of the task(s) to the protection the health and safety of the public;
- the relationship of the task(s) to regulatory requirements and commitments; and;
- other factors as may be specified by PVNGS Senior Management.

Documents that prescribe how to perform activities within the scope of this Plan shall be identified as stated in Section 17.2.6.2.1.1.

17.2.2.3 Graded Approach

The extent to which the requirements of this Plan and its implementing documents are applied to an item or activity shall be based upon the following:

A. The effect of a malfunction or failure of the item on nuclear safety or safe plant operation.

B. The design and fabrication complexity or uniqueness of the item.

C. The need for special controls, surveillance or monitoring of processes, equipment, and operational activities.

D. The degree to which functionality can be demonstrated by inspection or test.

E. The quality history and degree of standardization of the item.

The extent to which the requirements of this Plan apply to activities shall be based as a minimum on Operating License conditions and other plans previously approved by the NRC, other regulatory commitments as may have been made associated with activities, the text of this Plan, the Unit's Technical Specifications, and Appendix 17.2B of this Plan. Such other plans or regulatory commitments include, but are not limited to, those associated with emergency planning, physical plant security, safeguard contingency planning, radiological controls, radiological environmental controls, fire protection, inservice inspection, inservice testing, licensed operator qualification and requalification, process control, offsite dose calculation, shift technical advisor training, environmental qualification of equipment, and security guard training and qualification.

When the graded approach is utilized, the justification and basis for grading shall be documented and retrievable. Application of the graded approach shall be accomplished in

accordance with procedures concurred with by the Nuclear Assurance organization. These procedures shall clearly identify how the justification and basis for grading shall be documented and maintained.

Grading of Plan requirements applicable to items shall be the responsibility of the Vice President, Nuclear Engineering. Grading of Plan requirements applicable to activities shall be the responsibility of the organization responsible for performing the activity.

17.2.2.4 Three Level Assurance Approach

PVNGS is committed to a comprehensive assurance process consisting of a three level approach to assure consistent and complete implementation of this Plan. This approach is described in detail in Section 17.2.4.

17.2.2.4.1 Level I

Activities at this level consist of worker verifications, supervisory verifications, second party verifications, independent verifications, and independent inspections for the purpose of establishing acceptance of equipment, systems and activities within the QA scope.

17.2.2.4.2 Level II

Activities at this level are primarily those of survey, surveillance, monitoring, and document review and are performed as deemed necessary by the Director, Nuclear Assurance. These

activities are used to establish adequate confidence that activities within the QA scope are being performed in accordance with QA Program requirements and plant administrative controls.

Procedures and instructions are established and records of the verification activity shall be completed and maintained. Such surveillance and/or monitoring normally include observation of tests and inspections, observation of selected operations, review of records, verifications of tests reports, and direct verification on a spot-check basis.

17.2.2.4.3 Level III

The purpose of this level of activity is to assure, through a comprehensive program of audit and assessment, that the first and second levels of the program are properly functioning, and that organizations conducting activities within the scope of this Plan are properly satisfying the requirements of the Quality Assurance Program.

At this level, procedures and instructions are established, including documentation requirements of the audit or third-level activity.

17.2.2.4.4 Where necessary, quality verifications are adjusted, considering the criteria provided below. Adjustments include, but are not limited to, changes in frequency of verification, application of random or selective sampling techniques, redefining the scope of specific verification activities, or shifting of verification levels.

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- The effect of a malfunction or failure of the item on nuclear safety or safe plant operation
- The design and fabrication complexity or uniqueness of the item
- The need for special controls, surveillance or monitoring of processes, equipment, and operational activities
- The degree to which functionality can be demonstrated by inspection or test
- The quality history and degree of standardization of the item
- Activities requiring verification as mandated by code, standard, licensing requirement, or regulatory commitment
- Activities critical to plant safety or with a high potential to impact plant safety
- Complex activities not previously performed or implemented
- Implementation of significantly revised procedures or organizational structures
- Trending or quality history information related to the activity
- Activities that have not been recently evaluated or are performed infrequently
- Activities performed by contractors or new personnel

- Overall quality verification coverage applied to the activity

17.2.2.5 Control of the Quality Assurance Plan

The Director, Nuclear Assurance, with assistance from the Director, Regulatory Affairs and Environmental shall, for each revision to this Quality Assurance Plan, determine if the proposed changes affect the program description previously accepted by the NRC.

Revisions to the Quality Assurance Plan that do not reduce the commitments in the program description previously accepted by the NRC shall be concurred with by affected Senior Management and approved by the director, nuclear assurance. Revisions of this type do not require acceptance by the NRC prior to implementation, but shall be submitted to the NRC within 24 months of the previous revision in accordance with the provisions of the approved exemption from NRC requirements related to 10 CFR 50.54(a).

The executive vice president, nuclear and CNO may authorize changes to the Palo Verde organizational structure that affect the Quality Assurance Plan, provided the change does not constitute a reduction in QA commitment pursuant to 10CFR50.54(a). Such organizational changes shall be authorized in writing and do not require updating of the Quality Assurance Plan prior to implementation. Supporting Quality Assurance Plan changes, required reviews, and approvals shall be completed as soon as practical after the change is authorized,

but not to exceed 90 days from the effective date of the organizational change.

Revisions to the Quality Assurance Plan that reduce the commitments in the program description previously accepted by the NRC shall be concurred with by affected Senior Management, the director, nuclear assurance, and approved by the executive vice president, nuclear and CNO. They shall be submitted to the NRC for acceptance prior to implementation in accordance with 10CFR50.54(a)(3). Such revisions shall be regarded as accepted by the NRC upon receipt of a letter to this effect from the appropriate reviewing office of the Commission or 60 days after submittal to the Commission, whichever comes first. The submittal of the revision to the Quality Assurance Plan shall include all pages affected by that change and shall be accompanied by a forwarding letter identifying the change, the reason for the change, and the basis for concluding that the revised program incorporating the change continues to satisfy the criteria of Appendix B to 10CFR50 and to provide a suitable level of control. The letter need not provide the basis for changes that correct spelling, punctuation, or editorial items. A copy of this letter shall be maintained as a record for three years.

17.2.2.5.1 Effective Date of Implementation

Changes to implementing procedures resulting from changes to this Plan shall be incorporated within 90 days of the Plan change approval date unless an interim action plan is defined and approved by the Director, Nuclear Assurance.

17.2.2.5.2 Regulatory Commitments

Conformance to NRC Regulatory Guides is documented in the Updated Final Safety Analysis Report (UFSAR) which is maintained by the Regulatory Affairs department.

Appendix 17.2B of this Plan contains the Quality Assurance Regulatory Guides and standards that PVNGS shall utilize to meet 10CFR50, Appendix B.

The director, regulatory affairs and environmental, is responsible for providing PVNGS positions and interpretations on the Regulatory Guides to which PVNGS is committed. Changes to these commitments shall be accomplished in accordance with regulatory requirements. The Director, Nuclear Assurance, shall concur with changes to the positions and interpretations affecting the Regulatory Guides and standards contained in Appendix 17.2B.

17.2.2.6 Quality Assurance Program Review

17.2.2.6.1 The effectiveness of the QA Program and its implementation is periodically reviewed by various organizations at various levels and the results of these reviews are documented in reports to the executive vice president, nuclear and CNO, and Senior Management for review and corrective action as required. The effectiveness of the QA Program is also evaluated and reported by the Nuclear Assurance organization through the inspection, review, monitoring, auditing, and assessment functions. In addition, the Nuclear Assurance organization periodically prepares reports on Program

effectiveness. APS management is informed of quality assurance activities at least annually through reports developed by the Nuclear Assurance organization. Other organizations provide additional information and assessment as requested.

17.2.2.6.2 In addition to the reviews and evaluations performed above, the executive vice president, nuclear and CNO, shall have an independent assessment of the QA Program implementation performed at least annually to ensure that activities meet the regulatory requirements and the policies of PVNGS. This assessment may be performed utilizing the safety review groups, an independent consultant, representatives of other utilities and/or the executive vice president, nuclear and CNO's staff.

Any corrective action which may be deemed necessary as a result of these assessments shall be formally identified and tracked through resolution.

17.2.2.7 Training and Qualification

The PVNGS Quality Assurance Program includes requirements for the training (including indoctrination) and, when necessary, qualification of personnel involved in activities within the QA scope. These requirements establish and demonstrate that personnel assigned to implement elements of the QA Program are capable of performing their assigned task and that required job related knowledge and skills are maintained. The training department is responsible for planning, scheduling and providing training to PVNGS personnel. The specific needs, and

the subject material to be covered in training and qualification programs are established by the organizational units responsible for the activities and by the Nuclear Training Department.

Programs and procedures shall be established to assure that personnel are properly trained and/or qualified to perform their assigned tasks. These programs and procedures shall define, address, or encompass the following features, as appropriate:

A. The organizational authority and responsibilities relative to the training and/or qualification of personnel.

B. Regulatory and accredited training, qualification, and certification requirements.

C. Indoctrination and training requirements for personnel performing activities affecting quality.

D. Methods for demonstrating proficiency.

E. Training program evaluation and improvement.

F. Methods used to verify completion of required training.

G. Instructor qualifications.

H. Retraining and requalification requirements, and frequency.

I. Methods of training.

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J. Maintenance and control of training, certification, and qualification records.

Personnel performing activities within the QA scope shall be indoctrinated into the Quality Assurance Program. Indoctrination shall emphasize that the individual is responsible for quality and explain the programs that exist for reporting conditions believed to be in non-compliance with the QA Program.

Personnel performing activities within the QA scope shall be instructed as to the purpose, scope, and implementation of manuals, procedures, and instructions for the activities being performed. Training shall be required commensurate with the activities importance to safety. For those activities that require certification, proficiency shall be demonstrated and documented.

Training programs shall be revised as necessary to reflect job performance, plant modifications, procedure changes, industry events, and regulatory changes.

Required training and/or qualification shall be identified, satisfactorily completed, and documented prior to an individual being assigned to independently perform the task.

17.2.2.8 Quality Classification

The quality classifications for items and activities within the QA scope as described in Section 17.2.2.2 shall be established using approved procedures. The significance of an item's or activity's importance to safety shall be considered in its

classification. Procedures shall be prepared that establish the requirements for the identification and control of the classification of quality related items and activities. These procedures and changes to them shall be reviewed and concurred with by the Nuclear Assurance organization prior to issuance.

Systems and major components shall be identified as either Quality Class Q, Quality Augmented (QAG), or Non-Quality Related (NQR) in accordance with PVNGS procedures. The classification of the systems and components shall be subject to independent verification. Where there is a change to a lower quality classification of systems, structures, and components, the classification shall be determined by Engineering and concurred with by Nuclear Assurance. The determinations shall be documented and retained as a permanent record.

Spare or replacement parts and materials are not necessarily classified the same as the component of which they are a part. Such parts and materials that perform or contribute to the performance of a safety related or Quality Augmented function are within the scope of this Plan and classified similarly as the component of which they are a part. The classification of spare or replacement parts and materials, that are of a different classification than the component of which they are a part, shall be determined by the Engineering organization. The determination shall be documented and reviewed by the Nuclear Assurance organization consistent with the requirements of this Plan.

Activities that are within the scope of this Plan are identified in Subsection 17.2.2.2.2. Subsection 17.2.2.3 provides further basis for grading the extent of application of the requirements of this Plan to these activities. Documents that prescribe methods for implementing the requirements of this Plan shall meet the requirements of Section 17.2.6.

17.2.2.9 Safety Reviews

The safety review program is comprised of four major elements:

17.2.2.9.1 The first element of the safety review program is the responsible Technical Reviewer. Technical Reviews shall be performed by someone other than the individual doing the work. This review shall be performed by a qualified responsible Technical Reviewer on activities within the QA scope. This includes, but is not limited to, design work or changes, plant operations procedures, emergency and alarm procedures, radiological protection procedures, and plant maintenance procedures. Individuals performing the review shall not have direct responsibility for the performance of the activities under review, but may be from the same functionally cognizant organization as the individual/group performing the original work. Additional reviews and evaluations shall be performed when required by 10 CFR 50.59.

17.2.2.9.2 The second element of the safety review program is the Plant Review Board (PRB). The PRB is composed of key management personnel whose function is to advise the site

general plant manager on all matters related to nuclear safety. The PRB reviews all proposed changes to Technical Specifications, investigates all violations of Technical Specifications, reviews reportable events, reviews unit operations to detect potential nuclear safety hazards, and performs reviews and investigations of other matters related to nuclear safety.

17.2.2.9.3 The third element of the safety review program consists of the independent safety reviews performed by personnel assigned to the Nuclear Assurance Department. When assigned to perform independent safety reviews, personnel have no line responsibilities and selectively assess and evaluate safety matters from a technical perspective.

17.2.2.9.4 The fourth element of the safety review program is the Offsite Safety Review Committee. The Committee reports to and advises the executive vice president, nuclear and CNO, on matters subject to its review. Committee members perform periodic reviews of selected PVNGS events and activities in order to identify areas involving nuclear safety where current and long term improvement can be realized. Additionally, the committee provides Senior Management with an overview and assessment of the adequacy of activities associated with meeting nuclear safety goals and objectives. This committee is comprised of a chairman, PVNGS senior managers, and members from outside PVNGS with overall nuclear expertise. The

chairman and members are designated by the executive vice president, nuclear and CNO.

17.2.2.10 Conditions Adverse to Quality and Corrective Actions

A program for identifying activity and hardware conditions adverse to quality within the QA scope shall be established.

Conditions adverse to quality include, but are not limited to, failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances.

Conditions adverse to quality shall be identified, documented, and controlled in accordance with administrative control procedures to ensure that they are promptly corrected.

Significant conditions adverse to quality shall be promptly identified, evaluated for reportability, and corrected. The cause of significant conditions adverse to quality shall be determined and appropriate action taken to prevent recurrence. The identification, cause, and actions taken to correct significant conditions adverse to quality shall be documented and reported to the appropriate levels of management.

17.2.2.11 External Organizations

Suppliers who provide items, parts, materials, consumables, and/or services that are within the scope of this Plan shall have an appropriate QA program and implementing procedures. The supplier's QA program shall be subject to review and

concurrence by the Director, Nuclear Assurance or their designee.

The extent to which the supplier's QA program shall be applied shall be specified by procurement documents.

17.2.2.12 Resolution of Differences and Escalations

Differences of opinion involving quality between Nuclear Assurance personnel and other organization(s) (engineering, operation, maintenance, etc.) shall, if possible, be resolved at the level at which they occur. If this is not possible, the differences shall be escalated through supervisory/management levels until resolution is achieved.

The Director, Nuclear Assurance, shall make the decision on matters concerning the applicability of the Plan to activities.

The Vice President, Nuclear Engineering, shall make the decision on matters related to classification of items, parts, materials, and technical requirements.

17.2.3 CONTROL OF STATION ACTIVITIES

17.2.3.1 Policy

17.2.3.1.1 Station activities within the QA scope shall be conducted in accordance with the requirements of this Plan. These activities include but are not limited to design changes, procurement, fabrication, handling, shipping, storage, cleaning, erecting, installation, inspection, testing, operation, maintenance, repair, refueling and modification.

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17.2.3.1.2 The Quality Assurance requirements for station activities are contained in this Plan and conform with applicable NRC Regulatory Guides and associated ANSI Standards. The commitments to these Regulatory Guides and associated ANSI Standards shall be implemented in appropriate procedures governing station activities. The requirements of this Plan apply to all organizations performing functions within the QA scope which affect the quality of structures, systems, components, or activities.

17.2.3.1.3 The following subsections discuss typical activities which are representative of the broad scope of administrative controls and quality assurance requirements that are applicable to station activities. The organizational and functional responsibilities governing station activities shall be structured so that the objectives of this Plan are accomplished by those who have been assigned responsibility for performing the work. Conformance to established requirements is the responsibility of individuals performing the work. Nuclear Assurance Division activities such as independent inspection, monitoring, audits, and reviews are performed to independently verify conformance to this Plan, applicable station administration controls, and applicable regulatory and licensing commitments. These Nuclear Assurance organization independent verifications are applied to station activities to the extent necessary to provide adequate confidence that structures, systems, components, and personnel perform satisfactorily to maintain the safety of the station.

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17.2.3.2 Design Control

17.2.3.2.1 Requirements

17.2.3.2.1.1 The organizational structure and responsibilities of personnel involved in preparing, reviewing, approving, and verifying design documents shall be defined.

17.2.3.2.1.2 The design bases, safety analyses, design criteria, codes and standards, and Plant Technical Specifications, including all amendments, shall be translated into design documents and reviewed during the design process. Changes shall be in accordance with regulatory requirements.

17.2.3.2.1.3 Materials, parts, and processes selected by design are reviewed to assure they are suitable for the intended application, including compatibility of materials; accessibility for inservice inspection; maintenance and repair; ALARA considerations; personnel safety; fire hazards analysis; associated computer programs; and quality standards. The review shall also evaluate suitability with regard to human factors which may affect safe operation; and the suitability of commercial grade materials, parts, and equipment to the application.

17.2.3.2.1.4 Internal and external design interface controls, procedures, and lines of communication, among participating design organizations and across technical disciplines, are established and described for the preparation, review, approval, release, distribution, and revision of documents

involving design interfaces to assure structures, systems, and components are compatible geometrically, functionally, and with processes and the environment.

17.2.3.2.1.5 Errors and deficiencies in approved design documents, including design methods (such as computer software) that could adversely affect items and activities within the QA scope shall be documented. Action shall be taken to assure that these errors or deficiencies are corrected. In addition to correcting a deficiency (or error), corrective action also includes, for significant or recurring deficiencies (or errors), determining the cause and instituting appropriate changes in the design process to prevent similar types of deficiencies from recurring.

17.2.3.2.1.6 Deviations from specified quality standards shall be identified and procedures shall be established to assure their resolution and control.

17.2.3.2.1.7 Design verification methods (design review, alternate calculations, or qualification testing) shall be established to verify design adequacy.

17.2.3.2.1.8 Design documents shall be subject to procedural control. Controlled design documents include, but are not limited to, specifications, calculations, computer programs, system design descriptions, and drawings (including flow diagrams, piping and instrument diagrams, system diagrams,

facility drawings showing equipment locations, and site arrangements).

17.2.3.2.1.9 Design verification procedures shall be established which assure the following:

A. The responsibilities of the verifier, areas and features to be verified, and the extent of documentation required are identified.

B. The verifier is qualified and is not directly responsible for the design.

C. Verifications are completed and documented prior to turnover of the component or system to Operations.

17.2.3.2.1.10 When verifications are to be accomplished solely by test:

A. Prototype, component, or feature testing shall be performed prior to installation of the equipment, or prior to the point when the installation would become irreversible.

B. Verification by test shall be performed, whenever practical, under conditions that simulate the most adverse design conditions as determined by analysis.

C. Procedures provide criteria that specify when verification should be by test.

17.2.3.2.1.11 Procedures shall be established to assure that computer codes, and changes thereto, are validated and controlled to prevent unauthorized changes.

17.2.3.2.1.12 Design and specification changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design. Design changes shall be reviewed and approved by the organization responsible for the original design or by another organization with comparable expertise designated to review and approve changes.

17.2.3.2.1.13 Measures shall be provided to assure that responsible plant personnel are informed of and/or trained on design changes and/or modifications which may affect the performance of their duties.

17.2.3.2.1.14 Work authorizing documents which control the installation of quality related modifications shall be clearly identified as quality related. New items shall be evaluated for quality classification determination and added to the Quality Classification list as applicable.

17.2.3.2.1.15 Design control procedures shall ensure that design documents for implemented design changes are issued in a timely manner to prevent inadvertent use of superseded design information.

17.2.3.2.2 Responsibilities

17.2.3.2.2.1 Vice President, Nuclear Engineering. The Vice President, Nuclear Engineering, is responsible for the development and implementation of the design control measures, maintenance and control of the PVNGS design bases, determination of the quality classification of systems, structures, and components, and delineating critical attributes requiring verification. This position is also responsible for providing qualified discipline engineers to perform design for major modifications, improvements and additions to PVNGS. To fulfill these responsibilities, the Vice President, Nuclear Engineering shall:

A. Monitor operational performance data.

B. Provide technical assistance to other organizations.

C. Ensure design verifications are performed.

D. Ensure Nuclear Assurance review and concurrence of applicable design criteria documents, specifications, and changes.

E. Maintain a classification list.

F. Ensure that construction, modification and/or installation of major structures, systems, and components are in compliance with technical and Quality Assurance requirements.

17.2.3.2.2.2 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.2.2.3 PVNGS Leaders. PVNGS Leaders are responsible to incorporate into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.3 Procurement Control

17.2.3.3.1 Requirements

The requirements for the preparation, review, approval, and control of procurement documents shall be delineated in detailed procedures. These procedures shall comply with and require the incorporation of current PVNGS QA program controls into procurement documents. Technical requirements for spare and replacement parts shall meet or exceed the original procurement requirements. Procedures shall also delineate requirements to assure that procurement documents contain the following, as applicable:

A. Specify technical, quality assurance, inspection, and acceptance criteria commensurate with the requirements of this Plan.

B. Impose applicable quality program requirements on vendors, subvendors, and contractors.

C. Specify or reference appropriate technical requirements, including applicable regulatory requirements, material, component identification requirements, drawings, specifications, codes and standards, test, calibration, inspection requirements, handling, storage, shipping requirements, and special process instructions.

D. Identify the documentation to be prepared, maintained, and submitted for review and approval.

E. Identify those items and activities within the QA scope.

F. Identify those records which vendors, subvendors, or contractors shall retain, maintain, and control; and those which vendors, subvendors, or contractors shall deliver prior to use or installation of the item.

G. Include right of access to vendor's, contractor's and their subtier vendor's and contractor's facilities and records for source inspection and/or audit.

H. Contain technical and quality requirements for spare or replacement parts at least equivalent to those applied to the original procurement. In those cases where the technical and quality requirements for the original item cannot be readily determined or when spare or replacement parts and materials are of a different classification than that of the component of which it is a part, an engineering evaluation shall be

conducted and documented to establish the requirements and controls.

I. Include provisions that ensure PVNGS reviews of designated supplier procedures prior to implementation.

J. Require design organizations performing design activities for PVNGS to have and implement quality programs which include design control provisions consistent with those provided in this Plan.

K. Identify the programs, procedures, activities, and conditions that require PVNGS approval and/or release.

L. Include requirements for reporting and approving the disposition of nonconformances including the requirement for notification of significant conditions determined to be reportable under 10CFR21.

M. Provisions for extending applicable requirements to lower tier subcontractors and suppliers.

N. Require submittal of appropriate certification documentation identifying the purchased material and the specific procurement requirements met. For any procurement requirements that were not met, the vendor will be required to furnish documentation indicating how such non-conformances were resolved. Such certification must be attested to by a person responsible for this quality assurance function.

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Measures shall be established for the review, approval, and release of procurement documents and subsequent revisions. Changes to technical and quality requirements specified in procurement documents shall be subject to at least the same level of review and approval as the original document. The reviews shall assure the inclusion of the applicable technical, quality, and administrative requirements in procurement documents prior to their use. Reviews shall be documented to provide objective evidence of approval prior to release.

17.2.3.3.2 Qualification and Selection of External organizations

17.2.3.3.2.1 Procedures shall be established to accomplish the evaluation and selection of external organizations. Contracts or purchase orders for material, equipment or services covered by the scope of the Quality Assurance Program shall be awarded to organizations that have been evaluated by the Nuclear Assurance organization and determined to have an acceptable Quality Program that is commensurate with the equipment or services to be provided, unless one or more of the following conditions apply:

A. The external organization shall be required in the procurement documents to accomplish their work under the direct control of the PVNGS Quality Assurance Program and in accordance with procedures that have been approved by PVNGS.

B. The external organization will be supplying commercial grade items or services as defined in 10CFR21 and the acceptability of these items or services can and shall be adequately verified by PVNGS through inspection or tests conducted following delivery of the item or service or through in-process surveillances conducted during the manufacture or performance of the item or service.

C. The external organization will be supplying an item or service for use in a Quality Augmented structure, system or component and the quality of the item or service can be assured to the extent required by this Plan by receipt inspection or in-process surveillances.

17.2.3.3.2.2 Documented evaluations of prospective suppliers shall be conducted. Qualifications shall be based upon one or more of the following criteria:

A. Capability to provide products or services based upon historical performance.

B. Capability to comply with the PVNGS Quality Assurance Program, as applicable to the items or services to be supplied.

C. Acceptable pre-award survey of the organization's facilities and quality assurance program to determine their capability to supply the items or services that

meet the design and quality requirements of the specification.

D. The supplier is providing commercial-grade calibration services and is accredited by a nationally-recognized accrediting body as described in the APS responses to NRC Regulatory Guides 1.123 and 1.144 that are documented in Section 1.8 of the UFSAR. For suppliers of commercial grade calibration services with accreditation by a nationally-recognized accrediting body, a documented review of the supplier's accreditation by the purchaser may be used in lieu of inspections or tests following delivery or in-process surveillances during performance of the service. This review shall include, at a minimum, all of the following:

1. The accreditation is to ANSI/ISO/IEC 17025.
2. The accrediting body is either NVLAP or the American Association for Laboratory Accreditation (A2LA) based upon A2LA continued NVLAP recognition through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement.
3. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

17.2.3.3.2.3 When the approval of an external organization's quality assurance program by PVNGS is required, it shall be reviewed and approved by PVNGS prior to initiation of the activity affected by their program.

17.2.3.3.2.4 In the case where "commercial grade items," are to be used in safety related applications, evaluations are not required; however, critical characteristics of the items to be provided shall be established and verified for the purpose of item dedication and acceptance.

17.2.3.3.2.5 Material suppliers, not holding a quality systems certificate, shall be evaluated by PVNGS to assess compliance with ASME Section III, Subsection NCA-3800 quality program requirements.

17.2.3.3.3 Vendor Assurance

Measures shall be established to provide for control of vendor activities. These measures shall be described in detailed written procedures.

The attributes of the Vendor Assurance program shall include:

A. Provisions for the review and approval of appropriate vendor Quality Assurance documents prior to fabrication. When specified in procurement documents, vendors may not implement procedures until written notice of PVNGS approval is received.

B. Provisions for source verifications that delineate, as required, review, inspection, verification, and hold, witness, or test points in the manufacturing/design process.

C. Methods for resolution of nonconformances. Where the vendor's disposition of nonconformances against PVNGS accepted drawings/specifications is "Use-as-is" or "Repair," approval by the responsible engineer and the PVNGS Nuclear Assurance organization shall be required.

D. Planned and systematic audit and surveillance of vendor quality activities. Scope of coverage and frequency shall be determined by the criticality of the furnished items and the evaluated results of vendor qualifications, including pre-award surveys, quality program reviews, audits and industry experience, and quality procedure reviews. Revisions to audit and surveillance plans shall be made as warranted by vendor performance. Identified deficiencies shall be documented. The Nuclear Assurance organization shall also provide followup of corrective action implementation.

E. Control of vendor document packages, including reviews for completeness and acceptability. Inadequate records which render the quality status of item(s) furnished indeterminate shall be sufficient cause for rejection of the item(s).

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F. Assessments of vendor quality. Assessments shall be made at a frequency commensurate with Regulatory requirements and the importance, complexity and quantity of the items furnished. These assessments shall utilize the qualitative and quantitative information provided by vendor noncompliance documents; industry experience, inspection, monitoring, and audit reports; and receiving inspection and test records.

G. Material acceptance procedures that assure:

1. The material, component, or equipment is clearly identified and the identification and quantity correspond to the information on the shipping documents and quality records.

2. The item's handling and shipping requirements have been met by the vendor and maintained by the carrier.

3. The item's quality record package or compliance certification is complete and adequate. Supplier certificates of conformance shall be periodically validated through audits, surveys, independent inspections, or tests when they are used as the basis for acceptance of a purchased item or service.

4. The material, component, or equipment meets the technical requirements specified in procurement

documents, inspection plans, checklists, or other engineering documents.

5. Items delivered which are not in compliance with requirements are documented in accordance with the nonconformance procedure, tagged (as item configuration or storage conditions permit; additional administrative controls shall be used if tagging is not practical), segregated (if possible), and prevented from being inadvertently issued for installation or use.
6. Items are maintained in proper storage levels.
7. Items accepted are identified as to their inspection status prior to releasing them for installation or further work.

17.2.3.3.4 Responsibilities

17.2.3.3.4.1 Director, Supply Chain. The Director, Supply Chain is responsible for the following:

A. Administration and operation of contracting, procurement, and warehousing activities of PVNGS.

B. Assurance that the contractual, legal, and commercial requirements are incorporated into the procurement documents in a manner which shall enforce the technical and quality requirements.

C. Assurance that documents and records, as required by procurement documents, are submitted to PVNGS in a timely manner and that they are complete and legible.

D. Assurance that purchase orders and contracts for items and services within QA scope are issued to external organizations that meet the requirements of this Plan.

E. Assurance that the technical and quality requirements are incorporated into contract/procurement documents.

F. Receipt inspection and acceptance of procured materials using qualified independent inspection personnel.

G. Review and acceptance of quality documentation submitted by suppliers.

17.2.3.3.4.2 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible to:

A. Approve supplier Quality Assurance Programs to the extent required in the procurement documents.

B. Review and concur with PVNGS receipt inspection procedures.

C. Establish and implement an adequate program of source inspection, surveillance, and audit, to assure supplier compliance with procurement document requirements.

D. Review procurement documents to assure that quality requirements are correctly stated, inspectable, and

controllable; that there are adequate acceptance/ rejection criteria; that source surveillance or receipt inspection is specified; that minimum documentation to be supplied is specified; and that the procurement documents have been processed in accordance with established requirements. This review may include sampling review of previously approved procurement documents or in-line reviews of selected purchase requisitions or orders prior to placement

E. Establish and maintain an Approved Vendors List/ Approved Suppliers List (AVL/ASL) which documents an acceptable quality program which meets PVNGS procurement requirements.

17.2.3.3.4.3 PVNGS Leaders. PVNGS Leaders are responsible to incorporate into applicable policies, procedures and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.4 Identification and Control of Materials, Parts, and Components

17.2.3.4.1 Requirements

17.2.3.4.1.1 Identification and traceability requirements shall be included in specifications and drawings.

17.2.3.4.1.2 Materials, parts, and components, including partially fabricated subassemblies or subdivided materials,

shall be identified to preclude the use of incorrect or defective items.

17.2.3.4.1.3 Materials, parts, and components within the QA scope shall be identified so that they can be traced to the appropriate documentation. Appropriate documentation may include, but is not limited to:

A. Specifications

B. Drawings (including as-builts)

C. Procurement Documents

D. Physical and Chemical Test Reports

E. Nonconformance Reports

F. Inspection Reports and Checklists

G. Storage Maintenance Instructions

H. NDE Reports

I. Vendor Certificates of Compliance

17.2.3.4.1.4 The location and method of identification shall be specified so as not to affect the form, fit, function, or quality of the item being identified.

17.2.3.4.1.5 Identification of materials, parts and components shall be traceable through release for fabrication, shipping, installation, and testing.

17.2.3.4.1.6 Where physical identification is either impractical or insufficient, physical separation, procedural control, or other approved means shall be employed.

17.2.3.4.1.7 A receipt inspection shall be performed at the site to verify that identification for received items is complete and accompanied by appropriate documentation.

17.2.3.4.2 Responsibilities

17.2.3.4.2.1 Director, Supply Chain. The Director, Supply Chain is responsible for assuring that materials, parts, and components are correctly identified prior to release for fabrication, shipping, installation, and testing.

17.2.3.4.2.2 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.4.2.3 PVNGS Leaders. PVNGS Leaders are responsible for:

A. Ensuring that procurement documents contain appropriate requirements for the identification and control of materials, parts, or components and that only materials, parts, or components which have been accepted in accordance with Quality Assurance Program requirements are used.

B. Incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.5 Control of Special Processes

17.2.3.5.1 Requirements

17.2.3.5.1.1 Special processes are those that require interim in process controls in addition to final inspection to assure quality. Special process include, but are not limited to, such processes as welding, heat treating, chemical cleaning, nondestructive examination, and coatings.

17.2.3.5.1.2 Measures shall be established and documented to assure that special processes are accomplished under controlled conditions in accordance with applicable codes, standards, applications criteria, and other requirements including the use of qualified personnel and procedures.

17.2.3.5.1.3 Procedures shall provide for recording evidence of acceptable completion of special processes. Procedures and instructions for the control of special processes shall be reviewed and approved by qualified personnel. Qualification records of personnel, equipment, and procedures associated with special processes shall be established and maintained. For special processes not covered by the existing codes or standards, or when item quality requirements exceed the requirements of established codes or standards, the necessary

qualifications of personnel, procedures and equipment shall be defined in procedures.

17.2.3.5.2 Responsibilities

17.2.3.5.2.1 PVNGS Leaders. PVNGS Leaders performing special processes are responsible for:

A. Assuring that the established program requirements for controlling and accomplishing special processes are implemented.

B. Assuring that the procedures, including changes, are reviewed, approved, and qualified prior to use.

C. Assuring that personnel and equipment used in the performance of special processes are qualified and the records of qualification are maintained.

D. Incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.5.2.2 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for:

A. Performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

B. Review of special process procedures.

17.2.3.6 Test Control

17.2.3.6.1 Requirements

17.2.3.6.1.1 A documented test program shall be established. Testing required to demonstrate that the structures, systems, or components within QA scope will perform satisfactorily in service will be identified and documented. These tests shall be performed in accordance with written, approved, and controlled test procedures which incorporate or reference the requirements and acceptance standards contained in the applicable design and procurement documents. These test procedures or instructions shall provide the following, as required:

A. A description of the test objective.

B. Instructions for performing the test, including caution or safety notes in sufficient detail to avoid operator interpretation.

C. Test prerequisites such as calibrated instrumentation, adequate test equipment and instrumentation including accuracy requirements, status of item to be tested, suitable and controlled environmental conditions, and personnel to be provided to conduct tests under the direction of a qualified test engineer.

D. Provisions for data collection and storage.

E. Acceptance and rejection criteria as specified in design and procurement documents.

F. Methods of documenting or recording test data and results, in sufficient detail to prevent misinterpretation.

G. Mandatory hold or witness points for inspection by PVNGS Nuclear Assurance and/or other designated personnel.

H. Provisions for control of jumpers, lifted leads, and jurisdictional or safety tags.

I. Provisions for returning a system to normal configuration upon completion of the test, including verification.

J. Provisions for assuring test prerequisites have been met.

17.2.3.6.1.2 Test results shall be documented, evaluated, and their acceptability determined by a qualified individual or group.

17.2.3.6.1.3 The test program shall cover all required tests including:

A. Preoperational test of components or systems to demonstrate that performance is in accordance with the design intent.

B. Tests during initial operation to demonstrate system performance (that could not be tested prior to operation) to confirm compliance to design criteria.

C. Tests during the operational phase to provide assurance that failures or substandard performance do not remain undetected and that the required reliability of systems within the QA scope is maintained.

D. Tests during activities associated with plant maintenance and modifications during the operational phase.

E. Tests to demonstrate satisfactory performance following plant maintenance, modifications, or procedural changes.

17.2.3.6.1.4 Tests performed following plant repairs or replacements shall be conducted in accordance with the original design and testing requirements or approved, documented alternatives. The extent of testing shall be based upon the complexity of the modification, replacement or repair. Testing shall be sufficient to confirm that the changes reasonably produce expected results and that the change does not reduce plant safety.

17.2.3.6.2 Responsibilities

17.2.3.6.2.1 Director, Plant Engineering. The Director, Plant Engineering is responsible for the startup test function which assures that new or substantially modified facilities and

systems are tested. These responsibilities include providing a program which ensures that:

A. Test plans are developed and implemented in accordance with written, approved, and controlled procedures.

B. Personnel performing tests have the training and skills required to perform the testing activities.

C. Testing is completed and documented, as required, and test results are evaluated for acceptability by qualified individuals.

D. Test documentation and test document reviews are complete prior to turnover to Operations.

17.2.3.6.2.2 Director, Engineering Programs and Support. The Director, Engineering Programs and Support has overall responsibility for providing a code test program which ensures, at a minimum, that:

A. Testing is performed in accordance with written, approved, and controlled procedures.

B. Personnel performing tests have the training and skills required to perform the testing activities.

C. Test results are documented and evaluated for acceptability by a qualified individual.

D. Identified discrepancies are addressed, resolved, and reported as required by the Operating Licenses or other regulatory requirements.

17.2.3.6.2.3 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.6.2.4 PVNGS Leaders. PVNGS Leaders are responsible to incorporate into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.7 Control of Measuring and Test Equipment

17.2.3.7.1 Requirements

17.2.3.7.1.1 Measures shall be established to assure that tools, gauges, instruments, and other measuring and testing devices used in activities affecting the function or quality of structures, systems, and components covered under the scope of the QA Program, are properly controlled and calibrated or adjusted at specified periods to maintain accuracy within specified limits. Additional measures shall be established to ensure that the proper range, type, and accuracy of the measuring and test equipment is used in order to conform to the specified requirements.

A. Calibration and control measures may not be required for rulers, tape measures, volumetric glassware, and other such devices if commercial equipment provides accuracy adequate to meet specified requirements.

B. NDE equipment shall be controlled and calibrated in accordance with the industry code(s) governing its use.

17.2.3.7.1.2 Requirements for each control program shall include provisions for verification of accuracy, identification of all instruments, calibration, scheduled recall as appropriate for recalibration, and traceability to an accepted Standard.

17.2.3.7.1.3 Calibrations of all items which are used in the measurement, inspection, and monitoring of components, systems, and structures covered under the QA scope shall be traceable to nationally recognized standards. Where national standards do not exist, provisions shall be established to document the basis for the calibration.

17.2.3.7.1.4 For permanent-plant instruments which are used in the measurement, inspection, and monitoring of components, systems, and structures covered under the QA scope, procedures or instructions shall be established to implement the following requirements.

A. Establish the calibration technique and frequency requirements, maintenance requirements, and controls.

B. Identify all permanent-plant instruments and provide traceability to the calibration test data.

C. Installed permanent-plant instrumentation shall be labeled, tagged or otherwise controlled in accordance

with written, approved procedures to assure that approved calibration intervals are not exceeded.

D. Installed permanent-plant instrumentation that is found out of calibration shall be evaluated to determine if the condition constitutes a reportable occurrence in accordance with Technical Specifications or other regulatory requirements.

17.2.3.7.1.5 For portable Measuring and Test Equipment which are used in the calibration, measurement, inspection, and monitoring of components, systems, and structures covered under the QA scope, procedures or instructions shall be established to implement the following requirements.

A. Establish the calibration technique, calibration intervals, maintenance requirements, and controls.

B. The identification of Measuring and Test Equipment, traceability to the calibration test data, and calibration status.

C. Measuring and Test Equipment requiring calibration shall be clearly labeled, as appropriate, to indicate the date on which the current calibration expires. Measuring and Test Equipment that has exceeded its calibration interval shall not be used for measurements or tests.

D. Calibration intervals for Measuring and Test Equipment shall be based on required accuracy, purpose, degree of usage, stability characteristics,

and/or any other condition which may affect the measurement.

E. A calibration recall system shall be implemented to assure that Measuring and Test Equipment is not used past its calibration interval.

F. Establish methods for determining the validity of previous inspections or tests performed, when Measuring and Test Equipment is found to be out of calibration. This determination shall be documented. Where the validity of previous inspections cannot be established, the inspected items shall be identified as "nonconforming" until inspections or tests can confirm acceptability.

G. Establish methods for evaluating items of Measuring and Test Equipment that are consistently found to be out of calibration, to determine the cause of the problem, and resolve it by repairing or replacing the item.

17.2.3.7.1.6 Procedures or instructions shall be established to implement the following requirements:

A. In all calibrations, the ratio of the calibration accuracy of the item being calibrated to the item being used as the calibration reference shall be greater than 1:1.

B. In addition, Measuring and Test equipment (M&TE) used to calibrate or test permanent plant instruments

shall have been calibrated against calibration standards with accuracies at least four times greater than that of the M&TE equipment being calibrated.

C. When requirements of either A. or B. above cannot be met, the equipment and/or standards used to perform the calibration shall have the required precision to assure that the device being calibrated is within the required tolerance. The basis for acceptability of such calibrations shall be documented and approved.

17.2.3.7.2 Responsibilities

17.2.3.7.2.1 Director, Maintenance. The Director, Maintenance, is responsible for the development of the M&TE control program.

17.2.3.7.2.2 PVNGS Leaders. PVNGS Leaders utilizing tools, gauges, instruments, and other measuring devices in activities affecting the function or quality of structures, systems, components, and activities are responsible for:

A. Assuring that the equipment is controlled in accordance with an approved calibration control program which complies with the requirements of this Plan.

B. Incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards referenced in Appendix 17.2B of this Plan.

17.2.3.7.2.3 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.8 Handling, Storage, and Shipping

17.2.3.8.1 Requirements

17.2.3.8.1.1 Measures shall be established and documented to control handling, storage, and shipping, including cleaning, packaging, and preservation of items within the QA scope in accordance with established instructions, procedures, and drawings to prevent damage, deterioration, or loss. The requirements for handling, storage, packaging, and shipping of radioactive wastes are contained in Section 17.2.3.14 of this Plan.

Procedures shall be established to control the cleaning, handling, storage, packaging, and shipping of materials, components, and systems in accordance with design and procurement requirements to preclude damage, loss, or deterioration by environmental conditions such as temperature or humidity. These procedures shall be implemented by trained individuals. The procedures shall include but not be limited to the following:

A. Packaging and preservation procedures to provide assurance of adequate protection against corrosion, contamination, physical damage, or any effect which would lower the quality of the items or cause

deterioration during shipping, handling, or storage. Special protective environments, special coverings, inert gas atmospheres, moisture contents, and temperature controls shall be specified as required and their existence verified and documented.

B. Cleaning methods to provide assurance that necessary cleaning operations are carried out prior to packaging, storage, or installation. The level of cleanliness required, and verification and documentation requirements shall be specified in the procedures.

C. Detailed handling methods for all items that require special handling. Special handling tools and equipment shall be provided and controlled to ensure safe and adequate handling. These tools and equipment shall be maintained, inspected, and tested in accordance with written procedures at established intervals to ensure their reliability and availability for use.

D. Storage practices to provide for methods of storage and the control of items in storage which will minimize the possibility of damage or deterioration during storage. Periodic inspections of storage areas shall be performed and documented to verify compliance with storage procedures. Release of items for installation shall also be procedurally controlled.

E. Provisions to assure that proper marking and labeling of items and containers is accomplished to provide identification and necessary instructions during packaging, shipment, and storage.

F. Provisions for documenting and reporting nonconformances with handling, storage, and shipping requirements.

G. Provisions for the storage of chemicals, reagents, lubricants, and other consumable materials which will be used in conjunction with quality related systems.

H. Provisions for "Limited Life" requirements (including "Shelf Life" for applicable materials).

17.2.3.8.2 Responsibilities

17.2.3.8.2.1 Director Supply Chain. The director supply chain, is responsible for:

A. Providing the procedures applicable to receiving, shipping, and storage of materials, parts, and components.

B. Assuring that the personnel responsible for handling and storage of materials, parts, and components are trained in the performance of their duties and that they implement the procedures properly.

C. Providing adequate storage of materials, components, and parts within the QA scope.

17.2.3.8.2.2 Senior Vice President, Site Operations. The senior vice president, site operations, is responsible for:

A. Assuring that the handling, cleaning, and storage activities associated with the operation and maintenance of PVNGS are performed in accordance with the requirements of this Plan.

B. Assuring that the handling, cleaning, and storage requirements of this Plan are incorporated in the procedures and are properly implemented for all maintenance and modification activities.

17.2.3.8.2.3 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.8.2.4 PVNGS Leaders. PVNGS Leaders are responsible to incorporate into applicable policies, procedures, instructions, drawings, specifications, or procurement documents those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.9 Equipment Status and Control

17.2.3.9.1 Measures shall be established for the control and status of equipment, as necessary, to maintain personnel and reactor safety and to avoid unauthorized operation of equipment. In addition, measures shall be established and documented to ensure that required inspections and tests are

performed and that the acceptability of these items is known throughout manufacturing, installation, and operation. These measures shall be documented in procedures and shall require that:

17.2.3.9.1.1 Control measures, such as locking or tagging to secure and identify equipment in a controlled status, are established.

17.2.3.9.1.2 Independent verifications, where appropriate, to ensure that necessary measures, such as tagging, have been correctly implemented.

17.2.3.9.1.3 The status of inspections and tests performed upon individual items shall be indicated by the use of markings such as stamps, tags, labels, routing cards, or other suitable means.

17.2.3.9.1.4 Items that have satisfactorily passed required inspections and tests, shall, where necessary, be identified to preclude inadvertent bypassing of required inspections and tests on other similar items which may not have been inspected or tested.

17.2.3.9.1.5 When required documentary evidence of passed inspections and tests is not available, the associated equipment or materials shall be considered nonconforming. Unless suitable documentary evidence is available to show the equipment or material is in conformance, affected systems shall

be considered to be inoperable and reliance shall not be placed on such systems to fulfill their intended safety functions.

17.2.3.9.1.6 Documented permission from the operations organization be obtained prior to releasing equipment or systems for maintenance or modification. Operations personnel shall verify that equipment or system can be released and determine how long it may be out of service. Attention shall be given to the potentially degraded degree of protection when one subsystem of a redundant safety system has been removed for maintenance.

17.2.3.9.1.7 After permission has been granted, equipment shall be made safe to work on. Equipment and systems in a controlled status shall be clearly identified. Measures shall provide for protection of equipment and workers.

17.2.3.9.1.8 When equipment is ready to be returned to service, operating personnel shall place the equipment in operation and verify and document its functional acceptability. Documentation of functional acceptability shall be traceable to the equipment. Attention shall be given to restoration of normal conditions.

17.2.3.9.1.9 Design documents or other appropriate documents address the requirements for the identification of inspection, test and operating status.

17.2.3.9.1.10 Bypassing or altering the sequence of inspections, tests, or other critical operations shall be procedurally controlled. These procedures require concurrence from the Nuclear Assurance organization.

17.2.3.9.1.11 Temporary modifications, such as temporary bypass lines, electrical jumpers, lifted electrical leads, and temporary trip point settings, shall be controlled and shall include a requirement for either independent verification or functional test which conclusively proves the installation and subsequent removal of the temporary modification. A log shall be maintained of the current status of such temporary modifications.

17.2.3.9.2 Responsibilities

17.2.3.9.2.1 Senior Vice President, Site Operations. The senior vice president, site operations is responsible for assuring the appropriate requirements for control of equipment, inspection, test, and operating status, including independent verification, are incorporated in the procedures on all fabrication, installation, test, and operating activities.

17.2.3.9.2.2 Director, Nuclear Assurance. The director, nuclear assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.9.2.3 PVNGS Leaders. PVNGS Leaders are responsible for incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.10 Housekeeping and Cleanliness

17.2.3.10.1 Requirements

17.2.3.10.1.1 Good housekeeping practices shall be utilized at all times to maintain the facilities in a neat and clean condition. Housekeeping encompasses all activities related to the control of cleanliness of facilities, materials, and equipment; fire prevention and protection including disposal of combustible material and debris; control of access to areas, protection of equipment, and radioactive contamination control; and storage of solid radioactive waste.

17.2.3.10.1.2 Housekeeping practices shall assure that only proper materials, equipment, and processes, are utilized and that the quality of the item is not degraded as a result of housekeeping practices or techniques. During maintenance activities, certain portions of quality related systems or components may be subject to potential contamination with foreign materials. To prevent such contamination, control measures, including measures for access control, and tool accountability, shall be established. Additionally, immediately prior to closure of system(s) or component(s), a verification shall be conducted and documented to ensure

cleanliness. Special housekeeping considerations shall be made for maintenance of radioactively contaminated systems and components.

17.2.3.10.2 Responsibilities

17.2.3.10.2.1 Senior Vice President, Site Operations. The senior vice president, site operations, is responsible for establishing and maintaining programs and practices for housekeeping and cleanliness control for work activities performed by the plant site staff, support organizations, and contractors in accordance with the requirements of the QA Program.

17.2.3.10.2.2 Director, Nuclear Assurance. The director, nuclear assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.10.2.3 PVNGS Leaders. PVNGS Leaders are responsible for incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

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17.2.3.11 Control of Construction, Maintenance (Preventive/Corrective), and Modifications

17.2.3.11.1 Requirements

17.2.3.11.1.1 Construction, maintenance, or modifications which have the potential to affect the functioning of structures, systems, or components within the QA scope shall be performed in a manner to ensure quality at least equivalent to that specified in the original design bases and requirements, materials specification, and inspection requirements. A suitable level of confidence in structures, systems, or components on which maintenance or modifications have been performed shall be attained by appropriate inspection and performance testing. Construction, maintenance, or modification of equipment shall be preplanned and performed in accordance with written procedures, instructions, or drawings appropriate to the circumstances which conform to applicable codes, standards, specifications, and criteria. In this regard, modification type work in areas and systems of the plant, which are critical to the safe operation of the plant, shall not be performed without specific, advanced approval in each instance by the designated Operations management personnel. Maintenance shall be performed in a manner such that license limits are not violated.

17.2.3.11.1.2 Written procedures are subject to general administrative controls that govern or define the following areas:

A. Methods for obtaining permission and clearance from operations personnel to work and for appropriately logging such work.

B. Factors to be taken into account, including the necessity of maintaining occupational radiation exposure as low as is reasonably achievable (ALARA).

C. Method for identifying what procedural coverage is necessary for the maintenance, construction, and modification activity.

D. Considerations for system/equipment cleanliness control.

E. Method for identification of post maintenance, construction, or modification testing, including testing required to demonstrate system/equipment functional capability to meet operational requirements in all respects.

F. Method for ensuring that maintenance, construction, or modification activities, performed either on-site or off-site, are properly reviewed.

G. Considerations for other activities already taking place in the general area.

17.2.3.11.1.3 Skills normally possessed by qualified maintenance personnel may not require detailed step-by-step delineation in a written procedure.

17.2.3.11.1.4 Means for assuring quality of maintenance, modifications, or construction activities and measures to document the performance thereof shall be established. Measures shall be established and documented to identify the inspection and test status of items to be used in maintenance, modification, and construction activities.

17.2.3.11.1.5 A corrective maintenance program shall be developed to restore structures, systems and components to the quality level required for them to perform their intended functions. Corrective maintenance shall be performed in a timely manner.

17.2.3.11.1.6 A preventive maintenance program shall be established, including appropriate procedures which prescribe the frequency and type of maintenance to be performed for structures, systems, and components. In all cases, maintenance shall be scheduled and planned so as not to compromise the safety of the plant. Planning shall consider the possible safety consequences of concurrent or sequential maintenance, testing, or operating activities. Preventive maintenance shall be performed in a timely manner to ensure that quality related items are adequately maintained in the original, as designed, functional status.

17.2.3.11.1.7 Proposed modifications shall be reviewed, approved and controlled in accordance with the applicable requirements of the Operating Licenses, regulatory requirements, and procedures governing the design, procurement, construction, testing and inspection. Modifications to structures, systems, and components within the QA scope shall be reviewed and accepted in accordance with the requirements of Section 17.2.2.9 of this Plan.

17.2.3.11.1.8 Design, procurement, construction, testing, and inspection of all modifications shall be performed in accordance with the applicable portions of this Plan.

17.2.3.11.1.9 Deficiencies identified during installation shall be identified for resolution using the appropriate documentation as identified in the implementing procedures.

17.2.3.11.1.10 Organizations performing construction, maintenance, or modifications shall notify Responsible inspection personnel and, where applicable, the Authorized Inspection Agency of all witness and hold points in sufficient time for performance of required inspections.

17.2.3.11.1.11 Deviations from design shall not be permitted without proper review and approval.

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17.2.3.11.2 Responsibilities

17.2.3.11.2.1 Senior Vice President, Site Operations. The senior vice president, site operations, is responsible for:

A. Establishing and implementing preventive and corrective maintenance programs to maintain the station in a safe, reliable, and efficient condition.

B. Ensuring that maintenance and modification activities are performed in accordance with the requirements of this Plan and the applicable Operating Licenses, and regulatory requirements.

C. Establishing administrative control procedures for maintenance and modification work performed.

17.2.3.11.2.2 Vice President, Nuclear Engineering. The vice president, nuclear engineering, is responsible for:

A. Ensuring that design and procurement activities associated with plant modifications are implemented in accordance with approved procedures.

B. Providing the drawings and specifications used for plant modifications.

C. Preparing and issuing as-built drawings of plant modifications, as appropriate.

D. Ensuring that modifications are designed, procured, and installed in accordance with requirements which are either equal to or better than the original requirements.

E. Preparing and filing records in accordance with the requirements of the Plan.

F. Providing the design and engineering support during installation and testing of plant modifications including the resolution of deficiencies identified during installation.

G. Maintaining configuration control.

H. Ensuring proper approvals for deviations from design.

17.2.3.11.2.3 Leaders of organizations installing modifications are responsible for:

A. Reviewing the requirements of the modification packages and preparing the appropriate installation procedures and supporting documentation.

B. Providing the supervision and labor necessary to complete the modifications.

C. Ensuring that the modifications are installed in accordance with the engineering requirements.

D. Preparing and filing records in accordance with the requirements of this Plan.

17.2.3.11.2.4 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.11.2.5 PVNGS Leaders. PVNGS Leaders are responsible to incorporate into applicable policies, procedures, instructions, drawings, specifications, or procurement documents those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.12 Control of Surveillance Testing and Inspection

17.2.3.12.1 Requirements

17.2.3.12.1.1 Surveillance testing and inspection programs shall be established and implemented in accordance with the Operating Licenses requirements of the plant to ensure that quality related structures, systems, and components will continue to operate to maintain parameters within normal bounds, or will act to put the plant in a safe condition if parameters exceed normal bounds.

17.2.3.12.1.2 Provisions shall be made for performing required surveillance testing and inspections, including inservice inspections. Such provisions shall include the establishment of a master surveillance schedule reflecting the status of all planned in-plant surveillance tests and inspections. Frequency of surveillance tests and inspections shall be in accordance with Operating Licenses unless increased frequency is warranted by reliability analyses, type of service, or age of the item or system.

17.2.3.12.1.3 Additional control procedures shall be instituted, as necessary, to assure timely conduct of

surveillance tests and inspections, and appropriate documentation, reporting, and evaluation of the results. Procedures shall be established to assure proper review of surveillance test data and the return of systems to an operable status following the completion of testing. These procedures shall include provisions for the documentation of authority, conduct, responsibility, and verification involved in returning the system to an operable status. Such provisions shall include the use of procedures, checklists, and independent verification as appropriate, considering the degree that system status was altered during the performance of the test.

17.2.3.12.2 Responsibilities

17.2.3.12.2.1 Director, Operations The Director, Operations has overall responsibility for providing a surveillance test program which ensures, at a minimum, that:

A. Surveillance tests are performed in accordance with written, approved, and controlled procedures that implement the surveillance test requirements of the Operating Licenses applicable to each unit.

B. Surveillance test requirements are completed as required.

C. Surveillance test personnel have the training and skills required to perform surveillance test and inspection activities.

D. Test results are documented and evaluated for acceptability by a qualified individual.

17.2.3.12.2.2 Director, Plant Engineering. The Director, Plant Engineering has the overall responsibility for an inspection program covering the main steam/pressurizer safety valve testing as well as the integrated safeguards train testing which ensures that:

A. Inspections are performed in accordance with written, approved, and controlled procedures that implement the inspection requirements of the Operating Licensing applicable to each unit.

B. Inspection requirements are completed as required.

C. Inspection personnel have the training and skills required to perform inspection activities.

D. Inspection results are documented and evaluated for acceptability by a qualified individual.

17.2.3.12.2.3 Director, Engineering Programs and Support. The Director, Engineering Programs and Support has the overall responsibilities for inservice inspection and inservice testing (ASME Section XI and OM code), 10CFR50 Appendix J containment inspection and testing, and performance of nondestructive examinations (NDE).

17.2.3.12.2.4 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.12.2.5 PVNGS Leaders. PVNGS Leaders are responsible for:

A. Providing schedules and manpower necessary to implement the Surveillance Testing and Inspection Program.

B. Incorporating into applicable policies, procedures, instructions, drawings, specifications, or procurement documents those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.13 Radiological Control

17.2.3.13.1 Requirements

17.2.3.13.1.1 A radiological controls program shall be established and implemented to:

A. Control radiation hazards.

B. Avoid accidental radiation exposures.

C. Maintain exposures to workers and the general population as low as is reasonably achievable (ALARA) and within regulatory requirements.

D. Provide guidance and specify appropriate methods or techniques to ensure that the performance of activities are in accordance with sound radiological control principles and in compliance with applicable regulatory requirements.

17.2.3.13.1.2 The radiological controls program is to be fully integrated into the applicable activities of each and every phase of operations at the nuclear generating station.

17.2.3.13.1.3 Procedures shall be provided for the implementation of the radiological controls program. These procedures shall contain the requirements for implementation of the program by the radiation protection manager and the requirements for inclusion of radiological controls in the plant operation, maintenance, and testing procedures.

17.2.3.13.1.4 The radiological controls program includes the acquisition of data, and provisions for equipment necessary to perform radiation surveys, measurements and evaluations for assessments and control of radiological conditions.

17.2.3.13.2 Responsibilities

17.2.3.13.2.1 Radiation Protection Manager. The Radiation Protection Manager is also known as the director, radiation protection or director, site radiation protection and the titles may be used interchangeably throughout the UFSAR and Technical Specifications. This position is responsible for:

A. Establishing and maintaining the radiological controls program.

B. Providing the personnel, procedures and administrative controls to implement the radiological controls program.

C. Providing administrative and technical guidance applicable to radiological controls, radioactive materials, respiratory protection and radiological engineering including ALARA programs and dosimetry control.

17.2.3.13.2.2 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.13.2.3 PVNGS Leaders. PVNGS Leaders are responsible for incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.14 Control of Radioactive Waste

17.2.3.14.1 Requirements

17.2.3.14.1.1 Procedures and administrative controls shall be developed and implemented to cover the following:

A. Processing of radioactive wastes including the collection, handling, and preparation for shipment of radioactive liquids and solids. These procedures shall be consistent with the ALARA program and shall clearly identify the administrative controls and organizational responsibilities.

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B. Training and qualification of personnel operating radioactive waste processing equipment, health physics monitoring, packaging and shipping (which includes waste classification and establishment of waste characteristics), and other operations deemed appropriate by management.

C. The activities associated with the packaging of radioactive wastes to include the proper selection of the receptacles to be used for containing the waste materials, the selection of the shipping containers (structures used to contain and support the receptacle and its contents), establishment of Waste Characteristics, radiological control inspections of the outside of the package, and the preparation of documentation. The activities shall be in accordance with regulatory requirements.

D. Movement of radioactive materials within and outside the protected area to assure personnel protection at all times.

E. The shipment of radioactive material from the station.

F. The packaging used for transporting of radioactive wastes, whether purchased from an outside supplier or designed by PVNGS.

G. Minimization of the generation of radwaste materials through training programs, prudent scheduling, proper use of equipment, and good housekeeping practices.

17.2.3.14.1.2 Procedures shall also be developed for minimizing the generation of radwaste materials, the processing of radioactive waste, and movement of radioactive materials. These procedures include the following:

A. Training of personnel in the methods to minimize the generation of radwaste materials.

B. Processing and packaging of liquid and solid waste.

C. Collection and identification of radioactive solids such as rags, papers, boots, gloves, etc.

D. Selection of the proper packaging for the specific contents to be shipped, taking into consideration the radiation levels, contamination limits, and shipping requirements. Provisions for surveying the packaging for radiation levels, appropriate package markings, shipping papers/manifests and certificates, the security seals, and advising the carrier that the shipment is ready.

E. Review and acceptance of carrier procedures specified by the procurement documents covering the acceptance of radioactive waste materials for shipment.

F. Review and acceptance of the designs of packaging purchased from an outside supplier.

17.2.3.14.1.3 The carriers to be used for transporting of radioactive wastes shall be selected on the basis of their experience, knowledge of DOT regulations, control and maintenance of their equipment, and the selection and control

of their drivers. The carrier is required to have or shall be supplied documented procedures covering acceptance of materials from a shipper, certification requirements, placarding, stowage control, reporting of incidents, and security.

17.2.3.14.1.4 Radwaste operations shall be controlled to minimize personnel exposures or environmental contamination consistent with ALARA.

17.2.3.14.2 Responsibilities

17.2.3.14.2.1 Radiation Protection Manager. The Radiation Protection Manager is responsible for:

A. Developing and implementing radwaste procedures.

B. Monitoring all radiological activities associated with the processing and handling of radioactive wastes and for providing advice on radiological matters relating to processing, packaging, and shipping.

C. Incorporating into applicable policies, procedures, and instructions those requirements contained in the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.3.14.2.2 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Nuclear Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.3.14.2.3 PVNGS Leaders. PVNGS Leaders are responsible for incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.4 CONTROL OF QUALITY VERIFICATIONS AND SELF ASSESSMENTS

17.2.4.1 Policy

A comprehensive Quality Verification Program shall be established and implemented to provide verification that Plan requirements are implemented.

17.2.4.2 Level I Verifications

Activities at this level consist of worker verifications, supervisory verifications, second party verifications, independent verifications, and independent inspections for the purpose of establishing acceptance of equipment, systems and activities within the QA scope.

17.2.4.2.1 Requirements

A program for verification of items within the QA scope shall be established and executed by, or for, the organization performing the activity to verify conformance to the documented instructions, procedures, and drawings for accomplishing the activity. Design specifications, drawings, procedures, or instructions shall include the necessary requirements for performance of verification activities. These requirements

include acceptance criteria and reference codes, standards, and regulatory documents. These requirements shall be further translated into procedures, instructions, or checklists which shall contain, as required, the following:

A. Identification of characteristics and activities to be verified.

B. Methods to be used including necessary measuring and test equipment and the accuracy requirements.

C. Identification of the organization responsible for performing the verification.

D. Acceptance and rejection criteria.

E. Identification of required procedures, drawings, and specifications, including the applicable revisions.

F. Provisions for documentation of verification results including identification of the individual performing the verification.

17.2.4.2.1.1 The organization that initiates work implementing documents is responsible for identification of tasks which require worker verification, supervisory verification, second party verification, independent verification and independent inspection. Procedures shall be developed to provide appropriate guidelines used in task selection.

17.2.4.2.1.2 The Nuclear Engineering organization is responsible for the identification of attributes that require

independent inspection. The Nuclear Assurance organization may elect to identify additional attributes requiring independent inspection based on quality history, trending, and other information that indicates the need for increased independent inspection.

17.2.4.2.1.3 Worker Verification. Worker verifications provide a confirmation of the product quality provided by the worker who performed the tasks (i.e., the worker checks the quality of his/her own task(s)). The worker is responsible and accountable for the proper completion and documentation of the task(s) in accordance with the controlling document or procedure. Worker verification may be requested by the organization initiating work implementing documents for quality related tasks. A sign-off for worker verification shall be provided in the work document when worker verification is requested.

17.2.4.2.1.4 Supervisory Verification. Supervisory verifications provide a confirmation of product quality by technically cognizant supervisory personnel subsequent to worker verification. Supervisory verification may also be requested by the organization initiating work implementing documents for quality related tasks. A sign-off for the supervisory verification shall be provided in the work document when supervisory verification is requested.

17.2.4.2.1.5 Second Party Verifications. Second party verifications are performed during activities where a second

check of the work is desired to provide an additional measure of the quality of the work performed.

Second party verifications are performed by individuals who are knowledgeable in the activity being validated and who may have responsibility for performing the work, but did not perform the specific activity being checked. A sign-off for second party verification shall be provided in the work document.

17.2.4.2.1.6 Independent Verifications. Independent verifications are performed on activities where an independent review of correct performance is desired or when required by code, standard, or regulatory commitment.

Independent verifications are performed by qualified individuals who do not have responsibility for performing or directly supervising the work.

Independent verifications may be conducted by second line supervisory personnel or by other qualified personnel not assigned first line supervisory responsibility for the conduct of the work. Independent verifications are not intended to dilute or replace the clear responsibility of the first line supervisors for the quality of the work performed under their supervision. A sign-off for independent verification shall be provided in the work document.

Independent verification data and results shall be evaluated by designated personnel to assure that the acceptance criteria have been met and that items requiring action or follow-up are identified and documented.

Records shall be kept in sufficient detail to provide adequate confirmation of an independent verification program.

17.2.4.2.1.7 Independent Inspections

Independent inspection is performed on activities in which a high degree of independence is desired to assure correct performance was accomplished or when required by code, standard, or regulatory commitment.

Independent inspection is performed by ANSI N45.2.6 certified inspectors, by individuals in organizations authorized by the Nuclear Assurance organization to perform those activities and who meet the requirements of ANSI N45.2.6, and by NDE personnel certified in accordance with applicable codes and standards.

Inspectors (including NDE personnel) shall be qualified in accordance with applicable codes, standards, and PVNGS training programs and their qualification and/or certification shall be maintained current and documented.

Selected quality related work authorizing documents shall be reviewed by the Nuclear Assurance organization to determine the need for and annotation of additional attributes requiring independent inspection.

When independent inspection hold points have been established, either contractually by procurement, or internally by plant procedures, work may not proceed beyond the hold point until either the inspection is performed satisfactorily or waived by individuals assigned waiver authority.

Where independent inspection is being performed on previously accepted lots, sampling inspection shall be representative and shall be applied only to the extent necessary to assure adequacy of control. The sampling plan shall be reviewed and concurred with by the Nuclear Assurance organization. Inspection personnel shall be provided with suitable equipment and tools, which are calibrated as necessary, and controlled to assure that accuracy requirements are satisfied and that inspections are complete.

Inspection data and results shall be evaluated by designated personnel to assure that the acceptance criteria have been met and that items requiring action or follow-up are identified and documented.

Records shall be kept in sufficient detail to provide adequate confirmation of an inspection program.

17.2.4.2.2 Responsibilities

17.2.4.2.2.1 PVNGS Leaders. PVNGS Leaders are responsible for:

A. Ensuring that the requirements for worker verification, supervisory verification, second party verification, independent verification, and independent inspection are incorporated into work implementing documents.

B. Incorporating into applicable policies, procedures and instructions those requirements contained in this Plan

and the Regulatory Guides and standards committed to in Appendix 17.2B of this QA Plan.

C. Notifying the Nuclear assurance Division of the work being performed.

D. Assuring that established independent inspection hold points are not bypassed without prior authorization by individuals assigned waiver authority.

E. Assuring that all information, records or copies of records associated with their work are made available to Nuclear Assurance personnel.

F. Assuring that the personnel performing Level I Verifications are qualified in accordance with applicable codes, standards, training programs and procedures.

G. Assuring that the results of Level I Verifications are properly documented.

17.2.4.2.2.2 Vice President, Nuclear Engineering. The Vice President, Nuclear Engineering, is responsible for ensuring that verification requirements are included in appropriate design specifications, drawings, procedures and instructions and that these documents include acceptance criteria and, as applicable, references to codes, standards and regulatory documents.

17.2.4.2.2.3 Director, Nuclear Assurance. The Director, Nuclear Assurance is responsible for:

A. Independent inspections performed by the Nuclear Assurance Division.

B. Assuring that Nuclear Assurance inspection personnel are qualified in accordance with applicable codes, standards, and PVNGS training programs.

C. Reviewing selected work authorizing documents for inclusion of additional independent inspection points.

D. Development of procedures and other documents necessary to facilitate Nuclear Assurance independent inspections.

E. Making decisions on matters concerning inspection and acceptance to criteria established by the Vice President, Nuclear Engineering.

17.2.4.2.2.4 Director, Engineering Programs and Support. The Director, Engineering Programs and Support, is responsible for performing NDE in accordance with applicable codes, standards, and regulatory requirements.

17.2.4.3 Level II Verifications

Activities at this level are primarily those of survey, surveillance, monitoring, and document review and are performed as deemed necessary by the Director, Nuclear Assurance. These activities are used to establish adequate confidence that activities within the QA scope are being performed in

accordance with QA Program requirements and plant administrative controls.

Procedures and instructions are established and records of the verification activity shall be completed and maintained. Such surveillance and/or monitoring normally includes observation of tests and inspections, observation of selected operations, review of records, verification of test reports, and direct verification on a spot-check basis.

17.2.4.3.1 Requirements

17.2.4.3.1.1 A program for monitoring, survey, surveillance, and document review activities within the QA scope shall be established.

17.2.4.3.1.2 Survey, Surveillance, and Monitoring. Survey, surveillance, and monitoring are used to establish adequate confidence that activities within the QA scope are being performed in accordance with the QA Program requirements and plant administrative controls. The level of survey, surveillance, or monitoring applied is consistent with the activities or item's importance to safety and the extent of Level I verification applied.

Survey, surveillance, and monitoring personnel shall be qualified in accordance with documented procedures.

Survey, surveillance, and monitoring reports shall contain, as a minimum, the following:

A. Identification of the activity being observed, including specific reference to the program or procedural requirements governing the activity.

B. Identification of compliance.

C. Identification of the individual observing the activity.

D. Appropriate distribution to supervisory or managerial personnel who have responsibility for performance of the activity.

E. Identification of each nonconformance and action taken when such nonconformances exist.

Records shall be kept in sufficient detail to provide adequate documentation of surveys, surveillances, and monitoring activities.

17.2.4.3.1.3 Document Reviews. A program for reviewing documents that implement quality related activities shall be established to verify incorporation of the requirements of this Plan.

Review of plant procedures and other documents shall be performed on a graded or sample basis as part of verification activities. The purpose of such reviews is to verify that such documents will be or are appropriate for use.

The types of documents typically reviewed include plans, procedures, temporary procedures, instructions, procurement documents, engineering documents, and work authorizing documents. Refer to Section 17.2.6.3.1.1 for specific types of documents that shall periodically be verified for document review.

Plans procedures, instructions, and changes thereto that shall be reviewed by Nuclear Assurance personnel prior to implementation shall be identified in administrative control procedures. The timing and extent of such reviews shall be prescribed by procedures and shall be consistent with the text and Appendix 17.2B of this Plan, and the following:

- Changes to quality classification procedure(s) and review and approval procedure(s) shall be reviewed by Nuclear Assurance prior to implementation of the change.
- Procurement and engineering documents that prescribe technical and/or quality requirements for items, parts, materials, and changes to the existing plant configuration shall be reviewed prior to issue if inspection requirements are to be revised or affected.

When documents do not comply with requirements of the QA Program, the noncompliance shall be resolved through an approval process or a nonconformance/corrective action process depending on the status of the document at the time of review, type of document, and its importance to safety.

Reviews may address the technical correctness or performance objectives in addition to the review for compliance with the QA Program.

Records shall be kept in sufficient detail to provide adequate documentation of reviews.

17.2.4.3.2 Responsibilities

17.2.4.3.2.1 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for:

A. Establishing the requirements for Level II activities.

B. Assuring that Nuclear Assurance personnel performing Level II activities are adequately trained and qualified to perform their duties.

C. Assuring that reports of the verification activity have sufficient detail and provide adequate confirmation of the verification.

D. Establishing the requirements for the review of documents affecting materials, parts, components, and activities within the QA scope.

E. Assuring that records of document reviews have sufficient detail to provide adequate confirmation of document review activities.

F. Reviewing and concurring with specific documents and procedures prior to implementation, as identified in plant administrative procedures.

G. Reviewing special process procedures.

17.2.4.4 Level III Verifications

Activities at this level are primarily audits and assessments. The purpose of this level of activity is to assure, through a comprehensive program of audit and assessment, that the first and second levels of the program are properly functioning, and that organizations conducting activities within the scope of this Plan are properly satisfying the requirements of the Quality Assurance Program. At this level, procedures and instructions are established, including documentation requirements of the audit or third-level activity.

17.2.4.4.1 Requirements

17.2.4.4.1.1 Audits. An audit program shall be established for both internal and external functions which affect structures, systems, components, operations and activities within the QA scope. The audit program shall satisfy the requirements of ANS N45.2.12. The organization performing audits shall have sufficient authority and lines of internal and external communications to obtain the necessary management attention to audit activities and findings.

Planned and scheduled audits shall measure compliance with PVNGS Quality Assurance Policies, Plan, and Program, the Code of Federal Regulations, applicable Regulatory Guides, ANSI Standards, other codes and PVNGS license-based documents, Operating Licenses, commitments, procurement requirements associated with external organizations providing items, and services within the QA scope.

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Audits shall include an objective evaluation of quality related practices, procedures, and instructions, including an objective review of activities, items, and records which demonstrate effective and proper implementation.

Audits shall be performed in accordance with pre-established written procedures and checklists, and shall be conducted by trained and qualified personnel having no direct responsibilities in the areas being audited. The audit program shall include:

A. Audit schedules.

B. Procedures for preparation, performance, and reporting of audits.

C. Analysis of audit data and reporting these results to appropriate levels of management.

D. Provisions for follow-up action.

E. Qualification of auditors.

F. Delineation of the authority, responsibility, and organizational independence of those responsible for the audit program.

Audits shall be initiated in a timely manner to assure the effectiveness of the QA Program. Implementation of corrective action shall be verified in a timely manner.

Audited organizations shall provide sufficient support to assure the accuracy of the audit results, respond to audit nonconformances, and resolve deficiencies. The corrective

actions required to resolve audit findings and observations shall be addressed in a timely manner.

Audits shall be regularly scheduled, and their frequency shall be based upon the requirements section 13.4.5, the status and safety importance of activities, degree of previous experience, thoroughness of overall coverage, unique testing/operating activities, and follow-up of previous audit findings. In addition, audits shall be scheduled and performed as required by management. Unscheduled audits may be conducted at any time on any aspect of this Plan.

Records shall be maintained to provide evidence of audit program scope coverage, individual audit coverage, audit results, auditor certifications, follow-up, and verification.

Audits shall be performed by personnel who are trained and qualified to the requirements defined in ANSI N45.2.23 (as modified for PVNGS and described in section 1.8). Each audit team shall be led by a qualified Audit Team Leader. Audit team members shall be utilized as required and shall be classified as either auditors or technical specialists, depending on their function on the audit team. Additional technical experts may be assigned to the audit team as deemed necessary.

17.2.4.4.1.2 Assessments. An assessment program shall be established for activities within the QA scope. The program shall be delineated in procedures and instructions and shall include documentation requirements for the assessment activity.

Assessments are performed by the Nuclear Assurance organization and by the Offsite Safety Review Committee (OSRC). Assessments are performance based reviews designed to provide management a measure of the effectiveness of various programs in meeting management expectations and nuclear performance standards. Assessments may be performed in conjunction with other oversight activities, such as Nuclear Assurance audits and evaluations or OSRC independent review activities. The Director, Nuclear Assurance, and the OSRC, shall determine the need for assessments. The assessment scope shall be defined. The results of assessments shall be documented and any corrective action which may be deemed necessary as a result of these assessments shall be formally identified and tracked through resolution.

17.2.4.4.2 Responsibilities

17.2.4.4.2.1 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible to:

A. Establish and implement the Quality Assurance audit and assessment program.

B. Provide an auditing organization which meets the requirements of this Plan.

C. Evaluate the effectiveness of the audit program.

D. Ensure the development and implementation of the audit schedule.

E. Analyze audit data and the results, including the need for re-audits, and reporting these results to appropriate levels of management.

17.2.4.4.2.2 PVNGS Leaders of Audited Organizations. The PVNGS Leaders of audited organizations are responsible to ensure:

A. Sufficient support is given to the audit process to optimize the accuracy of the audit results.

B. Sufficient review of audit results is provided to assure that effective preventive measures for audit nonconformances are defined and implemented.

C. Responses to audit findings are reviewed and approved by their organizations prior to submittal to the auditing organization.

D. Responses to audit findings are submitted to the auditing organization in a timely manner as defined in implementing policies, plans, procedures and/or instructions.

E. Corrective actions to resolve audit findings are taken in a timely manner.

17.2.4.4.2.3 Chairman Offsite Safety Review Committee. The chairman, Offsite Safety Review Committee (OSRC), is responsible for establishing and implementing an assessment program for the Offsite Safety Review Committee.

17.2.5 CONTROL OF CONDITIONS ADVERSE TO QUALITY AND CORRECTIVE ACTIONS

17.2.5.1 Policy

Measures shall be established which ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified, documented, controlled, and corrected. The cause of significant conditions adverse to quality shall be determined and appropriate action taken to prevent recurrence. The identification, cause, and actions taken to correct significant conditions adverse to quality shall be documented and reported to the appropriate levels of management.

17.2.5.2 Requirements

17.2.5.2.1 Conditions Adverse to Quality

Conditions adverse to quality include hardware problems involving materials, parts, components or systems which do not comply with established requirements and non-hardware problems such as computer software deficiencies, failure to comply with the Licensing Commitments, Technical Specifications, procedures, regulations, design bases, or other established requirements.

It is the responsibility of all organizations and individuals to identify and report conditions adverse to quality.

Activities such as examinations or checks performed to assess the condition of equipment or its operation shall be documented on an appropriate form to control the activity. Once it has been determined that a nonconformance exists, the condition shall be reported as a nonconformance and the item controlled to prevent inadvertent use prior to correction.

Procedures shall be established to assure that conditions adverse to quality are promptly identified, documented, controlled, and corrected. These procedures shall detail and implement, as appropriate, the following measures:

A. Conditions adverse to quality shall be evaluated to determine the need for corrective action.

B. Follow-up activities shall be conducted to verify implementation of corrective actions and to close out corrective actions in a timely manner.

C. Conditions adverse to quality that are potentially reportable to the NRC shall be identified to appropriate management personnel for evaluation and reporting to the NRC as required.

D. Identification of nonconforming items by appropriate means (tags, labels, etc.) and segregation, if practical, until disposition of the nonconforming item has been determined.

E. Disposition of the condition adverse to quality. Nonconforming items shall be dispositioned as either rework, scrap, repair, or use-as-is. Use-as-is and

repair dispositions require approval and justification by the cognizant engineering organization.

F. Verification method, verification, and close out.

G. Record retention.

H. Required approval signatures of the disposition and the verification.

Reworked, repaired, and replacement items shall be inspected and tested in accordance with the original inspection and test requirements or acceptable alternatives. All inspection, testing, rework, and repairs shall be controlled by approved procedures, and the results documented.

Prior to the initiation of a preoperational test on a Quality Related item, all nonconformances shall be evaluated for significance or impact on further testing or operation and shall be dispositioned as appropriate. The evaluation/disposition shall be documented.

Conditions adverse to quality shall be periodically analyzed to detect trends which may not be apparent to a day-to-day observer. The results of analyses shall be reported to management for review and assessment. When actions are required to correct problems, such as a generic problem identified by trend analysis or repetitive failure to disposition nonconformances, these problems shall be elevated to upper levels of management for resolution.

17.2.5.2.2 Significant Conditions Adverse to Quality

In addition to the requirements delineated in Section 17.2.5.2.1, procedures shall require the identification of the cause and the actions to be taken to prevent recurrence of significant conditions adverse to quality. These procedures shall include additional requirements for the following:

A. Identification of the form to be used for reporting the significant condition adverse to quality.

B. Description of the significant condition adverse to quality and date of identification.

C. Identification of the requirement violated.

D. Notification to the affected organizations of the significant condition adverse to quality.

E. Nuclear Assurance Division concurrence with all dispositions to significant condition adverse to quality.

17.2.5.3 Responsibilities

17.2.5.3.1 Director, Nuclear Assurance

The Director, Nuclear Assurance, is responsible for the following:

A. Review and concurrence of all procedures for reporting and controlling conditions adverse to quality in accordance with the requirements of this Plan.

B. Concurring with the dispositions to significant conditions adverse to quality.

C. Deleted

D. Performing Quality Assurance verifications in accordance with Section 17.2.4.

17.2.5.3.2 Executive Vice President, Nuclear and CNO

The executive vice president, nuclear and CNO, is responsible for the establishment of programs for the reporting and correction of conditions adverse to quality. Plant items such as failures, malfunctions, deficiencies, deviations and defective materials, parts or components are handled in a manner consistent with their importance to safety and reviewed in accordance with appropriate procedures and the applicable Technical Specification(s). Authority and responsibility for the development and day-to-day implementation of the programs for the reporting and correction of conditions adverse to quality are delegated to the senior vice president, regulatory and oversight, and the director, performance improvement.

17.2.5.3.3 Vice Presidents, Directors and Department Leaders

Vice presidents, directors and department leaders are responsible for ensuring that conditions adverse to quality are identified and controlled in accordance with approved procedures and for ensuring that an atmosphere is created in the workplace where reporting and resolution of conditions adverse to quality are encouraged at all levels.

17.2.5.3.4 The Director, Performance Improvement, is responsible for:

A. The establishment and day-to-day implementation of programs for the reporting, correction, and trend analysis of conditions adverse to quality.

B. Reporting significant conditions adverse to quality to the organizational unit concerned, and the executive vice president, nuclear and CNO, as appropriate.

17.2.6 CONTROL OF DOCUMENTS AND RECORDS

17.2.6.1 Policy

17.2.6.1.1 The PVNGS Quality Assurance Program requires that activities within the QA scope be prescribed by documented procedures, instructions, and/or drawings of a type appropriate to the circumstances. Activities are accomplished in accordance with these documents.

17.2.6.1.2 Measures shall be established and documented to control the issuance of documents, such as program documents, design documents, instructions, procedures, and drawings, including changes thereto, which prescribe activities as defined in Section 17.2.2 of this Plan. These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and are distributed to, and used at, the location where the prescribed activity is performed.

17.2.6.1.3 Quality Assurance records for items and activities covered under the scope of the PVNGS Quality Assurance Program shall be identified, reviewed, retained, and retrievable. These requirements are imposed on all organizations performing Quality Related activities. Quality Assurance record systems shall be described and controlled by approved written procedures and instructions.

17.2.6.2 Instructions, Procedures, Drawings, and Policies

17.2.6.2.1 Requirements

17.2.6.2.1.1 Procedures, instructions, drawings, and policies that prescribe the performance of activities within the QA scope shall comply with the requirements of this Plan. To accomplish this, these documents shall, as appropriate:

A. Include quantitative and qualitative acceptance criteria sufficient for determining that activities have been satisfactorily accomplished.

B. Require approval and concurrence of responsible personnel prior to the initiation of the activity.

C. Describe the action to be accomplished.

D. Define the responsibilities and authorities of personnel performing the activity.

E. Describe interfaces with other company elements or other organizations that affect or are affected by the activity described in the procedure.

F. Be distributed in a controlled manner to preclude the use of obsolete documents and to assure availability to responsible personnel.

G. Require that changes be documented and approved prior to being implemented.

H. Require that revisions be reviewed and approved by the same organizations that performed the original review and approval or by organizations designated by the originating organizations.

I. Be clearly identified as "Quality Related." (Since procedure compliance is required by 17.2.2.2.2.D of this plan regardless of quality classification, identification of procedures as "Quality Related" is not required.)

17.2.6.2.1.2 Measures shall be established to control and coordinate the approval and issuance of instructions, procedures, and drawings, including changes, which prescribe activities within the QA scope.

These measures shall include the requirements for review of specific documents by the Nuclear Assurance organization. The Nuclear Assurance is to provide an independent verification that the documents have been prepared and reviewed in accordance with established policy and program controls. Additionally, the Nuclear Assurance review shall verify policy and program requirements have been incorporated.

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Applicable plant procedures shall be reviewed following an unusual incident (such as an accident, unexpected transient, significant operator error, or significant equipment malfunction) and following modifications to structures, systems, or components.

Non-routine procedures (such as abnormal operating procedures, emergency operating procedures, alarm response procedures, procedures which implement the Emergency Plan, and procedures which implement the Security Plan) shall be reviewed at least every two years and revised as necessary. This review may be satisfied by a detailed use or review of the procedure during plant operation, training exercise, or drill, or by a revision to the procedure which validates acceptability of the procedure. The use or review activity shall be documented.

Periodic review of plant procedures no less frequently than every two years is not required for routine, frequently-used plant procedures. Periodic audits to satisfy regulatory requirements and commitments include an assessment of a representative sample of related procedures to validate that the procedures are acceptable for use and that the procedure review and revision process is being effectively implemented.

Routine plant procedures which are infrequently used shall be identified and controlled to ensure they are reviewed within two years prior to their use to determine if changes are necessary or desirable.

Periodic reviews of procedures shall be performed by individuals knowledgeable in the area affected by the procedures.

17.2.6.2.2 Responsibilities

17.2.6.2.2.1 PVNGS Leaders. PVNGS Leaders performing activities within the scope of this Plan are responsible for:

A. Assuring that provisions are made for interface controls for internal and external lines of communications among participating organizations and technical disciplines.

B. Incorporating into applicable policies, procedures and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

17.2.6.2.2.2 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

When specified in procurement documents, contractor and vendor Quality Assurance Programs, special process procedures, and inspection and test procedures shall be reviewed and approved by the Nuclear Assurance organization prior to releasing the contractor or vendor to start work.

17.2.6.2.2.3 External Organizations. Those activities within the QA scope that are performed by contractors, suppliers, or vendors shall be delineated by documented, approved, and controlled procedures, instructions, or drawings.

17.2.6.3 Document Control

17.2.6.3.1 Requirements

17.2.6.3.1.1 Document control procedures shall be established to provide for control of all activities within the QA scope. These procedures shall address the following documents as a minimum:

A. Drawings

B. Plans/Manuals and Procedures

C. Operating Procedures & Instructions

D. Maintenance Procedures & Instructions

E. Design Documents (i.e., calculations, specifications, changes, analysis, as-built documentation) including documents related to computer software.

F. Manufacturing, Construction Modifications, Installation, Test, and Inspection Procedures, Instructions, and Drawings

G. Procurement Documents and Specifications

H. UFSAR and Related Design Criteria Documents

I. Nonconformance Documents

J. Design Criteria Documents and Specifications

K. Test Specifications

L. Operating and Special Orders

M. Equipment & Material Control Procedures

N. Refueling Procedures

O. Component Classification Evaluations

P. Audit and Assessment Reports

Q. Equipment Qualification Data Files (EQ Binders)

R. Technical Manuals

S. Operating Licenses

17.2.6.3.1.2 All procedures established for document control shall meet the following requirements:

A. Review, approval, and issuance criteria for documents and their revisions shall be specified to assure adequate technical and quality requirements are met prior to issue.

B. The organizations or positions responsible for reviewing, approving, and issuing documents and their revision shall be specified.

C. Changes must be documented and approved prior to being implemented.

D. Revisions shall be approved by the same organizations that performed the original review and approval, or by organizations designated by the originating organizations except for documents originated by

organizations outside PVNGS. In cases, where documents are originated by organizations outside PVNGS, PVNGS may designate the review and approval organization. Approved changes shall be promptly transmitted for incorporation into documents and obsolete or superseded documents shall be eliminated from use.

E. Document distribution must be sufficient to assure that the documents are readily available to responsible personnel prior to commencement of work.

F. Controls shall be established to assure that the correct revision of documents are used to perform work, thus assuring that voided, superseded or obsolete documents are not used. Master lists that identify the current revision of documents shall be maintained. As an alternative to master lists, documents may be issued as controlled documents and, as such, shall be appropriately stamped. Holders of controlled documents or master lists are responsible for maintaining their assigned copies in a current status.

G. Provisions shall be made to prohibit unauthorized disclosure of safeguards information. These provisions shall include identification of the documents, restrictions on their distribution, and storage in locked security storage containers.

H. Document disposition, including filing and permanent storage.

17.2.6.3.2 Responsibilities

17.2.6.3.2.1 Manager, Support Services. The manager, support services is responsible to develop, maintain and administer the PVNGS Document Control Program.

17.2.6.3.2.2 Director, Nuclear Assurance. The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

17.2.6.3.2.3 PVNGS Leaders. PVNGS Leaders performing activities within the scope of this Plan are responsible for:

A. Incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan, the Technical Specifications, and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

B. Ensuring that documents are available when required.

C. Properly reviewing and approving documents such as procedures, instructions, specifications, drawings, etc. to ensure that changes to documents are reviewed and approved by the same organization that performed the original review and approval of the document.

D. Ensuring that approved changes are promptly transmitted for incorporation into documents and ensuring that obsolete or superseded documents are eliminated from use.

17.2.6.4 Quality Assurance Records

17.2.6.4.1 Requirements

Procedures shall be established for the generation, collection, storage, maintenance, and retrieval of Quality Assurance records and shall meet the following minimum requirements:

A. Design specifications, procurement documents, and procedures shall specify the records to be generated, supplied, and maintained by or for PVNGS, including retention requirements. Typical records to be specified include operating logs; maintenance and modification procedures and related inspection results; reportable occurrences; inspection and verification procedures (excluding completed checklists when results are documented in a separate report); results or reviews, inspections, tests, audits, and material analysis; qualification of personnel, procedures, and equipment; other documentation such as calculations, design verifications, drawings, specifications, procurement documents, calibration procedures and reports; nonconformance documents; corrective action reports;

vendor evaluations; and other records required by regulations and Technical Specifications.

Retention periods of records for operations phase activities shall meet, as a minimum, the requirements described in ANSI N45.2.9-1974, Appendix A.6. In addition to these record retention requirements, the following records shall be collected, stored, and maintained for the periods indicated:

1. Records of reports of all reportable events submitted to the NRC - at least 5 years.
2. Records of sealed source and fission detector leaks tests and results - at least 5 years.
3. Records of annual physical inventory of all sealed source material of record - at least 5 years.
4. Records of inservice inspection performed pursuant to the technical specifications - the duration of the operating license.
5. Records of changes to the facility, including the written evaluation that provided the bases for the determination that the change did not require a license amendment pursuant to 10 CFR 50.59 - the duration of the operating license, or license issued pursuant to 10 CFR Part 54, whichever is later.

6. Records of changes to procedures, or tests or experiments, including the written evaluation that provided the bases for the determination that the change in the procedure, or test or experiment, did not require a license amendment pursuant to 10 CFR 50.59 - the duration of the operating license, or license issued pursuant to 10 CFR Part 54, whichever is later.

7. Records of changes in the facility (Independent Spent Fuel Storage Installation (ISFSI)) or spent fuel storage cask design, including the written evaluation that provided the bases for the determination that the change did not require a license or Certificate of Compliance (CoC) amendment pursuant to 10 CFR 72.48 - maintained until spent fuel is no longer stored in the facility (ISFSI) or the spent fuel storage cask design is no longer being used, or until the Commission terminates the license or CoC issued pursuant to 10 CFR Part 72.

8. Records of changes to procedures, or tests or experiments, including the written evaluation that provided the bases for the determination that the change in the procedure, or test or experiment, did not require a license or CoC amendment pursuant to 10 CFR 72.48 - at least 5 years.

9. Records of the service lives of all hydraulic and mechanical snubbers within the scope of snubber test and inspection program required by unit technical specifications, including the date at which life commences and associated installation and maintenance records - the duration of the operating license.

10. Records of audits required by UFSAR 13.4.5 - the duration of the operating license.

11. Records of analyses required by the radiological environmental monitoring program that would permit evaluation of the accuracy of the analysis at a later date.

    These records should include procedures effective at specified times and QA records showing that these procedures were followed - the duration of the operating license.

12. Meteorological data, summarized and reported in a format consistent with the recommendations of Regulatory Guides 1.21 and 1.23 - the duration of the operating license.

13. Records of secondary water sampling and water quality - the duration of the operating license.

14. Records of reviews performed for changes made to the OFFSITE DOSE CALCULATION MANUAL and the

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PROCESS CONTROL PROGRAM - the duration of the operating license.

B. Sufficient records and documentation shall be maintained to provide objective quality evidence of the items or activities within the QA scope. Inspection and test records shall contain the following, where applicable:

1. Identification of the type of observation.
2. The date and results of the inspection or test.
3. Identification of any conditions adverse to quality.
4. Inspector or data recorder identification.
5. Evidence as to the acceptability of the results.
6. Action taken to resolve any discrepancies noted.

C. Documented and approved measures shall be established for complying with the requirements of codes, standards, and procurement documents regarding record transmittal, retention, and maintenance subsequent to completion of work.

D. Record storage facilities shall be established and utilized to prevent destruction of quality records by fire, flooding, theft, and deterioration by environmental conditions such as temperature or humidity in compliance with the applicable standards, codes, and regulations.

E. All records shall be legible and should be capable of being reproduced.

17.2.6.4.2 Responsibilities

17.2.6.4.2.1 PVNGS Leaders. PVNGS Leaders performing activities within the scope of this Plan are responsible for:

A. Incorporating into applicable policies, procedures, and instructions those requirements contained in this Plan and the Regulatory Guides and standards committed to in Appendix 17.2B of this Plan.

B. The initiation, collection, maintenance, and storage of records in accordance with approved written procedures which conform to the requirements and policy of this section until such time as they are transferred to Nuclear Records Information Management for storage.

17.2.6.4.2.2 Manager, Support Services. The manager, support services is responsible for:

A. The collection, maintenance, and storage of records in accordance with approved written procedures and instructions which conform to the requirements and policy of this section.

B. Providing procedures which ensure the maintenance of records sufficient to furnish objective evidence that activities affecting quality are in compliance with

applicable codes and standards, Regulatory Guides, and applicable regulations.

C. Establishing and implementing the PVNGS Records Control Program.

17.2.6.4.2.3 External Organizations. Records generated by contractors shall be controlled according to contractor or PVNGS procedures until such time as they are turned over for review, acceptance, and transmittal to the permanent records file. Purchased equipment records shall be retained by the vendor until the equipment is released for shipment, at which time the records required by procurement documents are to be submitted to PVNGS.

When required by the procurement documents, contractors and vendors shall establish procedures to control Quality Assurance records. Implementation of these procedures shall be assured by performance of source surveillance, monitoring, and audits performed by the Nuclear Assurance organization.

Records to be submitted with the shipment or retained by the vendor shall be specifically identified in procurement documents. These records shall be reviewed as necessary by Nuclear Assurance and/or Material Management and Budgets to provide the required degree of confidence regarding the adequacy of compliance by the vendor with the requirements of this section.

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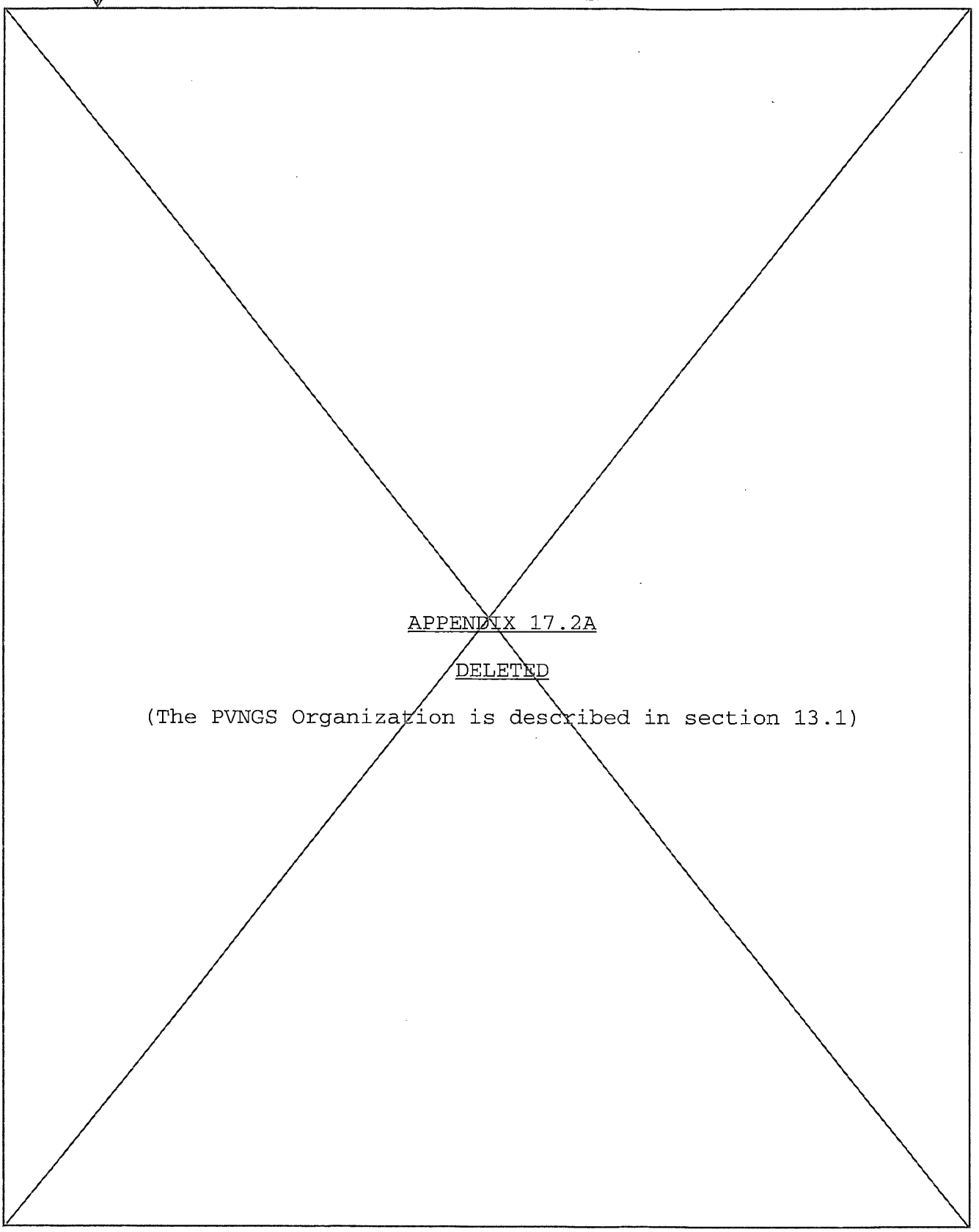
17.2.6.4.2.4 Director, Nuclear Assurance. The Director, Nuclear Assurance is responsible for performing quality verifications in accordance with Section 17.2.4 of this Plan.



APPENDIX 17.2A

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(The PVNGS Organization is described in section 13.1)

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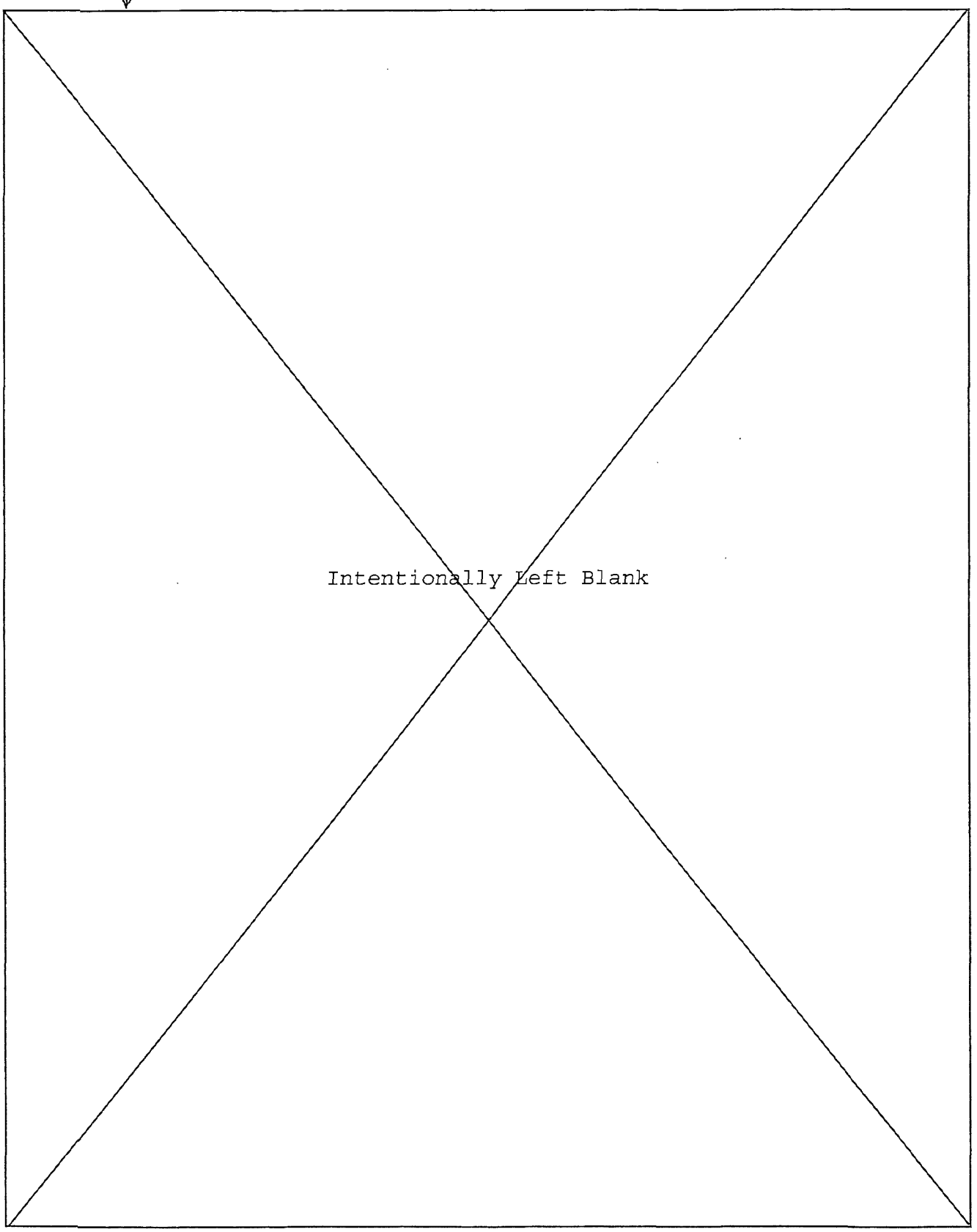

APPENDIX 17.2B

COMPLIANCE MATRIX (Sheets 1 of 2)

REG.Guide	Revision	Title	Standard	Year	Degree of Conformance
1.8	Rev. 1-R May 1977	Personnel Selection and Training	N18.1	1971	Modified
1.21	Revision 1, June, 1974	Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants	N/A	N/A	Conform
1.26	Rev. 1 Sept. 1974	Quality Group Classifications and Standards for Water-, Steam- and Radioactive-Waste-Containing Components of Nuclear Power Plants			Modified
1.28	Rev. 0 June 7, 1972	Quality Assurance Program Requirements (Design and Construction)	N45.2	1971	Modified Note 1
1.29	Rev. 3 Sept. 1978	Seismic Design Classification			Modified Operations Phase
1.30	Rev. 0 Aug 11, 1972	Quality Assurance Requirements for the Installation, Inspection and Testing of Instrumentation and Electrical Equipment	N45.2.4	1972	Modified
1.33	Revision 2 February 1978	Quality Assurance Program Requirements (Operation)	N18.7	1976	Modified
1.37	Revision 0 March 16, 1973	Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants	N45.2.1	1973	Modified
1.38	Revision 2 May 1977	Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water-Cooled Nuclear Power Plants	N45.2.2	1972	Modified Operations Phase
1.39	Revision 2 Sept. 1977	Housekeeping Requirements for Water-Cooled Nuclear Power Plants	N45.2.3	1973	Modified
1.54	Revision 0 June 1973	Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants	101.4	1972	Modified
1.58	Revision 1 Sept. 1980	Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel	N45.2.6	1978	Modified
1.64	Revision 2 June 1976	Quality Assurance Requirements for the Design of Nuclear Power Plants	N45.2.11	1974	Modified Operations Phase
1.74	Revision 0 Feb. 1974	Quality Assurance Terms and Definitions	N45.2.10	1973	Conform

REFER TO UFSAR SECTION 1.8 FOR CONFORMANCE STATEMENTS

Note 1. For Operational Phase see Reg. Guide 1.33.

APPENDIX 17.2.B

COMPLIANCE MATRIX (Sheet 2 of 2)

REG.Guide	Revision	Title	Standard	Year	Degree of Conformance
1.88	Revision 2 October 1976	Collection, Storage and Maintenance of Nuclear Power Plant Quality Assurance Records	N45.2.9	1974	Modified
1.94	Revision 1 April 1976	Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants	N45.2.5	1974	Modified
1.116	Revision 0-R May 1977	Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems	N45.2.8	1975	Modified
1.123	Revision 1 July 1977	Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants	N45.2.13	1976	Modified
1.143	Revision 0 July 1978	Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants	N199	1976	Modified
1.144	Revision 1 Sept. 1980	Auditing of Quality Assurance Programs for Nuclear Power Plants	N45.2.12	1977	Modified
1.146	Revision 0 August 1980	Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants	N45.2.23	1978	Modified
	Appendix A to (BTP) APCSB 9.5-1 (2/24/77)	Guidelines for Fire Protection for Nuclear Power Plants The Operations Quality Assurance Program complies with the Quality Assurance Program Guidelines of Appendix A to (BTP)APCSB 9.5-1			
4.1	Revision 1, April 1975	Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants (1/73)	N/A	N/A	Modified Audits of the QA program for monitoring radioactivity in the environs

REFER TO UFSAR SECTION 1.8 FOR CONFORMANCE STATEMENTS

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APPENDIX 17.2C

TERMS AND DEFINITIONS

Accept:

To acknowledge that identified items or specific services rendered comply with the specifications and procedures described in the controlling document.

Acceptance:

(As used in relation to acceptance of a document) Generally approved, believed or recognized. Does not require signature of person accepting.

Accept-As-Is:

A disposition which may be imposed for a nonconformance when it can be established that the discrepancy will result in no adverse conditions and that the item under consideration will continue to meet all engineering functional requirements including performance, maintainability, fit, and safety.

Acceptance Criteria:

A limit or limits placed on the variation permitted in the characteristics of an item expressed in definitive engineering terms such as dimensional tolerances, chemical composition limits, density and size of defects, temperature ranges, time limits, operating parameters, and similar characteristics.

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ALARA:

(Acronym for As Low As is Reasonably Achievable) As used within the QA Plan means as low as is reasonably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and other societal and socioeconomic considerations, and in relation to the utilization of atomic energy in the public interest.

Approval:

An act of endorsing and adding positive authorization (signature) to a document by the person(s) responsible for the documents.

Approved Vendor List (AVL):

A list of Suppliers who have been evaluated by the PVNGS Nuclear Assurance organization for their capabilities to produce or provide quality related items, equipment or services.

Approved Suppliers List (ASL):

Synonymous with (AVL) and may be used interchangeably.

APS:

Arizona Public Service Company.

As-Built Data:

Documented data that describes the condition actually achieved in a product.

Audit:

An activity to determine through investigation, the adequacy of, and adherence to, established procedures, instructions, specifications, codes, and standards or other applicable contractual and licensing requirements, and the effectiveness of implementation.

Auditor:

Any individual who performs any portion of an audit, including lead auditors, technical specialists, and others such as management representatives and auditors in training.

Calibration:

Comparison of two instruments or measuring devices, one of which is a standard of known accuracy traceable to national standard, to detect, correlate, report, or eliminate by adjustment any discrepancy in accuracy on the instrument or measuring device being compared with the standard.

Certification:

The action of determining, verifying and attesting, in writing, to the qualifications of personnel or material.

Commercial Grade Item:

A structure, system, or component, or part thereof that affects its safety function, that was not designed and manufactured as a basic component. Commercial grade items

do not include items where the design and manufacturing process require in-process inspections and verifications to ensure that defects or failures to comply are identified and corrected (i.e., one or more critical characteristics of the item cannot be verified). Therefore, the capability to verify all of the item's critical characteristics during the dedication process must exist.

Component:

A piece of equipment such as a vessel, piping, pump, valve or core support structure, which will be combined with other components to form an assembly.

Concurrence:

Written agreement with the provisions in a document.

Condition Adverse To Quality:

An all-inclusive term used to reference any item or activity which does not conform to requirements. Conditions adverse to quality is synonymous with terms such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances.

Contractor:

Any organization under contract for furnishing items or services. It includes the term Vendors, Supplier, Subcontractor, Fabricator and subtier levels, where appropriate.

Controlled Document:

A document which is assigned and distributed to an individual or organization and requires that individual or organization to be accountable for the document and to acknowledge receipt of the document in writing. The distributing agent is responsible for providing the recipients with current revision to the document and for maintenance of the return acknowledgment receipts.

Corrective Action:

Measures taken to rectify a condition adverse to quality and where necessary, to preclude repetition.

Dedication:

An acceptance process undertaken to provide reasonable assurance that a commercial grade item to be used as a basic component will perform its intended safety function and in this respect is deemed equivalent to an item designed and manufactured under a 10CFR Part 50, Appendix B, quality assurance program.

Deficiency:

A general term covering any defect, discrepancy, omission, or lack of conformance to requirements.

Documentation:

Any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedure or results. A document is not

considered to be a QA record until it is completed and contains the required signatures.

Engineering (Engineer):

The term used to refer to the technical responsibilities of Technical Functions, Plant Engineering, etc.

Equipment Qualification:

The generation and maintenance of evidence to assure that the equipment will operate on demand to meet the system performance requirements.

Evaluation:

A verification activity that typically includes the observation of tests and inspections, observation of selected operations, review of records and test reports, and direct verifications for the purpose of determining compliance with specified requirements and plant performance standards. This term is synonymous with and encompasses the terms survey, surveillance, and monitoring.

Failure:

The inability of an item to perform within previously specified limits.

Hold Point:

A process point for which notification, a reasonable time in advance of the operation, is required so that it can be witnessed. Work shall not proceed beyond the hold point

until inspection has been performed or waived in accordance with approved procedures.

Independent Safety Reviews:

Independent evaluations and assessments of procedures and activities to detect potential nuclear safety hazards, to provide independent verification that activities are performed correctly, and to provide recommendations for improving plant safety and reducing human errors.

Inservice Inspection (ISI):

Those periodic or event related actions accomplished to satisfy the requirements of the ASME Boiler and Pressure Vessel Code, Section XI. These actions may be required by PVNGS Technical Specifications.

Inservice Test (IST):

Those periodic surveillance tests performed to satisfy the requirements of the ASME OM Code. These surveillance tests may be required by PVNGS Technical Specifications.

Inspection Plan:

The instruction document that identifies the characteristics or activities requiring inspection, the method of inspection, acceptance criteria, and the extent of documentation required.

Item:

Any level of unit assembly, including structure, system, subsystem, subassembly, component, part, or material.

Lead Auditor:

An individual qualified to organize and direct an audit, report audit findings, and evaluate corrective action (also referred to as ATL.)

Measuring and Test Equipment (M&TE):

Any tool, gauge, instrument, standard, or device used to measure, test, calibrate, or otherwise verify acceptance parameters.

Modification:

A planned change in plant design or operation and accomplished in accordance with the requirements and limitations of applicable codes, standards, specifications, licenses and predetermined safety restrictions.

Monitoring:

Review, observation, or inspection for the purpose of verifying that an action is accomplished as specified (also see Evaluation).

Nonconformance:

A deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate. Examples of nonconformance include: physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processing, inspection or test procedures.

Non-Quality Related (NQR):

Items that are not designated as Quality Class Q or quality augmented (QAG).

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 fuel loading and ends with plant decommissioning.

Procurement Document:

Purchase requisitions, purchase orders, drawings, contracts, specifications or instructions used to define requirements for purchase.

PVNGS:

Palo Verde Nuclear Generating Station.

PVNGS Employees:

All APS employees directly or indirectly performing work at or for PVNGS.

QA:

Quality Assurance

Quality:

The degree of conformance of an item or material to the specified requirements.

Quality Assurance:

All those planned and systematic actions necessary to provide adequate confidence that an item or a facility will perform satisfactorily in service.

Quality Assurance Plan (Plan):

The document which describes the method, means, controls and limits of the QA Program that implements the applicable regulatory and PVNGS requirements.

Quality Assurance Program:

The program established by APS to provide the formal system of controls, directives, and documentation necessary to assure that quality related activities, including plant operation, maintenance, repair, inservice inspection, refueling, modifications, testing, and inspection, are carried out with the desired level of control to provide adequate confidence that systems and structures of the PVNGS perform satisfactorily in service. This program is described in the Quality Assurance Plan.

Quality Assurance Records:

Those records which furnish documentary evidence of the quality of items and of activities affecting quality. A document is considered a QA record when the document has been completed.

Quality Augmented (QAG):

Items that do not perform a safety related function but which, as a result of regulatory commitment or management directive, require the application of certain quality assurance program elements.

Quality Class Q:

A Quality Classification that includes safety related items as well as equipment, systems, and structures which do not meet the criteria of safety related, but, due to their importance, are designated by Senior Management as requiring the full application of 10CFR50, Appendix B.

Quality Classification List:

The controlled document used to record the identification of systems and major components subject to the requirements of the QA Plan.

Quality Related (Activities):

Those activities, programs, and procedures that are within the scope of the PVNGS Quality Assurance Program which may not be safety-related but, as the result of not being performed or being performed improperly, could result in the failure to satisfy, in whole or in part, the objectives of the operations Quality Assurance Program.

Quality Related (Items):

Those structures, systems, and components that are classified either Quality Class Q or quality augmented.

Repair:

The process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still may not conform to the original requirement.

Review:

To examine any form of documentation or activity for the purpose of establishing acceptability to the requirements of the function represented by the reviewer. Reviews may range from a thorough investigation to a spot check. Reviews are generally not hold points, but sign-off on documents or records traceable to the documents is required.

Rework:

The process by which a nonconforming item is made to conform to a prior specified requirement by completion, remachining, reassembling or other corrective means.

Safety-Related (Q):

The equipment, systems, and structures that are relied upon to remain functional during and following design bases events to ensure:

A. The integrity of the reactor coolant boundary;

B. The capability to shut down the reactor and maintain it in a safe condition;

C. The capability to prevent or mitigate the consequences of accident which could result in potential offsite exposures comparable to the guideline exposures of 10CFR100.

Safety Review Groups:

Committees or organizations with responsibilities for evaluation of methods, procedures or conditions affecting plant safety during the operational phase.

Services:

The performance by a supplier or contractor of activities such as design, fabrication, inspection, nondestructive examination, repair, or installation.

Shall, Should, and May:

The word "shall" is used to denote a requirement; the word "should" is to denote a recommendation; and the word "may" is used to denote permission, neither a requirement nor a recommendation.

Significant Condition Adverse to Quality:

A significant condition adverse to quality is one which, if uncorrected, could have a serious effect on safety or operability.

Special Processes:

Those processes that require interim inprocess controls in addition to final inspection to assure quality. Included

are such processes as welding, heat-treating, chemical cleaning, and nondestructive examination.

Supplier:

Any organization or individual furnishing items or services (not including contract work performed at PVNGS) subject to a procurement document.

Testing:

The determination or verification of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental or operating conditions.

Traceability:

The ability to trace the history, application, or location of an item and like items or activities by means of recorded information.

Trend Analysis:

The analysis of deficiency data to identify weaknesses that may not be apparent to the day to day observer.

Use-As-Is:

A disposition which may be imposed for a nonconformance when it can be established that the discrepancy will result in no adverse conditions and that the item under consideration will continue to meet all engineering functional requirements including performance, maintainability, fit, and safety.

Vendor:

Any organization or individual furnishing items or services, offsite or at the PVNGS, subject to a procurement document. The term vendor includes both suppliers and contractors.

Verification:

An act of confirming, substantiating and assuring that an activity or condition has been implemented in conformance with the specified requirements.

Witness:

To watch over, observe, or examine a specific test or work operation with sign-off responsibility included.

Witness/Notification Point:

A process point for which notification, a reasonable time in advance of the operation, is required so that it may be witnessed. Work may proceed past the witness/notification point if the notified individual is not available at the appointed time.

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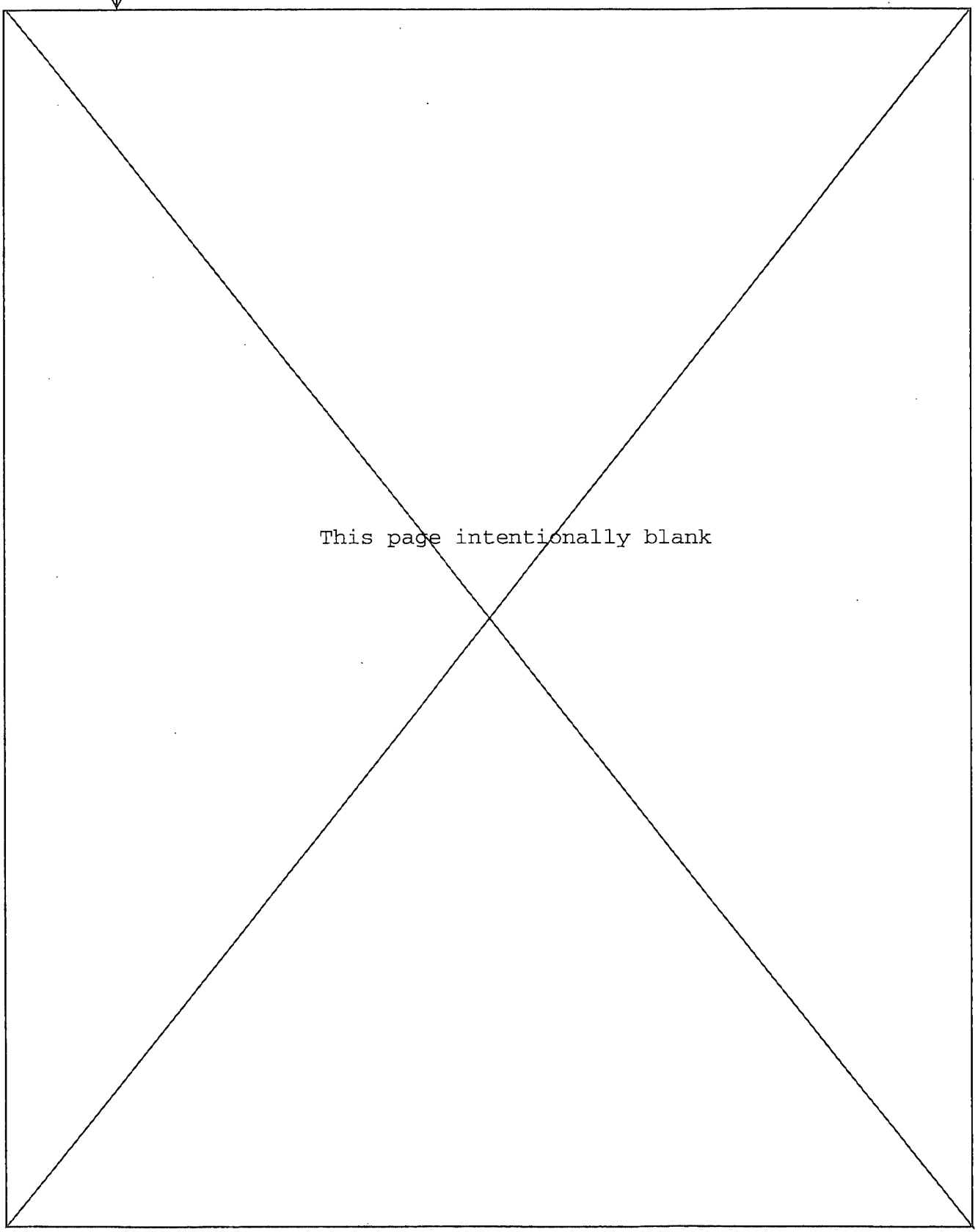

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APPENDIX 17.2D

COMPARISON OF QA PLAN REQUIREMENTS WITH THOSE OF 10CFR50 APP.B AND SELECTED ANSI STDS

10CFR50, Appendix B		QA Plan
I	Organization	17.2.1
II	QA Program	17.2.2
III	Design Control	17.2.3.2
IV	Procurement Document Control	17.2.3.3
V	Instructions, Procedures, Drawings	17.2.6.2
VI	Document Control	17.2.6.3
VII	Control of Purchased Material	17.2.3.3
VIII	Identification & Control of Materials, Parts, and Components	17.2.3.4
IX	Control of Special Processes	17.2.3.5
X	Inspection	17.2.2.4, 17.2.4.2
XI	Test Control	17.2.3.6
XII	Control of M&TE	17.2.3.7
XIII	Handling, Storage and Shipping	17.2.3.8
XIV	Inspection, Test and Operating Status	17.2.3.9
XV	Nonconforming Materials, Parts or Components	17.2.2.10, 17.2.5
XVI	Corrective Action	17.2.2.10, 17.2.5
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XVIII	Audits	17.2.2.4, 17.2.4.4

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ANSI N45.2 - 1971		QA Plan
1.0	Introduction	
2.0	QA Program	17.2.2
3.0	Organization	17.2.1
4.0	Design Control	17.2.3.2
5.0	Procurements Document Control	17.2.3.3

ANSI N45.2 - 1971		QA Plan
6.0	Instructions, Procedures and Drawings	17.2.6.2
7.0	Document Control	17.2.6.3
8.0	Control of Purchased Materials Equipment & Services	17.2.3.3, 17.2.3.4
9.0	Identification and Control of Materials, Parts and Components	17.2.3.4
10.0	Control of Special Processes	17.2.3.5
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12.0	Test Control	17.2.3.6
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15.0	Inspection, Test and Operating Status	17.2.3.9
16.0	Nonconforming Items	17.2.2.10, 17.2.5
17.0	Corrective Actions	17.2.2.10, 17.2.5
18.0	Quality Assurance Records	17.2.6.4

19.0	Audits	17.2.2.4, 17.2.4.4

ANSI N18.7 - 1976		QA Plan
3.0	Owner Organization	17.2.1
3.1	General	17.2.1
3.2	Assignment of Authority and Responsibility	17.2.1
3.3	Indoctrination and Training	17.2.2.7
3.4	Onsite Operating Organization	17.2.1
4.0	Reviews and Audits	17.2.2.4, 17.2.4.4
4.1	General	
4.2	Program Description	
4.3	Independent Review Program	17.2.2.9

ANSI N18.7 - 1976		QA Plan
4.4	Review Activities of the Onsite Operating Organization	17.2.2.9
4.5	Audit Program	17.2.2.4, 17.2.4.4
5.0	Program, Policies, and Procedures	17.2.2
5.1	Program Description	17.2.2
5.2	Rules of Practice	17.2.6.3
5.2.1	Responsibilities and Authorities of Operation Personnel	17.2.1
5.2.2	Procedure Adherence	17.2.6

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5.2.4	Special Orders	17.2.6
5.2.5	Temporary Procedures	17.2.6
5.2.6	Equipment Control	17.2.3.9
5.2.7	Maintenance and Modifications	17.2.3.11
5.2.8	Surveillance Testing and Inspection Schedule	17.2.3.12
5.2.9	Plant Security and Visitor Control	17.2F
5.2.10	Housekeeping and Cleanliness Control	17.2.3.10
5.2.11	Corrective Actions	17.2.5
5.2.12	Plants Records Management	17.2.6
5.2.13	Procurement and Materials Control	17.2.3.3, 17.2.3.4, 17.2.3.8
5.2.14	Nonconforming Items	17.2.2.10, 17.2.5
5.2.15	Review, Approval and Control of Procedures	17.2.6.2, 17.2E
5.2.16	Measuring and Test Equipment	17.2.3.7
5.2.17	Inspections	17.2.2.4, 17.2.4.2
5.2.18	Control of Special Processes	17.2.3.5
5.2.19	Test Control	17.2.3.6

ANSI N18.7 - 1976		QA Plan
5.3	Preparation of Instructions	17.2.6

	and Procedures	
5.3.1	Procedure Scope	17.2.6
5.3.2	Procedure Content	17.2.6
5.3.3	System Procedures	17.2.6
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5.3.5	Maintenance Procedures	17.2.6
5.3.6	Radiation Control Procedures	17.2.6
5.3.7	Calibration and Test Equipment	17.2.6
5.3.8	Chemical-Radiochemical Control Procedures	17.2.6
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5.3.10	Test and Inspection	17.2.6

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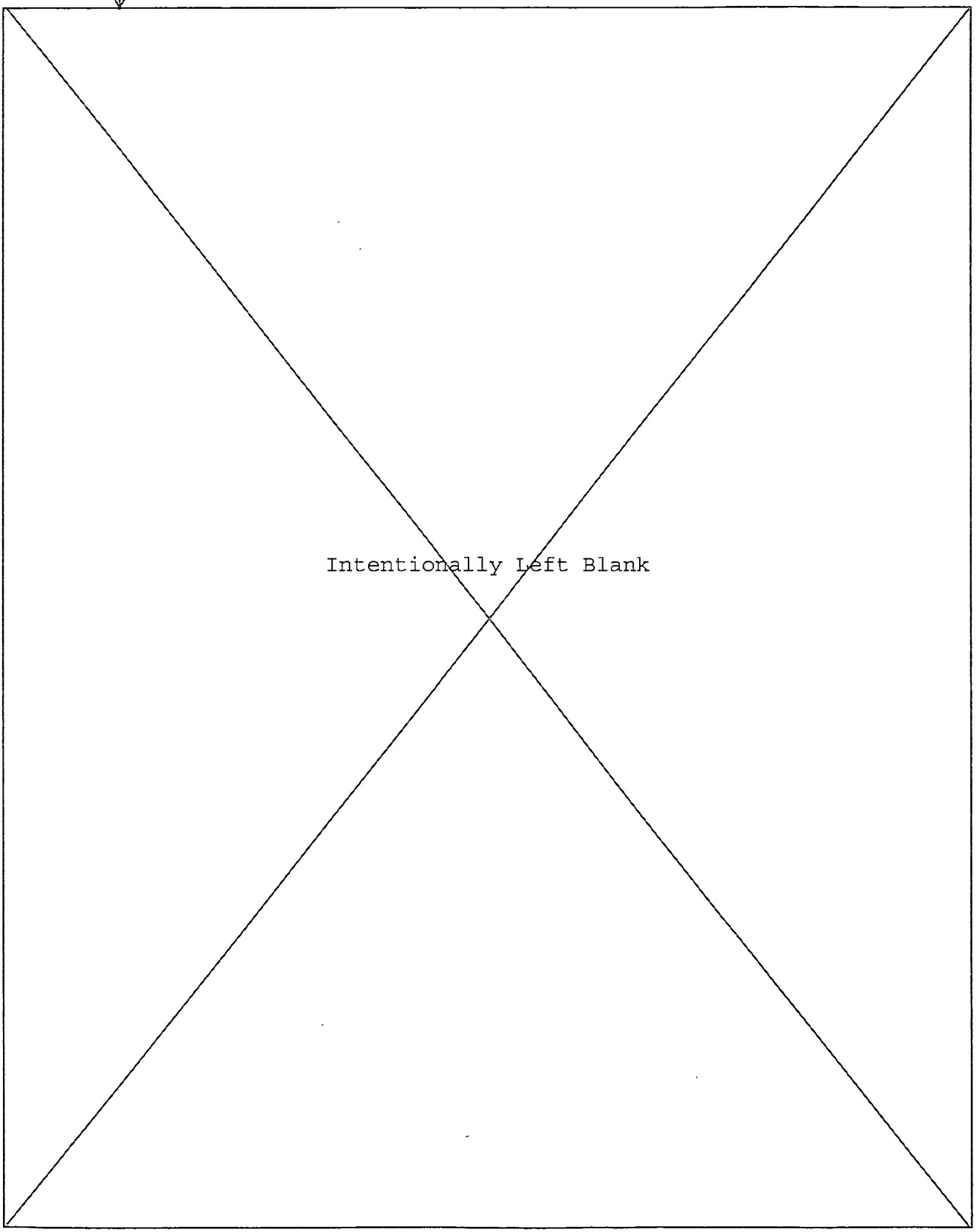

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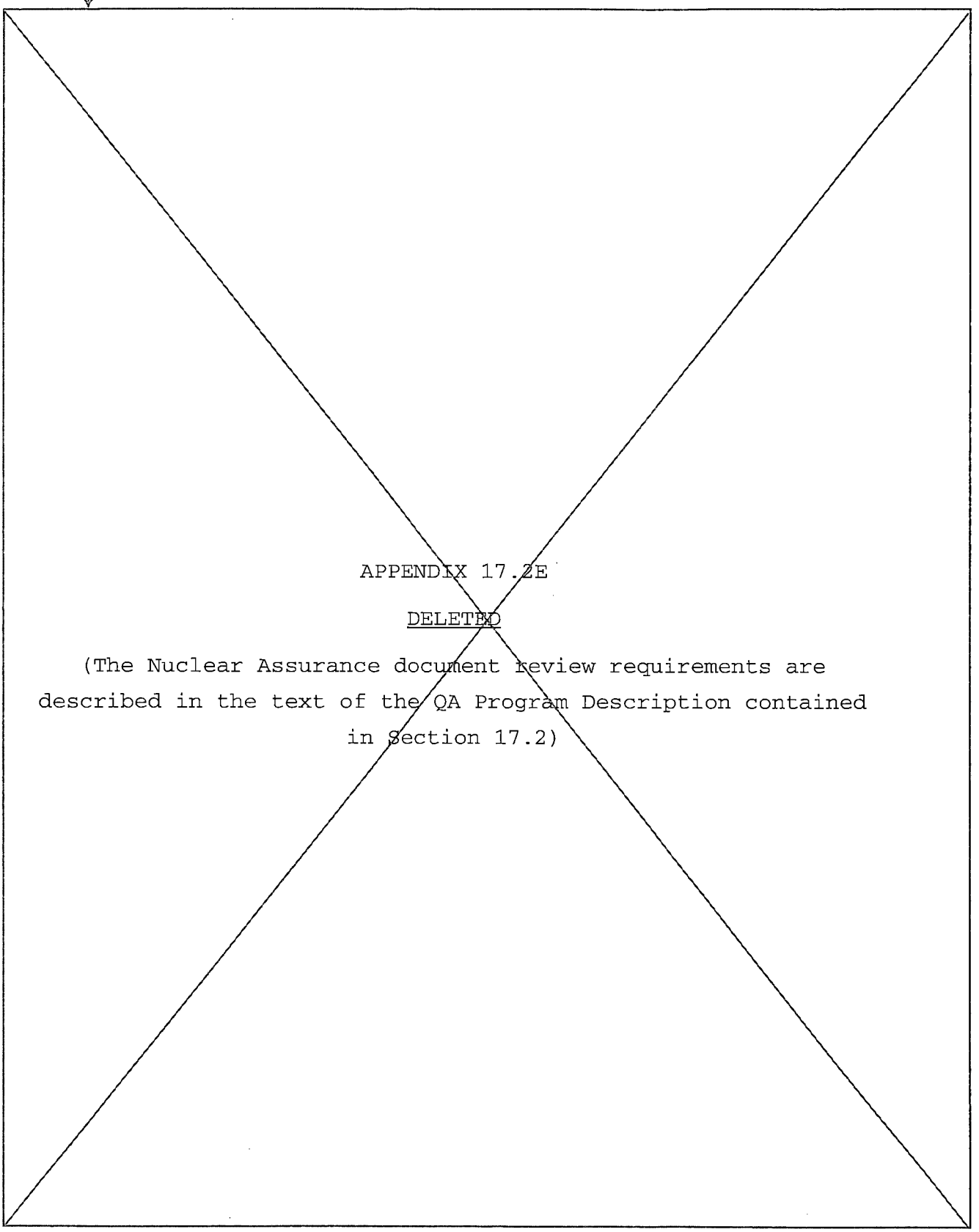

APPENDIX 17.2E

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(The Nuclear Assurance document review requirements are described in the text of the QA Program Description contained in Section 17.2)

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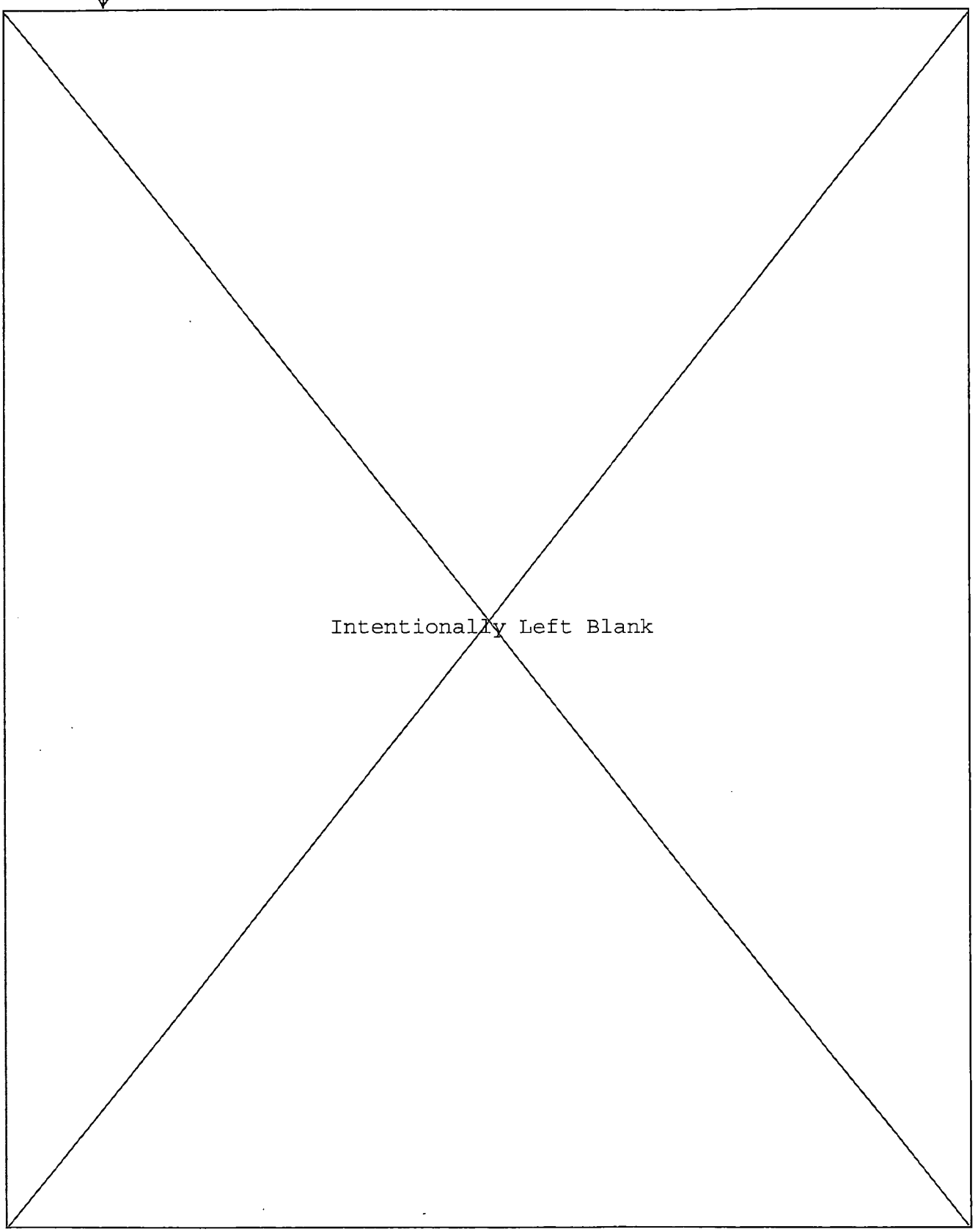

APPENDIX 17.2F
QUALITY AUGMENTED PROGRAMS

17.2F.1 QUALITY ASSURANCE FOR FIRE PROTECTION

17.2F.1.1 Scope

17.2F.1.1.1 This Appendix provides the Quality Assurance criteria for fire protection consistent with Branch Technical Position, APCSB 9.5-1, Appendix A, and the NRC Guidance Letter dated August 29, 1977, entitled "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance", Attachment 6 "Quality Assurance."

17.2F.1.1.2 Items and activities to which this Appendix applies are identified and classified in accordance with PVNGS Administrative Control procedures.

17.2F.1.1.3 This Appendix along with its implementing procedures comprise the PVNGS Fire Protection Quality Assurance Program.

17.2F.1.2 Purpose

The purpose of this Appendix is to ensure that the critical aspects of design, procurement, maintenance, and testing are applied to ensure that fire protection equipment is available and functional. The Quality Assurance requirements described herein are applied to the extent necessary to ensure that the safe shutdown capability of the plant is maintained and to minimize any radioactive release to the environment if a fire does occur.

17.2F.1.3 Requirements

17.2F.1.3.1 General

17.2F.1.3.1.1 The fire protection program shall include provisions for:

A. Conducting a fire hazards analysis and annual updates, as necessary, to evaluate the effect of a fire on nuclear safety. The analysis shall evaluate plant design, potential fire hazards in the plant, potential threat of these hazards in the plant, and the effect of postulated fires on the capability to safely shut down the plant and to minimize radioactive releases to the environment.

B. Establishing the organizational and administrative responsibilities for the program.

C. Training, which shall include fire drills, and qualification of Fire Department personnel.

D. General employee training on fire protection and prevention.

E. Controlling the use and storage of combustibles (such as wood and flammable gases and liquids) and ignition sources (such as welding, cutting, and open flame). Work activities shall be reviewed to identify potential fire hazards (including housekeeping), and precautions shall be taken to prevent the initiation and spread of fire.

F. Reporting of a fire, fire emergency procedures, and coordination of fire fighting activities with offsite fire departments.

G. Compensatory actions to be taken in the event that a fire protection system is out of service.

H. Conducting reportability evaluations of violations of the requirements of the fire protection program described in the UFSAR and the unit Operating Licenses which could have adversely affected the ability to achieve and maintain safe shutdown in the event of a fire.

17.2F.1.3.1.2 Those items associated with fire protection that are not part of the permanent plant (i.e., communications equipment, portable smoke ejectors, manual fire fighting equipment, etc.), shall be procured to an appropriate commercial quality standard. The activities associated with assuring that these items are functional and available for use shall be delineated in administrative control procedures and shall be classified as quality related.

17.2F.1.3.2 Quality Assurance

17.2F.1.3.2.1 The extent to which the requirements of this Appendix and its implementing documents are applied to an item or activity shall be based on a graded approach using the following criteria:

A. The effect of a malfunction or failure of the item on nuclear safety or safe plant operation.

B. The design and fabrication complexity or uniqueness of the item.

C. The need for special controls, surveillance or monitoring of processes, equipment, and operational activities.

D. The degree to which functionality can be demonstrated by inspection or test.

E. The quality history and degree of standardization of the item.

When the graded approach is utilized, the justification and basis for grading shall be documented and retrievable. Application of the graded approach shall be accomplished in accordance with procedures concurred with by the Nuclear Assurance organization. These procedures shall clearly identify how the justification and basis for grading shall be documented and maintained.

Grading of Plan requirements applicable to items shall be the responsibility of the Vice President, Nuclear Engineering.

Grading of Plan requirements applicable to activities shall be the responsibility of the organization responsible for performing the activity.

17.2F.1.3.2.2 Design Control and Procurement Document Control

Measures shall be established to assure that the applicable guidelines of Branch Technical Position APCSB 9.5-1 are included in design and procurement documents and that

deviations therefrom are controlled. These measures shall assure that:

A. Design and procurement document changes, including field changes and design deviations are subject to the same level of controls, reviews, and approvals that were applicable to the original document.

B. Quality standards are specified in the design documents such as appropriate fire protection codes and standards, and deviations and changes from these quality standards are controlled.

C. New designs and plant modifications, including fire protection systems, are reviewed by qualified personnel to assure inclusion of appropriate fire protection requirements. These reviews shall include items such as:

1. Design reviews to verify adequacy of wiring isolation and cable separation criteria.

2. Design reviews to verify appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers).

D. A review and concurrence of the adequacy of fire protection requirements and quality requirements stated in procurement documents are performed and documented by qualified personnel. This review shall determine that fire protection requirements and quality requirements are correctly stated, inspectable, and controllable; there are adequate

acceptance and rejection criteria; and the procurement document has been prepared, reviewed, and approved in accordance with QA program requirements.

17.2F.1.3.2.3 Instructions, procedures, and drawings

Inspections, tests, administrative controls, fire drills, and training that govern the fire protection program shall be prescribed by documented instructions, procedures, or drawings and shall be accomplished in accordance with these documents. The following provisions shall be included:

A. Indoctrination and training programs for fire prevention and fire fighting are implemented in accordance with documented procedures.

B. Activities such as design, installation, inspection, test, maintenance, and modification of fire protection systems are prescribed and accomplished in accordance with documented instructions, procedures, and drawings.

C. Instructions and procedures for design, installation, inspection, test, maintenance, modification, and administrative controls are reviewed to assure proper inclusion of fire protection requirements, such as precautions, control of ignition sources and combustibles, provisions for backup fire protection if the activity requires disabling a fire protection system, and restriction on material substitution unless specifically permitted by design and confirmed by design review.

D. The installation or application of penetration seals and fire retardant coatings is performed by trained personnel using approved procedures.

E. Instructions, procedures, and drawings shall be controlled to prevent the use of superseded information.

F. Reviews of fire protection procedures shall be performed as described in Section 17.2.4.3.1.3.

17.2F.1.3.2.4 Control of Purchased Material, Equipment, and Services

Measures shall be established to assure that purchased material, equipment, and services conform to the procurement documents. These measures shall include:

A. Provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor, inspections at suppliers, or receiving inspections.

B. Source or receiving inspection, as a minimum, for those items whose quality cannot be verified after installation.

17.2F.1.3.2.5 Inspection

A program for inspection of activities affecting fire protection shall be established by or for the organization performing the activity to verify conformance to documented installation drawings and test procedures for accomplishing activities. The program shall include:

A. Inspections of (1) installation, maintenance, modification, and tests of fire protection systems, and (2) emergency lighting and communication equipment to assure conformance to design and installation requirements.

B. Inspection of penetration seals and fire retardant coating installations to verify the activity is satisfactorily completed.

C. Inspections of cable routing to verify conformance with design requirements.

D. Inspection to verify that appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers) are accomplished during construction.

E. Measures to assure that inspection personnel are independent from the individuals performing the activity being inspected and are knowledgeable in the design and installation requirements for fire protection.

F. Inspection procedures, instructions, and checklists that provide for the following:

1. Identification of characteristics and activities to be inspected.

2. Identification of the individuals or groups responsible for performing the inspection operation.

3. Acceptance and rejection criteria.

4. A description of the method of inspection.

5. Recording evidence of completing and verifying a manufacturing, inspection or test operation.

6. Recording inspector or data recorder and the results of the inspection operation.

G. Periodic inspections of fire protection systems, emergency breathing and auxiliary equipment, emergency lighting, and communication equipment to assure the acceptable condition of these items.

H. Periodic inspection of materials subject to degradation such as fire stops, seals, and fire retardant coatings to assure that these items have not deteriorated or been damaged.

I. The identification of any required independent inspections to be performed by the Nuclear Assurance organization.

17.2F.1.3.2.6 Test and Test Control

A test program shall be established and implemented to ensure that testing is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. The tests shall be performed in accordance with written test procedures; test results shall be properly evaluated and acted upon. The test program shall include the following:

A. Installation testing - Following construction, modification, repair, or replacement, sufficient

testing shall be performed to demonstrate that fire protection systems, emergency lighting, and communication equipment will perform satisfactorily in service and that design criteria are met. Written test procedures for installation tests incorporate the requirements and acceptance limits contained in applicable design documents.

B. Periodic testing. The schedules and methods for periodic testing shall be developed and documented. Fire protection equipment, emergency lighting, and communication equipment are tested periodically to assure that the equipment will properly function and continue to meet the design criteria.

C. Provisions for the Nuclear Assurance organization to verify testing of fire protection systems and to verify that test personnel are effectively trained.

D. Test results are documented, evaluated, and their acceptability determined by a qualified responsible individual or group.

17.2F.1.3.2.7 Inspection, Test, and Operating Status

Measures shall be established to provide for the identification of items that have satisfactorily passed required tests and inspections. These measures shall include appropriate provisions for identification by means of tags, labels, or similar temporary markings to indicate completion of required inspections and tests, and operating status.

17.2F.1.3.2.8 Nonconforming Items

Measures shall be established to control items that do not conform to specified requirements to prevent inadvertent use or installation. These measures shall include provision to assure that:

A. Nonconforming, inoperative, or malfunctioning fire protection systems, emergency lighting, and communication equipment are appropriately tagged or labeled.

B. The identification, documentation, segregation, review disposition, and notification to the affected organization of nonconforming materials, parts, components, or services are procedurally controlled.

C. Documentation identifies the nonconforming item, describes the nonconformance and the disposition of the nonconforming item, and includes signature approval of the disposition.

D. Provisions are established identifying those individuals or groups delegated the responsibility and authority for the disposition and approval of nonconforming items.

17.2F.1.3.2.9 Corrective Action

Measures shall be established to ensure that conditions adverse to fire protection such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material, and nonconformances are promptly

identified, reported, and corrected. These measures shall assure:

A. Procedures are established for evaluation of conditions adverse to fire protection (such as nonconformance, failures, malfunctions, deficiencies, deviation, and defective material and equipment) to determine the necessary corrective action.

B. In the case of significant or repetitive condition adverse to fire protection, including fire incidents, the cause of the condition is determined and analyzed, and prompt corrective actions are taken to preclude recurrence. The cause of the condition and the corrective action taken are promptly reported to cognizant levels of management for review and assessment.

C. Conditions adverse to fire protection are periodically analyzed to detect trends which may not be apparent to a day-to-day observer.

17.2F.1.3.2.10 Records

Records shall be prepared and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the fire protection program. The following provision shall be included:

A. Records are identifiable and retrievable and shall demonstrate conformance to fire protection requirements. The records shall include results of inspection, tests, reviews, and audits;

nonconformance and corrective action reports; construction, maintenance, and modification records; and certified manufacturer's data.

B. Record retention requirements are established.

17.2F.1.3.2.11 Audits

17.2F.1.3.2.11.1 Audits shall be conducted and documented to verify compliance with the fire protection program, including design and procurement documents, instruction, procedures, drawings, and inspection and test activities. These audits are performed by Nuclear Assurance personnel in accordance with pre-established written procedures or check lists and conducted by trained personnel not having direct responsibilities in the area being audited.

17.2F.1.3.2.11.2 Audit results are documented and reviewed with management having responsibility in the area audited.

17.2F.1.3.2.11.3 Followup action is taken by responsible management to correct deficiencies revealed by the audit.

17.2F.1.3.2.11.4 Audits are performed to provide an overall assessment of conformance to fire protection requirements.

17.2F.1.4 Responsibilities

17.2F.1.4.1 The Vice President, Operations Support, is responsible for implementing and maintaining in effect all provisions of the approved fire protection program for PVNGS, as required by the Operating Licenses.

17.2F.1.4.2 The Vice President, Nuclear Engineering, is responsible for establishing all technical and quality classification requirements for the engineering and design of fire protection structures, systems, and components, including changes and modifications thereto.

17.2F.1.4.3 The Director, Nuclear Assurance, is responsible for:

17.2F.1.4.3.1 Performing independent inspection, when required.

17.2F.1.4.3.2 Performing an audit of the Fire Protection Program and implementing procedures at frequencies specified in 13.4.5.

17.2F.1.4.3.3 Reviewing Fire Protection procedures as described in Section 17.2.4.3.1.3.

17.2F.1.4.3.4 Resolving disputes on matters concerning the quality classification of activities.

17.2F.1.4.3.5 Performing periodic monitoring to ensure that the requirements of this Appendix are properly implemented.

17.2F.1.4.4 PVNGS Leaders are responsible for assisting in the implementation of the fire protection program as specified by administrative controls and implementing procedures.

17.2F.1.4.5 The Director, Performance Improvement, is responsible for the establishment of programs for the reporting, correction, and trend analysis of conditions adverse to fire protection.

17.2F.2 QUALITY ASSURANCE FOR RADWASTE MANAGEMENT

17.2F.2.1 Scope

17.2F.2.1.1 This Appendix provides the Quality Assurance criteria for those Radwaste Systems within the scope of Regulatory Guide 1.143," Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants."

17.2F.2.1.2 Items and activities to which this Appendix applies are identified and classified in accordance with PVNGS Administrative Control Procedures.

17.2F.2.2 Purpose

The purpose of this Appendix is to provide criteria that will furnish reasonable assurance that components and structures used in the radioactive waste management and steam generator blowdown systems are designed, constructed, installed, and tested to a level commensurate with the need to protect the health and safety of the public and plant operating personnel.

17.2F.2.3 Requirements

17.2F.2.3.1 General

17.2F.2.3.1.1 Since the impact of these systems on safety is limited, a quality assurance program corresponding to the full extent of Appendix B to 10CFR Part 50 is not required. However, to ensure that systems will perform their intended function, a quality assurance program sufficient to ensure that all design, construction, and testing provisions are met shall be established and documented.

17.2F.2.3.1.2 The design, procurement, fabrication, and construction activities shall conform to the quality assurance provisions of the codes and standards referenced in Regulatory Guide 1.143.

17.2F.2.3.1.3 Where not covered by the referenced codes and standards, the quality assurance features of this Appendix shall be established.

17.2F.2.3.2 Quality Assurance

The extent to which the requirements of this Appendix and its implementing documents are applied to an item or activity shall be based on a graded approach using the following criteria:

A. The effect of a malfunction or failure of the item on nuclear safety or safe plant operation.

B. The design and fabrication complexity or uniqueness of the item.

C. The need for special controls, surveillance or monitoring of processes, equipment, and operational activities.

D. The degree to which functionality can be demonstrated by inspection or test.

E. The quality history and degree of standardization of the item.

When the graded approach is utilized, the justification and basis for grading shall be documented and retrievable. Application of the graded approach shall be accomplished in accordance with procedures concurred with by the Nuclear Assurance organization. These procedures shall clearly identify how the justification and basis for grading shall be documented and maintained.

Grading of Plan requirements applicable to items shall be the responsibility of the Vice President, Nuclear Engineering.

Grading of Plan requirements applicable to activities shall be the responsibility of the organization responsible for performing the activity.

17.2F.2.3.3 Design and Procurement

17.2F.2.3.3.1 Design and procurement documents shall be independently verified for conformance to the requirements of Regulatory Guide 1.143 and this Appendix by individual(s) within the design organization who are not the originators of the documents. Changes to these documents shall be verified or controlled to maintain conformance to this Appendix.

17.2F.2.3.3.2 Measures to ensure suppliers of material, equipment, and construction services are capable of supplying these items to the quality specified in the procurement documents shall be established. This may be done by an evaluation or a survey of the suppliers' products and facilities.

17.2F.2.3.3.3 Instructions shall be provided in procurement documents to control the handling, storage, shipping, and preservation of material and equipment to prevent damage, deterioration, or reduction in the level of cleanliness.

17.2F.2.3.4 Inspection

In addition to required code inspections, a program for inspection of activities affecting quality shall be established and executed by, or for, the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity. This shall include the visual inspection of components prior to installation for conformance with procurement documents and the visual inspection of items and systems following installation, cleanness, and passivation (where applied).

17.2F.2.3.5 Inspection Test and Operating Status

Measures shall be established to provide for the identification of items which have satisfactorily passed required inspections and test.

17.2F.2.3.6 Corrective Action

Measures shall be established to identify items of nonconformance with regard to the requirements of procurement documents or applicable codes and standards and to identify the action taken to correct such items.

17.2F.2.3.7 Records

Sufficient records shall be maintained to furnish evidence that the measures identified herein are being implemented. The records shall include results of reviews and inspections and shall be identifiable and retrievable.

17.2F.2.4 Responsibilities

17.2F.2.4.1 The Radiation Protection Manager is responsible for implementing and maintaining in effect all provisions of the Radwaste Management Program for PVNGS, as required by the Operating Licenses.

17.2F.2.4.2 The Vice President, Nuclear Engineering, is responsible for establishing all technical and quality classification requirements for the engineering and design of the Radwaste structures and components, including changes and modifications.

17.2F.2.4.3 The Director, Nuclear Assurance, is responsible for:

17.2F.2.4.3.1 Performing independent inspections, when required.

17.2F.2.4.3.2 Reviewing Radwaste Management procedures as described in Section 17.2.4.3.1.3.

17.2F.2.4.3.3 Resolving matters of dispute with regard to the quality classification of activities.

17.2F.2.4.3.4 Performing periodic monitoring to ensure that the requirements of this Appendix are properly met.

17.2F.2.4.4 PVNGS Leaders are responsible for assisting in the implementation of the Radwaste Management Program as specified by the administrative control and implementing procedures.

17.2F.2.4.5 The Director, Performance Improvement, is responsible for the establishment of programs for the reporting, correction, and trend analysis of conditions adverse to quality related to radwaste management.

17.2F.3 QUALITY ASSURANCE FOR SECURITY

17.2F.3.1 Scope

17.2F.3.1.1 This Appendix provides the Quality Assurance requirements applicable to the PVNGS Security Program.

17.2F.3.1.2 Activities to which this Appendix applies are identified and classified in accordance with PVNGS Administrative Control Procedures.

17.2F.3.1.3 This Appendix, along with its implementing procedures, comprise the PVNGS Quality Assurance Program for security.

17.2F.3.2 Purpose

The purpose of this Appendix is to ensure that the requirements of 10CFR73, "Physical Protection of Plants and Materials," and the applicable Regulatory Guidance are appropriately applied to protect PVNGS from acts of industrial sabotage that could lead to a threat to the health and safety of the public.

17.2F.3.3 Requirements

17.2F.3.3.1 General

The security program is described further in section 13.6.2, "Security Plan".

17.2F.3.3.1.1 The security program for PVNGS shall provide for and maintain:

A. The maintenance of the physical security plan submitted in accordance with 10CFR50.34(c) and 10CFR73.55.

B. The maintenance of the training and qualification plan submitted in support of the physical security plan, as required by 10CFR73, Appendix B, "General Criteria for Security Personnel."

C. The maintenance of the safeguards contingency plan submitted in support of the physical security plan, as required by 10CFR50.34(d), "Safeguards Contingency

Plan," and 10CFR73, Appendix C, "Licensee Safeguards Contingency Plans."

17.2F.3.3.1.2 Changes to the physical security plan, the training and qualification plan, and the safeguards contingency plan for PVNGS shall be either pre-approved or subsequently accepted for inclusion in the plan(s) by the NRC, where necessary.

17.2F.3.3.1.3 Safeguards Information shall be protected against unauthorized disclosure in accordance with 10CFR73.21, and shall be restricted to authorized personnel with an established need-to-know.

17.2F.3.3.1.4 Security training, operational activities, and contingency measures shall be completed in accordance with the plans described in 17.2F.3.3.1.1.

17.2F.3.3.1.5 Reporting of physical security events shall be accomplished in accordance with 10CFR73.71.

17.2F.3.3.2 Quality Assurance

17.2F.3.3.2.1 Instructions, Procedures, and Drawings

Instructions, procedures, and drawings for implementing the security program shall be prepared, processed, and controlled in accordance with PVNGS Administrative Control Procedures.

17.2F.3.3.2.2 Reviews

A review of the security and safeguards contingency programs shall be performed at least once every 24 months using the performance-based option permitted by 10CFR73, Appendix C, 10CFR73.55(g)(4), and 10CFR50.54(p)(3&4), or more frequently when necessary to meet these regulations. Deficiencies identified during reviews of the security program shall be documented, reviewed by management, and evaluated for trends.

17.2F.3.3.2.3 Corrective Actions

Security Program deficiencies shall be identified and controlled in accordance with PVNGS Administrative Control Procedures.

17.2F.3.3.2.4 Records

Records generated during the development and implementation of the security program shall be processed and maintained in accordance with Section 17.2.6 of this QA Plan.

17.2F.3.4 Responsibilities

17.2F.3.4.1 The Director, Nuclear Security Division, is responsible for implementing and maintaining in effect all provisions of the approved security program for PVNGS, as required by the Operating Licenses.

17.2F.3.4.2 The Director, Nuclear Assurance, is responsible for:

A. Performing an audit of the PVNGS security program at frequencies specified in 13.4.5.

B. Performing periodic monitoring to ensure that the requirements of this Appendix are properly implemented.

C. Deleted

D. Reviewing Security Program Procedures as described in Section 17.2.4.3.1.3.

E. Resolving disputes on matters concerning the quality classification of security activities.

17.2F.3.4.3 PVNGS Leaders are responsible for assisting in the implementation of the security program as specified by administrative control and implementing procedures.

17.2F.3.4.4 The Director, Performance Improvement, is responsible for the establishment of programs for the reporting, correction, and trend analysis of conditions adverse to quality related to security.

17.2F.4 QUALITY ASSURANCE FOR EMERGENCY PLANS AND EQUIPMENT

17.2F.4.1 Scope

17.2F.4.1.1 This Appendix provides the Quality Assurance requirements applicable to the PVNGS Emergency Plan and associated equipment.

17.2F.4.1.2 Items and activities to which this Appendix applies are identified and classified in accordance with PVNGS Administrative Control Procedures.

17.2F.4.1.3 This Appendix, along with its implementing procedures, comprise the PVNGS Quality Assurance Program for Emergency Planning.

17.2F.4.2 Purpose

The purpose of this Appendix is to ensure that the requirements of 10CFR50.47, "Emergency Plans" and 10CFR50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities" and the applicable Regulatory Guidance are appropriately applied to provide assurance that adequate protective measures are taken in the event of a radiological emergency.

17.2F.4.3 Requirements

17.2F.4.3.1 General

The PVNGS Emergency Plan shall:

A. Establish plans for coping with emergencies.

B. Describe organizations and include responsibilities and duties.

C. Establish means for determining magnitude of and continually assessing the release of radioactive material, including emergency action levels.

D. Establish provisions for prompt communication among principal response organizations, emergency personnel, and the public.

E. Describe administrative and physical means for notifying local, state, and federal agencies and emergency personnel.

F. Establish and describe emergency facilities and equipment.

G. Establish a program to provide for training of employees.

H. Require periodic drills and provide for formal critiques of drills.

I. Provide for independent review of the emergency preparedness program.

J. Identify and evaluate events which may arise during operation.

K. Provide direction of activities to limit consequences of an accident.

L. Provide for a general approach to recovery.

M. Require periodic testing of communication systems.

17.2F.4.3.2 Quality Assurance

Plans, procedures, and instructions shall be prepared, processed, and controlled in accordance with PVNGS Administrative Control Procedures.

Measuring and test equipment utilized in implementing the Emergency Plan shall be calibrated against standards which are traceable to National Institute of Standards and Technology or other nationally recognized standards. In cases where no such standard exists, standards should be derived or developed.

Equipment, components, and supplies that are utilized in implementing the Emergency Plan shall be inspected at least quarterly. Equipment and components shall be maintained and tested in accordance with approved written procedures. Deficiencies shall be documented and corrected.

Deficiencies noted during drills and exercises shall be incorporated in action items. Follow-up shall be performed to ensure that deficiencies are corrected.

Independent audit of the Emergency Program (including the Emergency Plan) shall be performed.

Records, including training records, generated during the development and implementation of the Emergency Plan shall be identified and their retention requirements shall be specified.

17.2F.4.4 Responsibilities

17.2F.4.4.1 The Vice President, Operations Support, is responsible for implementing and maintaining in effect all provisions of the Emergency Plan for PVNGS.

17.2F.4.4.2 The Director, Nuclear Assurance, is responsible for:

A. Performing audits of the PVNGS Emergency Plan.

B. Performing periodic monitoring to ensure that the requirements of this Appendix are properly implemented.

C. Resolving disputes on matters concerning the quality classification of Emergency Plan activities.

17.2F.4.4.3 PVNGS Leaders are responsible for assisting in the implementation of the Emergency Plan as specified by administrative control and implementing procedures.

17.2F.5 QUALITY ASSURANCE FOR SEISMIC CATEGORY IX

17.2F.5.1 Scope

17.2F.5.1.1 This Appendix provides the Quality Assurance criteria for items that do not perform a safety related function but whose structural failure and collapse during a safe shutdown earthquake could reduce the functioning of safety related equipment or systems.

17.2F.5.1.2 Items and activities to which this Appendix applies are identified and classified in accordance with PVNGS Administrative Control Procedures.

17.2F.5.2 Purpose

The purpose of this Appendix is to ensure that seismic category IX items are designed and installed such that a safe shutdown earthquake will not cause their structural failure and collapse or cause the generation of missiles that could reduce the functioning of safety related structures, systems, and components.

17.2F.5.3 Requirements

17.2F.5.3.1 General

The quality augmented program applied to seismic category IX structures, systems, and components is primarily intended to provide design and configuration control.

The primary focus of this quality augmented program is component supports and support elements. It also must be applied to supported components to the extent that the support is an integral part of the supported component.

This quality augmented program is not intended to encompass structures, systems, and components whose failure could reduce the functioning of safety related equipment through leakage, spray, or impingement effects.

17.2F.5.3.2 Quality Assurance

17.2F.5.3.2.1 The extent to which the requirements of this Appendix and its implementing documents are applied to an item or activity shall be based on a graded approach using the following criteria:

A. The effect of a malfunction or failure of the item on nuclear safety or safe plant operation.

B. The design and fabrication complexity or uniqueness of the item.

C. The need for special controls, surveillance or monitoring of processes, equipment, and operational activities.

D. The degree to which functionality can be demonstrated by inspection or test.

E. The quality history and degree of standardization of the item.

When the graded approach is utilized, the justification and basis for grading shall be documented and retrievable. Application of the graded approach shall be accomplished in accordance with procedures concurred with by the Nuclear Assurance organization. These procedures shall clearly identify how the justification and basis for grading shall be documented and maintained.

Grading of Plan requirements applicable to items shall be the responsibility of the Vice President, Nuclear Engineering.

Grading of Plan requirements applicable to activities shall be the responsibility of the organization responsible for performing the activity.

17.2F.5.3.2.2 Design Control

The organizational structure and responsibilities of personnel involved in preparing, reviewing, approving, and verifying design documents shall be defined.

Internal and external design interface controls, procedures, and lines of communication among participating design organizations and across technical disciplines shall be established and described for the preparation, review, approval, release, distribution, and revision of design documents.

Vendor designed components shall be evaluated by Engineering to the extent necessary to assure that they are compatible with approved support design parameters.

A. Components or parts containing integral support elements (e.g., a built-in mounting bracket on an instrument) shall be analyzed by Engineering to ensure that the support element is adequate to withstand a safe shutdown earthquake without loss of structural integrity.

B. Vendor designed equipment shall be documented on approved drawings that are sufficiently detailed for the performance of configuration inspections.

Conditions adverse to quality in approved design documents, including design methods (such as computer software) that could adversely affect items within the scope of this Appendix shall be identified, documented, and corrected. An evaluation of the effect of such conditions adverse to quality on installed hardware shall be performed. Significant conditions adverse to quality shall be promptly identified, evaluated for reportability, and corrected. The cause of significant conditions adverse to quality shall be determined and appropriate action taken to prevent recurrence.

Design verification methods shall be established consistent with the commitment to Regulatory Guide 1.64 (including clarifications and exceptions) contained in Appendix 17.2B of this Plan.

17.2F.5.3.2.3 Instructions, Procedures, and Drawings

Activities critical to the structural integrity of seismic category IX systems, structures, and components shall be accomplished in accordance with documented procedures, instructions, and/or drawings of a type appropriate to the circumstances. These procedures, instructions, and drawings shall, as appropriate, be clearly identified as "quality related." (Since procedure compliance is required by 17.2.2.2.2 of this plan, regardless of quality classification, identification of procedures as "Quality Related" is not required).

17.2F.5.3.2.4 Control of Special Process

Special processes subject to the controls mandated by this Appendix are welding, brazing, and nondestructive examination which, if performed incorrectly, could have a detrimental effect on the structural integrity of seismic category IX structures, systems, or components.

Measures shall be established to assure that special processes are accomplished under controlled conditions in accordance with applicable codes, standards, applications criteria, and other requirements, including the use of qualified personnel and procedures.

Qualification records of personnel, equipment, and procedures associated with special processes shall be established and maintained to the extent required by applicable codes and standards.

17.2F.5.3.2.5 Control of Measuring and Test Equipment (M&TE)

Measures shall be established to assure that tools, gauges, instruments and other measuring and testing devices used in activities affecting the structural integrity of seismic category IX structures, systems, and components are properly controlled and calibrated or adjusted at specified intervals to maintain accuracy with specified limits.

Measures shall be established for determining the validity of previous inspections or tests performed when the measuring and test equipment is found to be out of calibration. Such determination is to be documented in suitable form. If any calibration, testing or measuring device is consistently found to be out of calibration, it shall be repaired or replaced.

Some measuring tools, because of their construction or because they are not adjustable (such as rulers) may not require periodic calibration. However, they shall be maintained in good working condition.

17.2F.5.3.2.6 Inspections

A program of inspection shall be established by or for the organization performing maintenance and modification activities that could affect the structural integrity of seismic category IX structures, systems, and components.

The inspection program associated with the installation of seismic IX components shall include verification of general configuration of vendor and APS designed components and support elements.

Measures shall be established to assure that inspection personnel are independent from the individuals performing the activity being inspected and are knowledgeable in the design and installation requirements for seismic category IX structures, systems, and components.

17.2F.5.3.2.7 Control of Conditions Adverse to Quality and Corrective Action

Measures shall be established for controlling items that do not conform to specified requirements to prevent inadvertent use or installation.

Measures shall be established to ensure that conditions adverse to quality are promptly identified, documented and corrected. Significant conditions adverse to quality shall be promptly identified, evaluated for reportability, and corrected. The cause of significant conditions adverse to quality shall be determined and appropriate action taken to prevent recurrence.

17.2F.5.3.2.8 Control of Documents and Records

Measures shall be established for the control and generation of documents and records associated with activities critical to the structural integrity of seismic category IX structures, systems, and components.

These measures shall control the issuance of documents such as program documents, design documents, and work instructions that prescribe the performance of activities critical to the structural integrity of seismic category IX structures, systems, and components.

These measures shall require that records are prepared and maintained to furnish objective evidence that the criteria enumerated above are being met for activities affecting the structural integrity of seismic category IX structure, systems, and components.

17.2F.5.4 Responsibilities

17.2F.5.4.1 The Vice President, Nuclear Engineering, is responsible for:

A. Establishing all technical and quality classification requirements for the engineering and design of seismic category IX structures, systems, and components.

B. Identifying attributes requiring inspection.

17.2F.5.4.2 The Director, Nuclear Assurance, is responsible for:

A. Performing independent inspections, when required.

B. Reviewing procedures associated with the implementation of this Appendix as described in Section 17.2.4.3.1.3.

C. Resolving matters of dispute with regard to the quality classification of activities.

D. Performing periodic monitorings to ensure that the requirements of this Appendix are properly met.

17.2F.5.4.3 PVNGS Leaders are responsible for assisting in the implementation of the seismic category IX program as specified by the administrative control and implementing procedures.

17.2F.5.4.4 The Director, Performance Improvement, is responsible for the establishment of programs for the reporting, correction, and trend analysis of conditions adverse to quality related to Seismic IX structures, systems, and components programs.

17.2F.6 QUALITY ASSURANCE FOR STATION BLACKOUT COPING EQUIPMENT

17.2F.6.1 Scope

17.2F.6.1.1 This Appendix provides the Quality Assurance requirements applicable to other non-safety related station blackout coping equipment used to meet the requirements of 10CFR50.63 and not already covered by existing QA requirements in 10CFR50 Appendix B or R.

17.2F.6.1.2 Items and activities to which this Appendix applies are identified and classified in accordance with PVNGS Administrative Control procedures.

17.2F.6.1.3 This Appendix along with its implementing procedures comprise the PVNGS Quality Assurance Program for non-safety related station blackout coping equipment.

17.2F.6.2 Purpose

The purpose of this Appendix is to ensure that the quality assurance requirements of Regulatory Guide 1.155 (August 1988), Appendix A, are appropriately applied to ensure compliance with the station blackout rule.

17.2F.6.3 Requirements

17.2F.6.3.1 General

17.2F.6.3.1.1 Since the impact of this system on safety is limited, a quality assurance program corresponding to the full extent of Appendix B to 10CFR Part 50 is not required. However, to ensure that the system will perform as intended, programs sufficient to ensure the application of the quality assurance provisions of Regulatory Guide 1.155 shall be established and documented.

17.2F.6.3.1.2 Equipment installed to meet the station blackout rule shall be implemented such that it does not degrade existing safety-related systems. This shall be accomplished by making the non-safety related equipment as independent as practicable from existing safety-related systems.

17.2F.6.3.2 Quality Assurance

17.2F.6.3.2.1 The extent to which the requirements of this Appendix and its implementing documents are applied to an item or activity shall be based on a graded approach, consistent with Regulatory Guide 1.155 requirements, using the following criteria:

A. The effect of a malfunction or failure of the item on nuclear safety or safe plant operation.

B. The design and fabrication complexity or uniqueness of the item.

C. The need for special controls, surveillance or monitoring of processes, equipment, and operational activities.

D. The degree to which functionality can be demonstrated by inspection or test.

E. The quality history and degree of standardization of the item.

When the graded approach is utilized, the justification and basis for grading shall be documented and retrievable. Application of the graded approach shall be accomplished in accordance with procedures concurred with by the Nuclear Assurance organization. These procedures shall clearly identify how the justification and basis for grading shall be documented and maintained.

Grading of Plan requirements applicable to items shall be the responsibility of the Vice President, Nuclear Engineering.

Grading of Plan requirements applicable to activities shall be the responsibility of the organization responsible for performing the activity.

17.2F.6.3.2.2 Design Control and Procurement Document Control

Measures shall be established to ensure that all design-related guidelines used in complying with 10CFR50.63 are included in design and procurement documents, and that deviations therefrom are controlled.

17.2F.6.3.2.3 Instructions, Procedures, and Drawings

Inspections, tests, administrative controls, and training necessary for compliance with 10CFR50.63 shall be prescribed by documented instructions, procedures, and drawings and shall be accomplished in accordance with these documents. Document control measures shall be applied to assure that activities are completed in accordance with the latest approved revisions of these documents.

17.2F.6.3.2.4 Control of Purchased Material, Equipment, and Services

Measures shall be established to ensure that purchased material, equipment, and services conform to the procurement documents.

17.2F.6.3.2.5 Inspection

A program for verification/inspection of activities affecting station blackout coping equipment shall be established by or for the organization performing the activity to verify

conformance with documented installation drawings and test procedures for accomplishing the activities.

17.2F.6.3.2.6 Testing and Test Control

A test program shall be established and implemented to ensure that testing is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. Tests shall be performed in accordance with written test procedures; test results shall be properly evaluated and acted upon.

17.2F.6.3.2.7 Inspection, Test, and Operating Status

Measures shall be established to identify items that have satisfactorily passed required tests and inspections.

17.2F.6.3.2.8 Nonconforming Items

Measures shall be established to control items that do not conform to specified requirements to prevent inadvertent use or installation.

17.2F.6.3.2.9 Corrective Action

Measures shall be established to ensure that failures, malfunctions, deficiencies, deviations, defective components, and nonconformances are promptly identified, reported, and corrected.

17.2F.6.3.2.10 Records

Records shall be prepared and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the station blackout coping equipment.

17.2F.6.3.2.11 Audits

Audits shall be conducted and documented to verify compliance with design and procurement documents, instructions, procedures, drawings, and inspection and test activities developed to comply with 10CFR50.63. These audits are performed by Nuclear Assurance personnel in accordance with pre-established written procedures or check lists and conducted by trained personnel having no direct responsibilities in the area being audited.

17.2F.6.4 Responsibilities

17.2F.6.4.1 The Vice President, Nuclear Engineering, is responsible for establishing all technical and quality classification requirements for the engineering and design for the station blackout coping equipment, including changes and modifications thereto.

17.2F.6.4.2 PVNGS Leaders are responsible for assisting in the implementation of the station blackout coping equipment program as specified by administrative controls and implementing procedures.

17.2F.6.4.3 The Director, Nuclear Assurance, is responsible for performing audits and periodic monitoring to verify compliance with the requirements of this Appendix.

APPENDIX 17.2G

CONTROL OF COMPUTER SOFTWARE AND DATA

17.2G.1 GENERAL

Measures shall be established utilizing the graded approach to ensure that the requirements for procurement, installation, design, testing, modification, and use of software and computer databases are commensurate with their importance to safety.

17.2G.2 PROGRAM REQUIREMENTS

17.2G.2.1 The computer software development process, documentation requirements, and qualification and approval requirements shall be established.

17.2G.2.2 Methods shall be established and implemented to control the procurement of computer software.

17.2G.2.3 Methods shall be established and implemented to document, evaluate, and correct errors and deficiencies in computer software. Their impact on past and present design activities shall be evaluated.

17.2G.2.4 Methods shall be established and implemented for the control of changes to approved computer software.

17.2G.2.5 Methods shall be established for the installation, use, modification, and distribution of computer software and associated documentation in accordance with Section 17.2.6.3 of this Plan.

17.2G.2.6 Methods shall be established for the maintenance and retention of computer software and associated documentation in accordance with Section 17.2.6.4 of this Plan.

17.2G.2.7 Prior to utilization, computer software shall be qualified in accordance with approved procedures, or by administrative controls that require verification of output prior to use.

17.2G.2.8 Controls shall be established to verify the accuracy and integrity of data input into computer databases.

17.2G.3 APPLICABILITY

17.2G.3.1 The requirements of this Appendix apply to computer software and relevant data not specifically classified as a plant system, structure, or component in accordance with Section 17.2.2.8 of this Plan.

17.2G.3.2 The requirements of this Appendix apply to computer software that is used to:

A. Generate design output which defines or prescribes activities affecting safety related functions or equipment.

B. Directly interface with control room personnel and is used by them to make decisions affecting:

1. The integrity of the reactor coolant pressure boundary.

2. The capability to shut down the reactor and maintain it in a safe condition.

3. The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10CFR100 guidelines.

C. Perform calculations which result in acceptance of inspection or test data for quality related equipment.

D. Design or aid in the design of quality related structures, systems, or components including physics, seismic, stress, thermal, hydraulic, radiation, and accident analysis.

17.2G.3.3 The requirements of this appendix also apply to computer databases that are used without further verification to maintain or control descriptive information for output used in design, operation, maintenance, test, inspection or procurement of quality related items.

17.2G.4 RESPONSIBILITIES

17.2G.4.1 The Vice President, Operations Support, is responsible for the development of non-process computer software and data controls in accordance with the requirements of this Plan.

17.2G.4.2 The Director, Plant Engineering, is responsible for the development of process computer software and data controls.

17.2G.4.3 The Director, Nuclear Assurance, is responsible for performing Quality Assurance verifications in accordance with Section 17.2.4 of this Plan.

18.I.B OVERALL ORGANIZATION

18.I.B.1.2INDEPENDENT SAFETY ENGINEERING GROUP

NRC Position

Each applicant for an operating license shall establish an onsite independent safety engineering group (ISEG) to perform independent reviews of plant operations.

The principal function of the ISEG is to examine plant operating characteristics, NRC issuances, licensing information service advisories, and other appropriate sources of plant design and operating experience information that may indicate areas for improving plant safety. The ISEG is to perform independent review and audits of plant activities, including maintenance, modifications, operational problems, and operational analysis, and aid in the establishment of programmatic requirements for plant activities. Where useful improvements can be achieved, it is expected that this group will develop and present detailed recommendations to corporate management for such things as revised procedures or equipment modifications.

Another function of the ISEG is to maintain surveillance of plant operations and maintenance activities to provide independent verification that these activities are performed correctly and that human errors are reduced as far as practicable. The ISEG will then be in a position to advise utility management on the overall quality and safety of operations. The ISEG need not perform detailed audits of plant operations and shall not be responsible for sign-off functions such that it becomes involved in the operating organization.

PVNGS Evaluation

~~In response to the recommendations of NUREG-0737, Independent Safety Engineering (ISE) at PVNGS was established onsite to perform independent reviews of plant operations. The principal function of ISE was to examine plant operating characteristics, NRC issuances, industry advisories, licensee event reports, and other sources of plant design and operating experience information, including plants of similar design which may indicate areas for improving plant safety.~~

~~The Director, Nuclear Assurance, is responsible for performance of the Independent Safety Review function for PVNGS and as such is also responsible for maintaining a qualified staff with a broad range of independent review and assessment capabilities. The Nuclear Assurance staff shall include personnel with engineering and operational expertise in sufficient numbers to perform the independent safety review function. Personnel performing independent safety reviews are outside of the line of responsibility for power production and independent of the day-to-day plant operating responsibilities.~~

~~Detailed requirements for implementation of the independent safety review function are contained in section 13.4.4.~~

The program and related procedures for review of operating experience described at UFSAR 18.I.C.5 are the primary method used at PVNGS to review and act upon internal and external operating experience.

To augment the program and related procedures described at 18.I.C.5, the Director, Nuclear Assurance, is responsible to monitor and assess operational activities to provide assurance that activities important to safety are performed satisfactorily. Specific functions of the Nuclear Assurance staff are described in the Operations Quality Assurance Program Description (QAPD).

ATTACHMENT 4

Comparison of Existing NRC Regulatory Guide Commitments to New NRC Regulatory Guide Commitments Adopted in the proposed QAPD

(6 Pages Follow)

ATTACHMENT 4

Comparison of Existing NRC Regulatory Guide Commitments to New NRC Regulatory Guide Commitments Aadopted in the proposed QAPD

Current Regulatory Guide Commitment	Standard	Proposed Regulatory Guide Commitment	Standard	Basis
1.8 (R1-R, May 1977), Personnel Selection and Training	ANSI/ANS 3.1-1978	1.8 (R1-R, May 1977), Personnel Selection and Training [Modified]	ANSI/ANS 3.1-1978	PVNGS will maintain existing commitment to Regulatory Guide 1.8 consistent with the Units 1, 2, and 3 Technical Specifications with the exception of qualifications for the independent QA organization management personnel described in NEI 11-04A, Part II, Section 2.6.
1.21 (R1, June 1974), Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants	N/A	[NO CHANGE]	N/A	PVNGS will maintain existing commitment to Regulatory Guide 1.21as described in UFSAR 1.8. The reference to RG 1.21 in the current PVNGS QA Program UFSAR 17.2 was intended to identify that QA program elements discussed in Regulatory Guide 1.21 are independently audited by the PVNGS Nuclear Assurance organization.
1.26 (R1, September 1974), Quality Group Classifications and Standards for Water-, Steam- and Radioactive-Waste-Containing Components of Nuclear Power Plants	N/A	[NO CHANGE]	N/A	PVNGS will maintain existing commitments to Regulatory Guide 1.26. PVNGS was designed and constructed to RG 1.26, Revision 1, September 1974. A change to a newer version of the regulatory guide would require significant analysis and potential backfit of design information used in the development of the quality classifications for PVNGS, which is not practical or necessary at the current stage of the operational phase.
1.28 (R0, June 1972), Quality Assurance Program Requirements (Design and Construction)	N45.2 (1971)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Part I/II	PVNGS will commit to Regulatory Guide 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/2009 Part I/II as the basis for the operational phase quality assurance program going forward.
1.29 (R3, September 1978), Seismic Design Classification	N/A	[NO CHANGE]	N/A	PVNGS will maintain existing commitments to Regulatory Guide 1.29. PVNGS was designed and constructed to RG 1.29, Revision 3, September 1978. A change to a newer version of the regulatory guide would require significant analysis and potential backfit of design information used in

Current Regulatory Guide Commitment	Standard	Proposed Regulatory Guide Commitment	Standard	Basis
				the development of the quality classifications for PVNGS, which is not practical or necessary at the current stage of the operational phase.
1.30 (R0, August 11, 1972), Quality Assurance Requirements for the Installation, Inspection and Testing of Instrumentation and Electrical Equipment	N45.2.4 (1972)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Subpart 2.4	PVNGS will commit to Regulatory Guide 1.28 Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/ NQA-1a-2009. Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.30 and ANSI N45.2.4 is NQA-1-2008/NQA-1a-2009 Subpart 2.4
1.33 (R2, February 1978), Quality Assurance Program Requirements (Operation)	N18.7 (1976)	1.28 (R4, June 2010) 1.33 (R2, February 1978)	NQA-1-2008/NQA-1a-2009 & NEI 11-04A	PVNGS is currently committed to Regulatory Guide 1.33, Revision 2, February1978. In lieu of adopting ANSI N18.7-1976/ANS 3.2 per RG 1.33, PVNGS will adopt RG 1.28, Revision 4, NQA-1-2008/NQA-1a-2009, and the additional guidance for operational phase activities provided in the text of NEI 11-04A, Part V.
1.37 (R0, March 16, 1972), Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants	N45.2.1 (1973)	1.28 (R4, June 2010) 1.37 (R1, March 2007)	NQA-1-2008/NQA-1a-2009 Subpart 2.1	PVNGS is currently committed to Regulatory Guide 1.37, Revision 0, March 16, 1973. PVNGS will commit to the revision of RG 1.37 endorsed in NEI 11-04A, but in lieu of adopting ASME NQA-1-1994, Part II, Subpart 2.1 per RG 1.37, Revision 1, March 2007, PVNGS will adopt NQA-1-2008/NQA-1a-2009 Subpart 2.1 as endorsed by RG 1.28, Revision 4.
1.38 (R2, May 1977) W[1], Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage Operations and Handling of Items for Water-Cooled Phase Nuclear Power Plants	N45.2.2 (1972)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Subpart 2.2	PVNGS will not maintain commitment to RG 1.38. PVNGS will commit to RG 1.28 (R4, June 2010). Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.38 and ANSI N45.2.2 is NQA-1-2008/NQA-1a-2009 Subpart 2.2

Current Regulatory Guide Commitment	Standard	Proposed Regulatory Guide Commitment	Standard	Basis
1.39 (R2, September 1977) W[1], Housekeeping Requirements for Water-Cooled Nuclear Power Plants	N45.2.3 (1973)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Subpart 2.3	PVNGS will not maintain commitment to Regulatory Guide 1.39. PVNGS will commit to Regulatory Guide 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/NQA-1a-2009. Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.39 and ANSI N45.2.3 is NQA-1-2008/NQA-1a-2009 Subpart 2.3.
1.54 (R0, June 1973), Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants	101.4 (1972)	[NO CHANGE]	[NO CHANGE]	PVNGS will maintain existing commitments to Regulatory Guide 1.54, Revision 0, June 1973.
1.58 (R1, September 1980) W, Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel	N45.2.6 (1978)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Part I [Requirement 2, as modified by NRC-endorsed alternatives for the operational phase as described in NEI 11-04A, Part II, Section 2.]	PVNGS will not maintain commitment to Regulatory Guide G 1.58. PVNGS will commit to RG 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/NQA-1a-2009. Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.58 and ANSI N45.2.6 is NQA-1-2008/NQA-1a-2009, Part I [Requirement 2].
1.64 (R2, June 1976) W, Quality Assurance Requirements for the Design of Nuclear Power Plants	N45.2.11 (1974)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Part I [Requirement 3]	PVNGS will not maintain commitment to Regulatory Guide 1.64. PVNGS will commit to RG 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/NQA-1a-2009. Table A-3 of RG 1.28 Revision 4 provides a cross-reference between

Current Regulatory Guide Commitment	Standard	Proposed Regulatory Guide Commitment	Standard	Basis
				previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.64 and ANSI N45.2.11 is NQA-1-2008/NQA-1a-2009 Part I [Requirement 3].
1.74 (R0, February 1974), Quality Assurance Terms and Definitions	N45.2.10 (1973)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 and NEI 11-04, Part V, Section 1	PVNGS will not maintain commitment to Regulatory Guide 1.74. PVNGS will commit to RG 1.28, Revision 4, June 2010 and the Quality Assurance terms and definitions provided in NQA-1-2008/NQA-1a-2009. Additional definitions applicable to the operational phase are adopted via NEI 11-04A, Part V, Section 1.
1.88 (R2, October 1976) W, Collection, Storage and Maintenance of Nuclear Power Plant Quality Assurance Records	N45.2.9 (1974)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Part I [Requirement 17]	PVNGS will not maintain commitment to Regulatory Guide 1.88. PVNGS will commit to RG 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/NQA-1a-2009. Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.88 and ANSI N45.2.9 is NQA-1-2008/NQA-1a-2009, Part I [Requirement 17].
1.94 (R1, April 1976) W[1], Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants	N45.2.5 (1974)	[NO CHANGE]	[NO CHANGE]	PVNGS will maintain existing commitments to Regulatory Guide 1.94 in lieu of adopting Subpart 2.5 of NQA-1-2008/ NQA-1a-2009. PVNGS was designed and constructed to Regulatory Guide 1.94, Revision 1, April 1976. NQA-1-2008/NQA-1a-2009 Subpart 2.5 is intended for new construction and would cause significant re-analysis and backfit of designs for PVNGS, which is not practical or necessary at the current stage of the operational phase.

Current Regulatory Guide Commitment	Standard	Proposed Regulatory Guide Commitment	Standard	Basis
1.116 (R0-R, May 1977) W[1], Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems	N45.2.8 (1975)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009, Part II, Subpart 2.8.	PVNGS will not maintain commitment to Regulatory Guide 1.116. PVNGS will commit to RG 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/NQA-1a-2009.Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.116 and ANSI N45.2.8 is NQA-1-2008/NQA-1a-2009, Subpart 2.8.
1.123 (R1, July 1977) W, Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants	N45.2.13 (1976)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Part I [Requirements 4 and 7]	PVNGS will not maintain commitment to Regulatory Guide 1.123. PVNGS will commit to RG 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/NQA-1a-2009. Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.123 and ANSI N45.2.13 is NQA-1-2008/NQA-1a-2009 Part I [Requirements 4 and 7].
1.143 (R0, July 1978), Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants	N199 (1976)	[NO CHANGE]	[NO CHANGE]	PVNGS will maintain existing commitments to Regulatory Guide 1.143.
1.144 (R1, September 1980) W, Auditing of Quality Assurance Programs for Nuclear Power Plants	N45.2.12 (1977)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Part I [Requirement 18]	PVNGS will not maintain commitment to Regulatory Guide 1.144. PVNGS will commit to RG 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-

Current Regulatory Guide Commitment	Standard	Proposed Regulatory Guide Commitment	Standard	Basis
				2008/NQA-1a-2009. Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.144 and ANSI N45.2.12 is NQA-1-2008/NQA-1a-2009, Part I [Requirement 18].
1.146 (R0, August 1980) W, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants	N45.2.23 (1978)	1.28 (R4, June 2010)	NQA-1-2008/NQA-1a-2009 Part I [Requirement 2]	PVNGS will not maintain commitment to Regulatory Guide 1.146. PVNGS will commit to RG 1.28, Revision 4, June 2010. RG 1.28 Revision 4 endorses NQA-1-2008/NQA-1a-2009. Table A-3 of RG 1.28 Revision 4 provides a cross-reference between previous regulatory guides, the related ANSI Standards, and location in NQA-1. The cross-reference for RG 1.146 and ANSI N45.2.23 is NQA-1-2008/NQA-1a-2009, Part I [Requirement 2].
Appendix A to BTP APCSB 9.5-1, Guidelines for Fire Protection for Nuclear Power Plants	N/A	[NO CHANGE]	N/A	PVNGS will maintain existing commitments to Appendix A of NRC Branch Technical Position APCSB 9.5-1 in lieu of adopting NRC RG 1.189 as described in NEI 11-04A, Part IV.
4.1 (R1, April 1975), Programs for Monitoring Radioactivity in the Environs Audits of the of Nuclear Power Plants (1/73)	N/A	[NO CHANGE]	N/A	PVNGS will maintain existing commitments to Regulatory Guide 4.1 as described in UFSAR 1.8. The reference to RG 4.1 in the current PVNGS QA Program, UFSAR 17.2, Appendix B, was intended to identify that QA program elements discussed in Regulatory Guide 4.1 are independently audited by the PVNGS Nuclear Assurance organization.

ATTACHMENT 5

Specific Deviations from the NEI 11-04A Template
and the Basis for the Deviations

(12 Pages follow)

ATTACHMENT 5

Specific Deviations from the NEI 11-04A Template and the Basis for the Deviations

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
Part I, Section 1 - General	17.2.0	1.0	Section 1, First Paragraph, Third Sentence: Changed sentence to read "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."	10CFR52 does not apply to the PVNGS Operational QAP. QA requirements described in 10 CFR 71, Subpart H, and 10 CFR 72, Subpart G, are within the scope of the PVNGS QAP.
			Section 1.1, Second Paragraph, Last Sentence: Changed sentence to read "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."	10CFR52 does not apply to the PVNGS Operational QAP. QA requirements described in 10 CFR 71, Subpart H, and 10 CFR 72, Subpart G, are within the scope of the PVNGS QAP.
			Section 1.1, Third Paragraph, First Sentence: Changed "plant" to "generating station".	Editorial. PVNGS is a nuclear generating station and the QAP extends beyond the power plant itself (e.g. Independent Spent Fuel Storage Facility).
Part II, Section 1 - Organization	17.2.1 13.1.1 13.1.2	2.1.5.3	Section 1.9: Changed sentence to read "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."	PVNGS adopted the option from NEI 11-04A Part II, Section 2 which allows inspection to be performed by the same organization. Therefore, this sentence needed to be altered to reflect this option or otherwise the two sections would have been in conflict.
Part II, Section 2 – Quality Assurance Program	17.2.2	2.2	Section 2, First Paragraph, Second Sentence: Replace "plant" with "facility."	PVNGS is considered a facility, not multiple plants at various sites and the QAP extends beyond the power plant itself (e.g. Independent Spent Fuel Storage Facility).
			Section 2, First Paragraph, Third Sentence: Changed sentence to read " 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, as applicable to their activities."	QA requirements described in 10 CFR 71, Subpart H, and 10 CFR 72, Subpart G, are within the scope of the PVNGS QAP.
			Section 2, Second Paragraph, First Sentence: Added "including the Independent Spent Fuel Storage Installation (ISFSI) located at the facility,".	QA requirements related to the PVNGS ISFSI are within the scope of the PVNGS QAP.
			Section 2, Second Paragraph, Third Sentence: Replaced "the appropriate facility" with "PVNGS."	PVNGS is one nuclear generating station.
			Section 2, Third Paragraph, Second Sentence: Replaced "qualifies" with "qualify".	Editorial.
			Section 2, Fourth Paragraph: Removed all "principal contractor" wording.	Does not apply to PVNGS. PVNGS is no longer in the construction or initial start-up phases.

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
			Section 2, Last Paragraph, Second Sentence: Replaced "general" with "grace".	Editorial.
			Deleted Section 2.3	This does not apply to an Operations only QAP.
			Section 2.4: Changed paragraph to read "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."	The wording was changed to clarify that "those organizations" implies "organizations other than APS" to which APS has delegated responsibility. The reason for the change (clarification) is that 10 CFR 50, Appendix B, Criterion 2, discusses the requirement in terms of "The applicant" ("licensee" or "APS") and further states: "Management of other organizations shall regularly review the status and adequacy of that part of the quality assurance program which they are executing."
			Section 2.4: Removed "However, the period for assessing QA programs during the operational phase may be extended to once every two years."	Assessment of QA Programs is reflected in Part II, Section 18. This change eliminates a potential conflict with extended frequencies specified for the operational phase as discussed in NEI 11-04A Part II, Section 18.
			Section 2.5, First Paragraph: Removed sentence "This document shall be revised as appropriate to incorporate additional QA commitments that may be established during the [ESP and COL] application development process."	This statement does not apply to PVNGS as we are not seeking license under 10 CFR 52 (ESP and COL). Applicable NRC regulations 10 CFR 50.71(e) and 10 CFR 50.54(a) will apply regarding the updating of the PVNGS UFSAR and QAPD content.
			Section 2.5, First Paragraph: Added "or Senior Vice President Regulatory & Oversight" at the end of last sentence.	This would allow revisions to the QAPD to be approved by the Senior Vice President, Regulatory and Oversight.
			Section 2.7: Modified the NEI 11-04A template alternative to NQA-1-2008, Requirement 2, Section 302, Inspection and Test, to use the term "may" instead of "does" regarding implementation of the template alternative for qualifying inspection and test personnel.	This modification is made to allow use of either the levels of qualification per NQA-1-2008 or the alternative provided in the NEI template. Original wording provided by the template alternative implies only the template alternative will be implemented instead of allowing use of both methods.
			Section 2.7: Added exception which reads "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 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	This alternative was previously approved by NRC Safety Evaluation Report dated March 27, 1998, for the San Onofre Nuclear Generating Station. (Reference TAC Nos. MA1002, MA0981, and MA0982.) This alternative was adopted by PVNGS and incorporated into the PVNGS QA Program Description in November 2000 under the provisions of 10 CFR 50.54(a)(3)(ii), which states, in part: "...In addition to quality assurance program changes involving administrative improvements and clarifications, spelling corrections, punctuation, or editorial items, the following changes are not considered to be reductions in commitment:...

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
			prospective lead auditor as a "lead auditor."""	(ii) The use of a quality assurance alternative or exception approved by an NRC safety evaluation, provided that the bases of the NRC approval are applicable to the licensee's facility;..."
Part II, Section 3 – Design Control	17.2.3.2	2.3	Section 3.1 Design Verification, First Paragraph, Second Sentence: Changed "these" to "design".	Editorial. Design changes are subject to design controls for clarity. Use of term "these" in this context could be confusing.
			Section 3.1 Design Verification, Second Paragraph, First Sentence: Removed "original" from sentence.	Generalized to "design" versus "original design." Designs change over the life of the facility. "Original" used in this context may be misinterpreted to mean design created prior to or during initial construction.
			Section 3.2 Design Records, Second Paragraph, First Sentence: Changed sentence to read "Plant configuration documents reflect the properly reviewed and approved design of the plant."	A broad scope of PVNGS configuration documents reflects the properly reviewed and approved design of the plant. The approved design in general precedes documentation of plant configuration.
			Section 3.4 Setpoint Control, First Bullet: Removed "originally".	Editorial. Statement applies to any setpoint information supplied. PVNGS is in the operational phase, and term "Originally" may be a source of confusion in this context.
			Section 3.5 NQA-1 Commitment: Reworded sentence to read "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."	Editorial. "NQA-1-2008 and NQA-1a-2009 Addenda" was repeated in the sentence.
Part II, Section 4 – Procurement Document Control	17.2.3.3	2.4	Section 4, Second Bullet, Last Sentence: Added "10 CFR 71 Subpart H, or 10 CFR 72 Subpart G,".	QA requirements of 10 CFR 71, Subpart H, and 10 CFR 72, Subpart G, are within the scope of the PVNGS QAP.
Part II, Section 5 – Instructions, Procedures, and Drawings	17.2.6.2	2.5	No deviations from template.	N/A
Part II, Section 6 – Document Control	17.2.6.3	2.6	Section 6, First Paragraph, Fourth Bullet: Replaced "individuals" with "authorized personnel".	Editorial. This editorial change was made to identify "authorized personnel" versus "individuals" for consistency.
			Section 6, Third Paragraph, Section 6.1, Second Paragraph, First Sentence, Section 6.1, Third Paragraph, First Sentence, and Section 6.2, Third Sentence: Deleted "during the operational phase".	Editorial. The entire QAPD scope is an operational phase QAP only.
			Section 6.1, First Paragraph, Last Sentence: Changed sentence to read "The documented review(s) signify concurrence."	Editorial.

ATTACHMENT 5

Specific Deviations from the NEI 11-04A Template and the Basis for the Deviations

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
Part II, Section 7 – Control of Purchased Material, Equipment, and Services	17.2.3.3	2.7	Section 7.2, First Paragraph, First Sentence: Deleted "NQA-1-2008 and".	NQA-1a-2009 superseded NQA-1-2008 on this topic.
			Section 7.2, First Paragraph, First Bullet: Deleted " the plants" and replaced with "PVNGS".	PVNGS is one nuclear generating station including other nuclear facilities (such as the Independent Spent Fuel Storage Installation), which is also covered by this QAPD.
			Section 7.2, First Paragraph, Second Bullet, First Sub-bullet: Pluralized "document", "certificate", "report", and "standard'.	Editorial. To identify more than one of each of these items may be needed to procure the services.
			Section 7.2, First Paragraph, Third Bullet, Second Sentence: Deleted "Following completion of the construction period, sufficient as-built documentation will be turned over to [CA] to support operations".	Construction phase is complete for the currently licensed activities at PVNGS.
Part II, Section 8 – Identification and Control of Materials, Parts, and Components	17.2.3.4	2.8	No deviations from template.	N/A
Part II, Section 9 – Control of Special Processes	17.2.3.5	2.9	No deviations from template.	N/A
Part II, Section 10 – Inspection	17.2.2.4, 17.2.4.2	2.10	Section 10.1, First Paragraph, Second Numbered Bullet: Replaced " a [CA] facility" with "PVNGS"	"PVNGS" encompasses the scope intended in this sentence.
			Section 10.1, First Paragraph, Fourth Numbered Bullet: Replaced " a facility" with "PVNGS"	"PVNGS" encompasses the scope intended in this sentence.
			Section 10.3, First Paragraph, First Sentence: Added "and NQA-1a-2009,".	For accuracy, NQA-1a-2009 includes additional content that superseded certain content contained in NQA-1-2008 for Requirement 10.
			Section 10.3, First Paragraph, First Sentence: Added "Part II".	Editorial. "Part II" was added to identify Subparts 2.4, 2.5, and 2.8 as content of Part II of the NQA-1 standard.
			Section 10.3, First Paragraph, First Sentence: Removed reference to Subpart 2.5.	PVNGS will maintain current commitments to RG 1.94 in lieu of adopting Subpart 2.5 of NQA-1-2008/ NQA-1a-2009.

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
Part II, Section 11 – Test Control	17.2.3.6	2.11	Section 11, Second Paragraph, First Sentence: Replaced "SAR" with "UFSAR".	The SAR is known as the UFSAR during the operational phase at PVNGS.
			Section 11: Removed second paragraph of NEI 11-04A.	This paragraph does not apply to PVNGS. The Initial start-up phase is complete for PVNGS.
			Section 11.1, First Paragraph, First Sentence: Removed "and used".	Editorial. The words "and used" is redundant to the beginning part of the sentence where it states "computer software used".
Part II, Section 12 – Control of Measuring and Test Equipment	17.2.3.7	2.12	Section 12.0, First Paragraph, First Sentence: Replaced "or" with "for".	Editorial.
			Section 12.1, First Sentence: Deleted "For the operational phase of the facilities".	PVNGS is currently in its operational phase. The scope of the QAPD is for the operational phase only.
			Section 12.2, First Paragraph, First Sentence: Added "and NQA-1a-2009,".	For accuracy, NQA-1a-2009 includes additional content that superseded certain content contained in NQA-1-2008 for Requirement 12.
Part II, Section 13 – Handling, Storage, and Shipping	17.2.3.8	2.13	Section 13.2, First Paragraph, First Sentence: Deleted "during the construction and operational phase of the plant".	PVNGS is currently in its operational phase. The scope of the QAPD is for the operational phase only.
			Section 13.2, First Paragraph, First Sentence: Added "Part II".	Editorial. "Part II" was added to identify Subparts 2.1, 2.2, and 2.3 as content of Part II of the NQA-1 standard.
			Section 13.2, First Paragraph, First Sentence: Added "Part III".	Editorial. "Part III" was added to identify Subpart 3.2, Appendix 2.1 as content of Part III of the NQA-1 standard.
			Section 13.2, First Bullet, Second Bullet, and Third Bullet: Added "Part II".	Editorial. "Part II" was added to identify Subparts 2.1, 2.2, and 2.3 as content of Part II of the NQA-1 standard.
			Section 13.2, Third Bullet, Last Sentence: Replaced "of the applicable plant" with "established for PVNGS".	Editorial. PVNGS is located at one site and is comprised of all nuclear facilities on site within the scope of the QAPD.
			Section 13.2, NQA-1a-2009, Part II, Subpart 2.2 Changed first bullet reference from "Section 201" to "Section 202"	Editorial. Corrected incorrect NQA-1 section reference in the NEI 11-04A template.

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
			Section 13.2, Fourth Bullet referencing Subpart 2.3: Added "and NQA-1a-2009" to the section header for Subpart 2.3. Changed word "bases" to "may base" related to control over housekeeping activities.	NQA-1a-2009 reference added for accuracy. Change would allow either the method specified in NQA-1 or the alternative methods to be used, as appropriate, based upon the specific work location, work activities, or circumstances at an operating nuclear facility.
			Section 13.2, Fifth Bullet referencing Subpart 3.2: Changed section heading to "NQA-1a-2009".	For accuracy, NQA-1a-2009 superseded NQA-1-2008 for Part III, Subpart 3.2.
Part II, Section 14 – Inspection, Test and Operating Status	17.2.3.9	2.14	Section 14, Second Paragraph, First Sentence: Added "or work instructions" in sentence.	PVNGS also performs temporary modification work and related verifications in accordance with controlled work instructions.
Part II, Section 15 – Nonconforming Materials, Parts, or Components	17.2.2.10, 17.2.5	2.15	Section 15.2, First Bullet: Added clarification "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."	There are instances when marking or tagging on either the item, the container, or the package containing the item is not practical.
Part II, Section 16 – Corrective Action	17.2.2.10, 17.2.5	2.16	No deviations from template.	N/A
Part II, Section 17 – Quality Assurance Records	17.2.6.4	2.17	Section 17, First Paragraph, First Sentence: Added "established".	Editorial. Added for consistency with other sections of the NEI 11-04A template and the PVNGS QAPD.
			Section 17.1, Third Sentence: Added "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."	Two separate statements were placed in this section to differentiate between record retention requirements for initial design, construction, and start-up activities versus the revised requirements for ongoing operational phase record maintenance activities.
			Section 17.1, Fourth Sentence: Added "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."	Two separate statements were placed in this section to differentiate between historical record retention requirements for initial design, construction, and start-up activities versus the revised requirements for ongoing operational phase activities.
			Section 17.2, Second Sentence: Changed sentence to read "PVNGS will manage the storage of QA Records in electronic media consistent with the intent of RIS 2000-	Current PVNGS electronic QA records storage practices are more closely reflected in the updated 2011 NIRMA guidelines, which were not available at the time RIS 2000-18 was issued by the NRC.

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
			18 and associated NIRMA Guidelines TG11-2011, TG15-2011, TG16-2011, and TG21-2011."	
			Section 17.3: Added exception "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." •	Current PVNGS electronic QA records storage practices are more closely reflected in the updated 2011 NIRMA guidelines, which were not available at the time RIS 2000-18 was issued by the NRC.
Part II, Section 18 – Audits	17.2.2.4, 17.2.4.4	2.18	Section 18.1, First Paragraph: Removed "During the early portions of [Nuclear Development] activities, audits will focus on areas including, but not limited to, [site investigation], procurement, and corrective action."	PVNGS is currently in its operational phase not the nuclear development phase, therefore the statement is not applicable to PVNGS.
			Section 18.1, Third Paragraph: Removed "(by representative sampling),".	PVNGS determines the adequacy of programs and procedures via audits; however, "representative sampling" may or may not be used to determine adequacy of programs and procedures in audits.
			Section 18.2, First Paragraph (original template): Removed "Internal audits of organization and facility activities, conducted prior to placing the facility in operation, should be performed in such a manner as to assure that an audit of all applicable QA program elements is completed for each functional area at least once each year or at least once during the life of the activity, whichever is shorter."	PVNGS is currently in its operational phase. The statement removed is not applicable to PVNGS.
			Section 18.2, First Paragraph, First sentence: Restructured sentence to read "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."	Editorial. Restructured sentence to reflect an operating facility. Incorporated major elements of the NEI template Section 18.2 fourth paragraph into the first paragraph to eliminate redundancy.
			Section 18.2, First Paragraph, Second Sentence: Removed ", conducted after placing the facility in operation,".	PVNGS is currently in its Operational phase. The QAPD is an operational phase QAPD only.

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
			Section 18.2, First Paragraph, Last Sentence: Reworded sentence to read "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."	This sentence was reworded to reflect the perceived intent of the paragraph. The paragraph discusses "a detailed performance analysis" which would provide input into determining frequencies of audits. This "performance analysis" should dictate that "the extension of the internal audit frequency interval for the applicable functional area should be rescinded and an audit scheduled as soon as practicable" as the rest of the sentence reads. Hence the reference to "If performance dictates" is used to reflect the "performance analysis."
			Section 18.2, Second Paragraph, First Sentence: Added "of operational phase activities".	PVNGS is currently in its Operational phase. The QAPD is an operational phase QAPD only.
			Section 18.2, Third Paragraph (Original Template): Removed "During the operational phase audits are performed at a frequency commensurate with the safety significance of the activities and in such a manner to assure audits of all applicable QA program elements are completed within a period of two years."	The major elements of this sentence were incorporated into the first sentence of the first paragraph because they were redundant and created a potential conflict with extended frequencies permitted during the operational phase as described later in the paragraph.
			Section 18.2, Last Paragraph (Original Template): Relocated paragraph stating "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."	Editorial. This paragraph seemed more appropriate after the first paragraph in Section 18.2.
Part III, Section 1 – Nonsafety-Related SSCs – Significant Contributors to Plant Safety	17.2.2.2, 17.2.2.8, 17.2F	3.1	No deviations from template.	N/A

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
Part III, Section 2 – Nonsafety-Related SSCs Credited for Regulatory Events	17.2.2.2, 17.2.2.8, 17.2F	3.2	Section 2, First Bullet: Reworded bullet to read "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 does not intend to adopt RG 1.189 as a part of this QAPD change. PVNGS will maintain existing commitments to Section C of Appendix A of Branch Technical Position 9.5-1.
Part IV, Regulatory Guide 1.8 [Rev. 3, May 2000]	1.8, 17.2B	4.0	No deviations from template.	PVNGS will maintain existing commitments to Regulatory Guide 1.8 consistent with the Units 1, 2, and 3 Technical Specifications.
Part IV, Regulatory Guide 1.26 [Rev. 4, March 2007]	1.8, 17.2B	4.0	No deviations from template.	PVNGS will maintain existing commitments to Regulatory Guide 1.26, Revision 1, September 1974.
Part IV, Regulatory Guide 1.28 [Rev. 4, June 2010]	1.8, 17.2B	4.0	Removed "[CA] identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in [state location, e.g. FSAR Chapter 1.]" and added "Regulatory Guide 1.28, Revision 4, conditionally endorses NQA-1-2008 and NQA-1a-2009 Addenda as the basis for the quality assurance program."	PVNGS will commit to Regulatory Guide 1.28, Revision 4, June 2010 which adopts NQA-1-2008 and NQA-1a-2009 Addenda. Specific clarifications and exceptions are identified at the pertinent sections of the revised PVNGS Operations Quality Assurance Program Description.
Part IV, Regulatory Guide 1.29 [Rev. 4, March 2007]	1.8, 17.2B	4.0	No deviations from template.	PVNGS will maintain existing commitments to Regulatory Guide 1.29, Revision 3, September 1978.
Part IV, Regulatory Guide 1.33 [Rev. 2, February 1978]	1.8, 17.2B	17.2.4	Replaced "[CA] identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in [state location, e.g. FSAR Chapter 1.]" with "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." Also added paragraph stating "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	PVNGS is currently committed to RG 1.33, Revision 2, February 1978, which conditionally endorses ANSI N18.7-1976 (ANS.32). PVNGS will modify existing commitment to Regulatory Guide 1.33, Revision 2, by adopting Regulatory Guide 1.28, Revision 4, NQA-1-2008/NQA-1a-2009, and additional administrative controls for operational phase activities as described in NEI 11-04A, Revision 0.

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
			with NQA-1a-2009 Addenda, are as described in the pertinent sections of the PVNGS Operations Quality Assurance Program Description."	
Part IV, Regulatory Guide 1.37 [Rev. 1, March 2007]	1.8, 17.2B	4.0	Added "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."	PVNGS is currently committed to RG 1.37, Revision 0, March 16, 1973. PVNGS will commit to the revision of RG 1.37 endorsed in NEI 11-04A, but in lieu of adopting ASME NQA-1-1994, Part II, Subpart 2.1 per RG 1.37 Revision 1, March 2007, PVNGS will adopt NQA-1-2008/NQA-1a-2009 Subpart 2.1 as endorsed by Regulatory Guide 1.28, Revision 4.
Part IV, Regulatory Guide 1.54 [Rev. 2, October 2010]	1.8, 17.2B	4.0	No deviations from template.	PVNGS will maintain existing commitments to Regulatory Guide 1.54, Revision 0, June 1973.
Part IV, Regulatory Guide 1.94 [Rev. 1, April 1976]	1.8, 17.2B	4.0	Added existing PVNGS commitment to Regulatory Guide .194 as follows: "**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."	PVNGS will maintain existing commitments to NRC Regulatory Guide 1.94 in lieu of adopting Subpart 2.5 of NQA-1-2008 / NQA-1a-2009. The current PVNGS civil specifications meet the current licensing basis commitment to Regulatory Guide 1.94, Revision 1. NQA-1-2008/NQA-1a-2009 Subpart 2.5 is intended for new construction and would require extensive changes to existing implementation for an operating facility.
Part IV, ASME NQA-1-2008 Edition with NQA-1a-2009 Addenda	1.8, 17.2B (ANSI N45.2 and N18.7)	4.0	Reworded paragraph to read "**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." Relocated information under commitment to Regulatory Guide 1.28.	PVNGS commits to NQA-1-2008 with NQA-1a-2009 Addenda with exceptions and clarifications as described in the pertinent sections of the revised PVNGS Operations Quality Assurance Program Description.
Part IV, Nuclear Information and Records Management	1.8 (R.G. 1.88), 17.2.6	4.0	Reworded paragraph to read "**Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guides (TGs)** - Regulatory Guide 1.28, Revision 4, Regulatory Position C.1.(b)	PVNGS commits to the later versions of the referenced NIRMA Guidelines, specifically TG11-2011, TG15-2011, TG16-2011, and TG21-2011.

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
Association, Inc. (NIRMA) Technical Guides (TGs)			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." Relocated this information under commitment to Regulatory Guide 1.28.	
Part V, Section 1 – Definitions	17.2C	5.1	No deviations from template.	N/A
Part V, Section 2 – Review of Activities Affecting Safe Plant Operation	13.4, 17.2.2.9	5.2	Section 2.2, First Paragraph, First Sentence: Deleted "occurring during the operational phase"	PVNGS is currently in its Operational phase.
			Section 2.2, First Paragraph, Second Sentence: Deleted "The independent review program shall be functional prior to initial core loading."	PVNGS is currently in its Operational phase.
			Section 2.2, First Paragraph, First Bullet: Added "updated final" in front of "safety analysis report" and added "UF" in front of "SAR" to reflect the PVNGS Updated Final Safety Analysis Report (UFSAR).	Editorial.
			Section 2.2, First Paragraph, Second Bullet: Added "UF" in front of "SAR" to reflect the PVNGS Updated Final Safety Analysis Report (UFSAR).	Editorial.
			Section 2.2, "Independent Review Body" Section, Second Paragraph, First Bullet: Added "UF" in front of "SAR" to reflect the PVNGS Updated Final Safety Analysis Report (UFSAR).	Editorial.
			Section 2.2, "Independent Review Body" Section, Second Paragraph, Second Bullet: Added "UF" in front of "SAR" to reflect the PVNGS Updated Final Safety Analysis Report (UFSAR).	Editorial.
Part V, Section 3 – Operational Phase Procedures	13.5	5.3	Section 3.1, First Paragraph, First Sentence: Reworded first part of sentence to read "Procedure format and content may vary from one location to another, however,".	Editorial.

NEI 11-04	Current PVNGS UFSAR Section	New QAPD Section	Deviations from NEI 11-04	Basis for Deviations from NEI 11-04
			Section 3.2, Radiation Control Procedures Section, Title Heading: Renamed "Radiation Control Procedures" to "Radiological Protection Procedures".	Editorial. The types of procedures described are known as "Radiological Protection Procedures" at PVNGS.
			Section 3.2, Radiation Control Procedures Section, First Sentence: Replaced "radiation control" with "radiological protection".	Editorial. The radiation control program described is known as the "radiological protection" program at PVNGS.
			Section 3.2, Radiation Control Procedures Section, Second Sentence: Replaced "procedures" with "documents".	Editorial. The first sentence describes "documents" which contain instructions for implementation of the radiation protection program. The second sentence was changed to be consistent with the first sentence.
			Section 3.2, Radiation Control Procedures Section, Last Sentence: Removed sentence from "Chemical and Radiochemical Control Procedures" Title Heading which states "These documents also provide for the control, treatment and management of radioactive wastes, and control of radioactive calibration sources." and placed this sentence into the Title Heading "Radiological Protection Procedures".	Radiological Protection Procedures "provide for the control, treatment and management of radioactive wastes, and control of radioactive calibration sources."
Part V, Section 4 – Control of Systems and Equipment in the Operational Phase	17.2.3.9 17.2.3.11	5.4	Section 4, Fourth Paragraph: Replaced "Independent verifications" with "Independent/concurrent verifications".	Modified to be consistent with NEI 11-04A, Part II, Section 14, which includes concurrent verifications as well as independent verifications for status control activities.
Part V, Section 5 – Plant Maintenance	17.2.3.11	5.5	NQA-1-2008 Part II, Subpart 2.18, Section 207 refers to Subpart 2.5 for inspection. In lieu of using Subpart 2.5, PVNGS performs installation inspections for maintenance activities consistent with PVNGS commitment to RG 1.94 (R1, April 1976) / ANSI 45.2.5 (1974).	PVNGS will maintain existing commitments to NRC Regulatory Guide 1.94 in lieu of adopting Subpart 2.5 of NQA-1-2008 / NQA-1a-2009. The current PVNGS civil specifications meet the current licensing basis. NQA-1-2008/NQA-1a-2009 Subpart 2.5 is intended for new construction and would require extensive changes to existing implementation for an operating facility.

ATTACHMENT 6

Comparison of Current QAPD to Proposed QAPD Based Upon
NEI 11-04A and NQA-1-2008/NQA-1a-2009

(28 Pages Follow)

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
8.3.1.4.2 – Administrative Responsibilities and Controls for Assuring Separation Criteria	8.3.1.4.2 – Administrative Responsibilities and Controls for Assuring Separation Criteria	Revising sentence that reads "The routing is also confirmed by quality control personnel during installation to be consistent with the design document." The words "quality control personnel" will be changed to "inspection personnel."	N	Qualified inspection personnel meeting the requirements of the revised operational phase QA Program will inspect this activity. This administrative change is being made to clarify that for the operational phase, the inspection may be performed by properly qualified inspection personnel and not a separate QC organization.
Table 9B.3-1 – Comparison of Palo Verde Nuclear Generating Station to Appendix A of NRC Branch Technical Position APCSB 9.5-1 (Sheet 13 of 69) C. Quality Assurance Program	Quality Assurance for Fire Protection is specifically addressed by new QAPD 3.2.	Revised "PVNGS Position and Basis for Noncompliance Items" column of Table 9B.3-1 to read "Fire protection features required to protect safety-related structures, systems, and components are within the scope of the PVNGS Quality Assurance Program for the operational phase. APS implements the fire protection QA program through approved station procedures, instructions, and drawings that are controlled per the requirements of the PVNGS Quality Assurance Program for operational phase. Implementation of the quality assurance program for fire protection is consistent with NRC Branch Technical Position APCSB 9.5-1, Appendix A, Section C, "Quality Assurance Program." Deleted all other information in this column.	N	Clarifies that implementation of the quality assurance program for fire protection is consistent with NRC Branch Technical Position APCSB 9.5-1, Appendix A, Section C, "Quality Assurance Program". Specific details for quality classifications of affected nonsafety-related SSCs and implementing details are addressed by station procedures consistent with the guidance of NEI 11-04A, Part III.

R = Considered to be a reduction in commitment
N = Neutral change (considered to be neither a reduction or increase in commitment)
I = Considered to be an increase in commitment

Comparison of Current QAPD to Proposed QAPD Based Upon NEI 11-04A and NQA-1-2008/NQA-1a-2009

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
13.1 – Organizational Structure of Applicant	QAPD 2.1 – Organization	Generally, the organization is more functionally described (where possible) rather than by specific title.	N	Adopting functional description of organizational relationships, authorities, and responsibilities is not considered a reduction in commitment per 10 CFR 50.54(a) (3)(iii) and (iv).
13.1.1.2.2 – Vice President, Nuclear Engineering	QAPD 2.1.9 - Organization	The "Vice President, Nuclear Engineering" position in the current QAPD will be known as "Nuclear Engineering" in the current QAPD.	N	The nuclear engineering organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1.1.2.2.2 – Director, Nuclear Fuel Management	QAPD 2.1.9.1 – Nuclear Fuel Management	The "Director, Nuclear Fuel Management" in the current QAPD will be known as "Nuclear Fuel Management" in the new QAPD.	N	The nuclear fuel management organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1.1.2.2.1, 13.1.1.2.2.3, 13.1.1.2.2.4, 13.1.1.2.2.5 Directors reporting to the Vice President, Nuclear Engineering	QAPD 2.1.9.2 – Design, Projects, and Plant Engineering	The "Director, Design Engineering," "Director, Plant Engineering," "Director, Engineering Programs and Support," and "Director, Project Engineering" in current QAPD will be "Design, Project, and Plant Engineering" in the new QAPD.	N	The nuclear engineering organization is more generically and functionally described, however organizational responsibilities remain the same. One or more management positions within the Nuclear Engineering organization may be assigned these responsibilities.
13.1.1.2.3 – Vice President, Operations Support	QAPD 2.1.15 - Operations Support	The "Vice President, Operations Support" in the current QAPD will be known as "Operations Support" in the new QAPD.	N	The operations support organization is more generically and functionally described, however the overall operations support organizational responsibilities remain the same.
13.1.1.2.3.1 – Director, Nuclear Security Division	QAPD 2.1.15	The "Director, Nuclear Security Division" is not specifically described in the revised QAPD.	N	The operations support organization is more generically and functionally described; existing nuclear security functions are described and carried out by Operations Support organization.
13.1.1.2.3.2 – Manager, Fire Protection	QAPD 2.1.15	The "Manager, Fire Protection" is not specifically described in the revised QAPD.	N	The operations support organization is more generically and functionally described; existing fire protection functions are described and carried out

R = Considered to be a reduction in commitment

N = Neutral change (considered to be neither a reduction or increase in commitment)

I = Considered to be an increase in commitment

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
				by Operations Support organization.
13.1.1.2.3.3 – Director, Supply Chain	QAPD 2.1.15	The "Director, Supply Chain" is not specifically described in the revised QAPD.	N	The operations support organization is more generically and functionally described; existing QA functions are described and carried out by Operations Support organization.
13.1.1.2.3.4 – Director Emergency Planning 13.1.1.2.3.5 – Manager, Emergency Planning	QAPD 2.1.15	The Director, Emergency Planning" and "Manager, Emergency Planning" are not specifically described in the revised QAPD.	N	The operations support organization is more generically and functionally described; existing emergency planning functions are described and carried out by Operations Support organization.
13.1.1.2.3.6 – Manager, Support Services	QAPD 2.1.15	The "Manager, Support Services" is not specifically described in the revised QAPD.	N	The operations support organization is more generically and functionally described; existing QA functions are described and carried out by Operations Support organization.
13.1.1.2.3.7 – Palo Verde Information Services	QAPD 2.1.15	The "Palo Verde Information Services" group in the current QAPD is not specifically described in the revised QAPD.	N	Though there is no specific organization titled "Palo Verde Information Services" in the revised QAPD, the organization's QA functions are described and carried out by the Operations Support organization.
13.1.1.2.4 – Director, Nuclear Assurance	QAPD 2.1.5 – Quality Assurance 2.1.5.1 – Quality Assurance Management	The "PVNGS Nuclear Assurance Organization" responsibilities in the current QAPD are simplified and functionally described in 2.1.5 of the revised QAPD as "Quality Assurance".	N	The Nuclear Assurances organization is more generically and functionally described. Specific authorities and responsibilities of the Director, Nuclear Assurance, are described at QAPD 2.1.5.1 consistent with the guidance of NEI 11-04A, Revision 0.
13.1.1.2.4.1 – Nuclear Assurance Organization	QAPD 2.1.5 – Quality Assurance	The "PVNGS Nuclear Assurance Organization" description is simplified and more functionally described at 2.1.5 "Quality Assurance" in the revised QAPD.	N	The Nuclear Assurances organization is more generically and functionally described consistent with the guidance of NEI 11-04A, Revision 0. Overall Nuclear Assurance organizational responsibilities are the same, except where specific changes are noted in other sections of this table.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
13.1.1.2.5.1 – Director, Nuclear Regulatory Affairs and Environmental	QAPD 2.1.7 - Nuclear Regulatory Affairs and Environmental	The "Director, Nuclear Regulatory Affairs and Environmental" responsibilities are functionally described as "Nuclear Regulatory Affairs and Environmental" in the revised QAPD.	N	The regulatory affairs and environmental organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1 .1.2.5.1.1 Nuclear Regulatory Affairs Department 13.1.1.2.5.1.2 - Environmental Department	QAPD 2.1.7 - Nuclear Regulatory Affairs and Environmental	The section entitled "Nuclear Regulatory Affairs Department" and "Environmental Department" does not exist in the revised QAPD.	N	The regulatory affairs and environmental organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1.1.2.5.2 - Performance Improvement Department	QAPD 2.1.6 – Performance Improvement	The "Performance Improvement Department" responsibilities are functionally described as "Performance Improvement" in the revised QAPD.	N	The performance improvement organization is generically and functionally described, however organizational responsibilities remain the same.
13.1.1.2.5.3 – Palo Verde Communications Department 13.1.1.2.6 – Employee Concerns Department	N/A	The "Palo Verde Communications Department" and "Employee Concerns Department" are not described in the revised QAPD.	N	There are no specific licensing requirements to have "Communications Department" or "Employee Concerns Department" responsibilities described in the UFSAR or QAPD.
13.1.1.2.7 – Director, Strategic and Long Range Planning	N/A	The "Director, Strategic and Long Range Planning" is not described in the revised QAPD.	N	There is no specific licensing requirement to have "Director, Strategic and Long Range Planning" responsibilities described in the UFSAR or QAPD.
13.1.1.2.8.1 – Palo Verde Human Resources	N/A	The "Palo Verde Human Resources" in the current QAPD is not described in the revised QAPD.	N	There is no specific licensing requirement to have Human Resources organization responsibilities described in the UFSAR or QAPD.
13.1.1.2.8.2 – Director, Executive Projects	N/A	The "Director, Executive Projects" in the current QAPD is not described	N	There is no specific licensing requirement to have the "Director, Executive Projects" responsibilities

R = Considered to be a reduction in commitment
N = Neutral change (considered to be neither a reduction or increase in commitment)
I = Considered to be an increase in commitment

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		in the revised QAPD.		described in the UFSAR or QAPD.
13.1.1.2.8.3 – Director, Site Programs 13.1.1.2.8.3.1 – Department Leader, Site Procedure Standards	QAPD 2.1.8	The "Director, Site Programs" and "Department Leader, Site Procedure Standards" responsibilities in the current QAPD are now functionally described under "Site Procedure Standards" in the revised QAPD.	N	The site procedure standards organization is generically and functionally described, however organizational responsibilities remain the same.
13.1.2.2.1 – Executive Vice President, Nuclear and Chief Nuclear Officer (CNO)	UFSAR 13.1.2.1 QAPD 2.1.2	The Executive Vice President and Chief Nuclear Officer responsibilities are described in UFSAR 13.1.2.1 and QAPD 2.1.2.	N	The responsibilities are the same.
13.1.2.2.1.1 – Senior Vice President, Site Operations	UFSAR 13.1.2.2 QAPD 2.1.3	The Senior Vice President, Site Operations responsibilities are described in UFSAR 13.1.2.2 and QAPD 2.1.3.	N	The responsibilities are the same.
13.1.2.2.1.2 – Site General Plant Manager	UFSAR 13.1.2.3	The Site General Plant Manager responsibilities are described in UFSAR 13.1.2.3 and QAPD 2.1.3.1.	N	The responsibilities are the same.
13.1.2.2.1.2.1– Director, Operations	UFSAR 13.1.2.4	The Operations Director responsibilities are described in UFSAR 13.1.2.4.	N	The responsibilities are the same.
13.1.2.2.1.2.2 – Department Leaders Units 1, 2, and 3 Operations	UFSAR 13.1.2.5	The "Department Leaders Units 1, 2, and 3, Operations" responsibilities are described in UFSAR 13.1.2.5 "Units 1, 2, and 3 Operations Managers".	N	The responsibilities are the same.
13.2.2.1.2.3 – Shift Managers	UFSAR 13.1.2.6.1	Shift Manager responsibilities are described under 13.1.2.6 "Operating Shift Crews".	N	The responsibilities are the same.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
13.2.2.1.2.3.1 – Control Room Supervisors	UFSAR 13.1.2.6.2	Control Room Supervisor responsibilities are described under 13.1.2.6 "Operating Shift Crews".	N	The responsibilities are the same.
13.2.2.1.2.3.2 – Limited Senior Reactor Operator for Refueling	UFSAR 13.1.2.6.3	Limited Senior Reactor Operator for Refueling responsibilities are described under 13.1.2.6 "Operating Shift Crews".	N	The responsibilities are the same.
13.2.2.1.2.3.3 – Reactor Operator	UFSAR 13.1.2.6.4	Reactor Operator responsibilities are described under 13.1.2.6 "Operating Shift Crews".	N	The responsibilities are the same.
13.2.2.1.2.3.4 – Nuclear Auxiliary Operator and Auxiliary Operator, Senior	UFSAR 13.1.2.6.5	Nuclear Auxiliary Operator responsibilities are described under 13.1.2.6 "Operating Shift Crews".	N	The responsibilities are the same.
Shift Technical Advisors	UFSAR 13.1.2.6.6	The Shift Technical Advisor responsibilities are described under 13.1.2.6 "Operating Shift Crews".	N	The operating organization is updated to acknowledge the Shift Technical Advisors as members of the "Operating Shift Crews." Their responsibilities are the same.
13.1.2.2.1.3 – Director, Maintenance	QAPD 2.1.10	The "Director, Maintenance" responsibilities are now functionally described as "Maintenance" in the revised QAPD.	N	The maintenance organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1.2.2.1.4 – Director, Work Management	QAPD 2.1.11	The "Director, Work Management" responsibilities are now functionally described as "Work Management" in the revised QAPD.	N	The work management organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1.2.2.1.5 Radiation Protection Manager	QAPD 2.1.12	The Radiation Protection Manager is considered the same as the Director, Site Radiation Protection, as	N	The radiation protection manager responsibilities are more generically and functionally described, however organizational responsibilities remain the

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		described in the PVNGS Unit Technical Specifications		same.
13.1.2.2.1.6 – Department Leader, Chemistry	QAPD 2.1.13	The "Department Leader, Chemistry" responsibilities are functionally described as "Chemistry" in revised QAPD.	N	The chemistry organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1.2.2.1.7 – Plant Manager, Water Reclamation Facility	QAPD 2.1.17	The "Plant Manager, Water Reclamation Facility" responsibilities are functionally described as "Water Reclamation Facility" in the revised QAPD.	N	The water reclamation facility organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1.2.2.1.8 – Director, Nuclear Training	QAPD 2.1.18	No change in responsibilities.	N	The responsibilities are the same.
13.1.2.2.1.9 – Assistant Plant Managers	QAPD 2.1.14	No change in responsibilities.	N	The responsibilities are the same.
13.1.2.2.1.10 – Director, Nuclear Projects	QAPD 2.1.15	The "Director, Nuclear Projects" responsibilities are functionally described as "Maintenance Projects" in the revised QAPD.	N	The maintenance projects organization is more generically and functionally described, however organizational responsibilities remain the same.
13.1.3.– Qualifications of Nuclear Plant Personnel	QAPD 4.0, Regulatory Commitments, NRC Regulatory Guide 1.8	PVNGS will not carry over the exception to ANSI / ANS 3.1-1978 at UFSAR 13.1.3.1 A. which states: "A. Exception is taken to the educational requirements of ANSI/ANS 3.1, paragraph 4.6.1 Engineer in Charge. Equivalent technical expertise is demonstrated by possession of a Professional Engineering License; or successful completion of the Engineer in	I	Compliance with NRC QA Regulatory Guides is described at QAPD 4.0. PVNGS will meet the "Engineer In Charge" qualification requirement as delineated in ANSI / ANS 3.1-1978 as endorsed by NRC Regulatory Guide 1.8 (exception removed).

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		Training examination; or successful completion of 80 semester credit hours of technical portions of an engineering or physical science program; or a combination of any Bachelor's Degree and a current or previously held Senior Reactor Operator License."		
13.1.3 – Qualifications of Nuclear Plant Personnel	QAPD 4.0, Regulatory Commitments, NRC Regulatory Guide 1.8	The exception to NRC Regulatory Guide 1.8 and ANS 3.1-1978 at UFSAR 13.1.3.1 B. is relocated to QAPD 4.0 with no changes.	N	Compliance with NRC QA Regulatory Guides is described at QAPD 4.0. Existing exception to ANS 3.1-1978 related to LSRO experience requirements is maintained at QAPD 4.0.
13.1.3 – Qualifications of Nuclear Plant Personnel	QAPD 4.0, Regulatory Commitments, NRC Regulatory Guide 1.8	At UFSAR 13.1.3.1 C. Radiation Protection "Director" and "Manager" are considered the same.	N	Compliance with NRC QA Regulatory Guides is described at QAPD 4.0. Existing clarification to NRC Regulatory Guide 1.8 for the Radiation Protection Manager is maintained at QAPD 4.0.
13.1.3 – Qualifications of Nuclear Plant Personnel	QAPD 2.2, Quality Assurance Program QAPD 4.0, Regulatory Commitments, NRC Regulatory Guide 1.8	PVNGS will not carry over the exception to ANSI / ANS 3.1-1978 at UFSAR 13.1.3.1 D. which states: "D. Exception is taken to the experience requirement of ANSI/ANS 3.1-1978, paragraph 4.4.5 for the nuclear assurance department leaders. They are not required to have one year of experience within the QA/nuclear assurance organization."	N	Quality Assurance personnel training and qualification requirements will be described in Section 2.2 of the new QAPD and are based upon the guidance of NQA-1-2008 with 2009 Addenda and NEI 11-04A, Revision 0.
13.1.3 – Qualifications of Nuclear Plant Personnel	QAPD 2.2, Quality Assurance Program QAPD 4.0, Regulatory	PVNGS will not carry over the exception to ANSI / ANS 3.1-1978 at UFSAR 13.1.3.1 E. which states:	N	Quality Assurance personnel training and qualification requirements will be described in Section 2.2 of the new QAPD and are based upon

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
	Commitments, NRC Regulatory Guide 1.8	"E. The director, nuclear assurance, shall have broad experience and formal training in the performance of quality assurance and quality control activities, including inspection and testing. They shall be capable of planning and providing supervision to nuclear assurance personnel who may be engaged in inspecting, testing, reviewing, evaluating, and auditing the adequacy of activities to accomplish quality assurance program objectives. The director, nuclear assurance, shall have a bachelor's degree in science or engineering or the equivalent of a bachelor's degree as described in the PVNGS commitment to Regulatory Guide 1.8. In addition to the bachelor's degree or equivalent, the nuclear assurance director shall have at least 4 years of quality assurance or operations supervisory experience. At least two years of the required experience shall be nuclear power plant experience. As discussed in ANS 3.1-1978, Section 4.4.5, at least one year of the required experience shall be supervisory or management		the guidance of NQA-1-2008 with 2009 Addenda and NEI 11-04A, Revision 0.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		experience in overall implementation of a quality assurance program."		
13.2 – Training Program	13.2 – Training Program	Removed paragraph which stated "Refer to UFSAR Section 17.2F. Quality Augmented Programs (17.2F.1 Quality Assurance for Fire Protection, 17.2F.3 Quality Assurance for Security, and 17.2F.4 Quality Assurance for Emergency Plans and Equipment) for other training program requirements and associated responsibilities."	N	These references are no longer valid. UFSAR17.2F will cease to exist upon adopting new QAPD based upon NEI 11-04A, Revision 0 and NQA-1-2008 with 2009 Addenda. Emergency response training, security force training, and firefighting training are addressed separately in the emergency plan, security plan, and fire protection plan respectively. These training programs are governed by regulations other than 10 CFR 50, Appendix B.
13.4 – Review and Audit	QAPD 2.2 QAPD 2.18 QAPD 5.2	Revised section to read "Operating phase activities that affect nuclear safety are reviewed and audited. The review and audit program is implemented prior to initial fuel loading and is described in the PVNGS Operations Quality Assurance Program Description (QAPD)." All remaining details in UFSAR 13.4 were deleted and replaced with equivalent guidance in the new QAPD.	N	The new QAPD contains equivalent functions as currently described in UFSAR 13.4: • 13.4.1 – Staff Technical Reviews: Function is described in Section 5.2.2 of the new QAPD. • 13.4.2 – Onsite Review: Function is described in Section 5.2.1 of the new QAPD. • 13.4.3 – Independent Review: Function is described in Section 5.2.2 of the new QAPD. • 13.4.4 – Independent Safety Reviews: Independent oversight of operating activities to satisfy the intent of NUREG-0737 are carried out by the Nuclear Assurance organization as described in Section 2.2 of the new QAPD and modified "PVNGS Evaluation" at UFSAR 18.I.B.1.2. 13.4.5 – Audit Program: The audit program is described in Section 2.18 of the new QAPD.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
13.5 – Plant Programs and Procedures	QAPD 5.3	Revised section to read "The PVNGS Operations Quality Assurance Program description (QAPD) describes administrative and operating procedures that will be used by the operating organization to ensure that routine operating, off-normal, and emergency activities affecting nuclear safety are conducted in a safe manner." All remaining details in UFSAR 13.5 were deleted. Section 5.3 of the new QAPD provides a generic list of procedure types consistent with NEI 11-04A, Revision 0.	N	Section 5.3 of the new QAPD provides the various types of procedures used by PVNGS to govern the design, operation, and maintenance of its nuclear generating plants. Procedural coverage for the operational phase is also described in the PVNGS Unit Technical Specifications by specific reference to Regulatory Guide 1.33, Appendix A
17.2.0.1 – Quality Assurance Program Policy Statement	QAPD Policy Statement	Revised policy statement consistent with NEI 11-04A, Revision 0 guidance.	N	Adopted policy statement for operational phase consistent with NEI 11-04A, Revision 0
17.2.1 – Organization	13.1 – Organizational Structure of Applicant QAPD 2.1 - Organization	Operating organization positions with direct operational authority for the nuclear facilities are described at UFSAR 13.1. Organizations providing technical support for operations are functionally described in Section 2.1 of the new QAPD.	N	Operational responsibilities are maintained in UFSAR 13.1 consistent with the NRC Standard Review Plan for FSAR content [NUREG-0800]. Section 2.1 of the new QADP provides a functional description of supporting organization authorities and responsibilities consistent with the guidance of NEI 11-04A, Revision 0 and 10 CFR 50.54(a).
17.2.2.1 – General	QAPD 1.0, GENERAL	The new QAPD states "The QAPD is based on the requirements and guidance of ASME NQA-1-2008 and NQA-1a-2009 Addenda, "Quality Assurance Requirements	N	The new QAPD is based on the requirements and guidance of ASME NQA-1-2008 and NQA-1a-2009 Addenda. Format and content is based upon guidance of NEI 11-04A, Revision 0.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		for Nuclear Facility Applications," Parts I and II, with specific reference to selected Part III sections, as identified in this document."		
17.2.2.2 - Quality Assurance Scope	1.1 – Scope / Applicability	Items are not specifically called out as Quality Class Q or QAG in the new QAPD. In the new QAPD, items within the QA Program scope are discussed in terms of "safety-related" and "non-safety-related significant contributors to plant safety."	N	Determining safety functions and the specific quality classification of items (structures, systems, components, and parts) is an engineering function governed by the design control requirements of 10 CFR 50, Appendix B, Criterion 3, as implemented in the PVNGS QAPD by adopting NEI 11-04A and NQA-1-2008/NQA-1a-2009.
17.2.2.3 – Graded Approach	Intentionally not included.	The term "graded approach" is no longer specifically described or used in the proposed new QAPD.	N	Although the term "graded approach" is not specifically used, quality assurance requirements adopted in NEI 11-04A, Part III, "NONSAFETY-RELATED SSC QUALITY CONTROL" represent an equivalent approach by applying quality requirements similar to those in 10 CFR 50, Appendix B, commensurate with the safety significance of the item and/or based upon specific regulatory commitments.
17.2.2.4 - Three Level Assurance Approach	Details intentionally not included	The "three level assurance approach" is not specifically delineated in the new QAPD.	N	The elements of the three level approach to verification are similar to the those verification activities described in NEI 11-04A, Part II/Section 2, Quality Assurance Program; NEI 11-04A, Part II/Section 10, Inspection; and NEI 11-04A, Part II/Section 18, Audits, which are intended to meet the requirements of 10 CFR 50, Appendix B. With regard to performance of inspections and tests

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
				for the operational phase, NEI 11-04A includes specific exceptions to NQA-1-2008/ NQA-1a-2009 regarding persons or organizations performing inspections and tests, and regarding qualifications of inspection and test personnel. These exceptions have been previously accepted by the NRC. Specific verification activities related to operating status control are intentionally separated from the more traditional quality verifications (inspections) required by 10 CFR 50, Appendix B, Criterion 10, in order to provide clarity in the requirements for the various types of verifications . PVNGS is adopting the guidance of NEI 11-04A, Part II/Section 14, Inspection, Test, and Operating Status, and Part V/Section 4, "Control of Systems and Equipment in the Operational Phase", which specifically addresses verification requirements related to equipment status control.
17.2.2.5 – Control of the Quality Assurance Plan	2.2.5 – Issuance and Revision to Quality Assurance Program	The Senior Vice President Regulatory & Oversight may review and approve new revisions to the QAPD.	N	In addition to the Chief Nuclear Officer, the Senior Vice President Regulatory and Licensing is delegated responsibility and authority to review and approve revisions to the QAPD.
17.2.2.6 – Quality Assurance Program Review	2.2 - Quality Assurance Program 2.2.4 – Periodic Review of the Quality Assurance Program 2.18 – Audits 5.2 – Review of Activities Affecting Safe Plant Operation	Removed the summary description of reviews at existing UFSAR 17.2.2.6. Specific reviews of QA Program and operational activities are addressed in applicable sections of the new QAPD.	N	A simplified QAPD is adopted consistent with the guidance of NEI 11-04A, Revision 0. Equivalent audit and review requirements for operating activities are addressed in Sections 2.2, 2.2.4, 2.18, and 5.2 of the new QAPD.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
17.2.2.7 – Training and Qualification	2.2.6 – Personnel Training and Qualifications	Excessive details regarding implementation and training methods are removed.	N	A simplified description of training requirements is provided consistent with the guidance of NEI 11-04A, Revision 0 and 10 CFR 50, Appendix B, Criterion 2.
17.2.2.8 – Quality Classification	2.2 - Quality Assurance Program 3.1 – Non safety-related SSCs-Significant Contributors to Plant Safety 3.2 – Non-safety-related SSCs Credited for Regulatory Events	The PVNGS Nuclear Assurance Department will not be required to concur with lowering the quality classification of systems, structures, components, or parts.	R	The overall guidance provided in NEI 11-04A and NQA-1-2008/NQA-1a-2009, does not prescribe a similar review and concurrence by the independent quality assurance organization. Determining the safety functions and the specific quality classifications of items (structures, systems, components, and parts) are engineering design activities governed by the requirements of 10 CFR 50, Appendix B, Criterion 3. Design verifications and reviews are required for design activities as described in the new QAPD sections 2.3 and 5.2. Requirements are consistent with the guidance of NEI 11-04A and NQA-1-2008/NQA-1a-2009.
17.2.2.8 – Quality Classification	Intentionally not included.	The new QAPD does not specifically define the terms Quality Class Q, Quality Augmented (QAG), or Non-Quality Related (NQR), however the concept behind each classification remains.	N	The existing quality classification system and terms used at PVNGS are expected to remain in place because to change would be cost-prohibitive. The underlying concepts related to the quality classifications are unchanged. QAPD Section 1.1 addresses the scope of the QAP and determination of safety functions; specific quality classifications of items (structures, systems, components, and parts) is an engineering function governed by the design control requirements of 10 CFR 50, Appendix B, Criterion 3. Although "quality augmented " classification is not specifically defined, the quality assurance requirements adopted

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
				from NEI 11-04A, Part III, "NONSAFETY-RELATED SSC QUALITY CONTROL" represents an equivalent approach by applying quality requirements similar to those in 10 CFR 50, Appendix B, commensurate with the safety significance of the item and/or based upon specific regulatory commitments.
17.2.2.9 – Safety Reviews	QAPD 2.2 QAPD 2.18 QAPD 5.2	This section is redundant to the more detailed requirements of UFSAR 13.4.	N	Review and audit functions are maintained in the new QAPD. Refer to discussion for UFSAR 13.4, which provided a more detailed set of requirements.
17.2.2.10 – Conditions Adverse to Quality and Corrective Actions	2.16 – Corrective Action	No change in requirements	N	N/A
17.2.2.11 – External Organizations	2.7.1 – Acceptance of Item or Service	Interface with external organizations is accomplished via procurement requirements at new QAPD 2.7.	N	Equivalent requirements provided at new QAPD 2.7. This statement was redundant in the existing PVNGS QA Program Description.
17.2.2.12 – Resolution of Differences and Escalation	2.1.5.1 - Organization	Overall no change in requirements.	N	Specific discussion regarding Nuclear Assurance Director making decisions regarding Quality Assurance and the responsibility and authority for escalating safety or quality issues to the level of station or corporate management necessary to achieve resolution is captured at QAPD 2.1.5.1.
17.2.3.1 - Policy	1.0 - General	Overall, no change in requirements.	N	General description of activities within the QA scope are identified at QAPD 2.1 consistent with NEI 11-04A, Revision 0. An overall QA policy statement is also provided at the beginning of the QAPD consistent with NEI 11-04A, Revision 0
17.2.3.2 – Design Control	2.3 – Design Control	Overall, no change in requirements.	N	NEI-11-04A, Revision 0 and NQA-1-2008 with 2009 Addenda provide equivalent controls to those

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
				in existing QAPD commitments to NRC Regulatory Guide 1.64, Revision 2, and ANSI N45.2.11-1974.
17.2.3.2 – Design Control	QAPD 2.1	Engineering and Nuclear Assurance responsibilities and authorities are more generally described at QAPD Section 2.2.	N	Functional description of the organizational relationships, authorities, and responsibilities is not considered a reduction in commitment per 10 CFR 50.54(a) (3)(iii) and (iv).
17.2.3.2 – Design Control	2.3.4 – Setpoint Control	New QAPD identifies requirements for instrument and equipment setpoints that could affect nuclear safety.	I	The existing QAPD did not specifically address separate requirements for instrument and equipment setpoint control. Rather, control of setpoints was embedded within existing design and configuration control requirements previously delineated in UFSAR 17.2.3.2.
17.2.3.3 – Procurement Control	QAPD 2.1	Supply Chain and Director Nuclear Assurance responsibilities are more generally described in QAPD 2.1.	N	Functional description of the organizational relationships, authorities, and responsibilities is not considered a reduction in commitment per 10 CFR 50.54(a) (3)(iii) and (iv).
17.2.3.3 – Procurement Control	2.7 – Control of Purchased Material, Equipment, and Services	Instead of crediting either NVLAP or the American Association for Laboratory Accreditation (A2LA) based upon A2LA continued NVLAP recognition through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement, the new QAPD credits calibration laboratories which hold a domestic (United States) accreditation by an NRC-approved accrediting body recognized by the International Laboratory Accreditation	N	NEI 11-04A included a provision to credit calibration laboratories which hold a domestic (United States) accreditation by an NRC- approved accrediting body recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA).

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		Cooperation (ILAC) Mutual Recognition Arrangement (MRA).		
17.2.3.4 – Identification and Control of Materials, Parts, and Components	2.8 – Identification and Control of Materials, Parts, and Components	No change in requirements	N	N/A
17.2.3.5 – Control of Special Processes	2.9 – Control of Special Processes	Coatings application is not specifically identified as an example of a special process.	N	NEI 11-04A and NQA-1-2008/NQA-1a-2009 do not specifically identify coatings as a special process. Existing commitment to NRC Regulatory Guide 1.54 as discussed in QAPD Section 4.0 addresses the QA requirements applicable to coatings applications and inspections.
17.2.3.6 – Test Control	2.11 – Test Control	Overall no change in in existing requirements.	N	N/A
17.2.3.6 – Test Control	2.3.4 – Setpoint Control 2.11 – Test Control	Computer program testing requirements are expanded in the new QAPD.	I	PVNGS will implement the enhanced testing program requirements for computer programs in station administrative procedures.
17.2.3.7 – Control of Measuring and Test Equipment	2.12 – Control of Measuring and Test Equipment	Controls defined are essentially the same, except responsibilities are relocated to QAPD 2.1.	N	N/A
17.2.3.8 – Handling, Storage, and Shipping	2.13– Handling, Storage, and Shipping	Similar controls are adopted by reference to NQA-1-2008 with 2009 Addenda versus describing controls in detail. Controls for the handling of radioactive materials are within the scope of QA Program by reference to 10 CFR 71, Subpart H, and 10 CFR 72, Subpart G, in the new QA	N	Controls defined by NQA-1-2008 with 2009 Addenda are essentially the same as existing controls contained in Regulatory Guide 1.38, Revision 2, and ANSI N45.2.2 – 1972.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		Program scope statements at 1.0.		
17.2.3.9 – Equipment Status and Control	2.14 – Inspection, Test, and Operating Status 5.4 - CONTROL OF SYSTEMS AND EQUIPMENT IN THE OPERATIONAL PHASE	The PVNGS Nuclear Assurance Department will not be required to concur with the administrative controls for bypassing or altering the sequence of inspections, tests, or other critical operations.	R	PVNGS will adopt the guidance of NEI 11-04A, Revision 0. Specifically, Part II/Section 14, "Inspection, Test, and Operating Status states, in part: "Administrative procedures also describe the measures taken to control 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."
17.2.3.10 – Housekeeping and Cleanliness	2.13 – HANDLING, STORAGE, AND SHIPPING	Similar controls are adopted by reference to NQA-1-2008 with 2009 Addenda versus describing controls in detail. The following requirement in current QAPD is not specifically described in the new QAPD: "Additionally, immediately prior to closure of system(s) or component(s), a verification shall be conducted and documented to ensure cleanliness."	N	The controls for housekeeping and cleanliness included in NQA-1-2008 with 2009 Addenda are essentially the same as existing controls contained in ANSI N45.2.1 – 1973 and ANSI N45.2.3 - 1973. For the change related to verifying no foreign material has entered opened systems or components, PVNGS will adopt equivalent guidance provided in NEI 11-04A, Revision 0, Part V, Section 4, "CONTROL OF SYSTEMS AND EQUIPMENT IN THE OPERATIONAL PHASE", which states: "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."
17.2.3.11 – Control of Construction,	5.4 - CONTROL OF SYSTEMS AND	The term "construction" is generally no longer used in the new QAPD as	I	PVNGS has already or will implement the enhanced maintenance and modification program

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
Maintenance (Preventive / Corrective), and Modifications	EQUIPMENT IN THE OPERATIONAL PHASE 2.3 - Design Control 2.10 - Inspection 2.11 - Test Control 2.15 - Nonconforming Materials, Parts, or Components 2.16 - Corrective Action 2.5.4 - Control of Systems and Equipment in the Operational Phase 2.5.5 - Plant Maintenance 2.12 – Control of Measuring and Test Equipment	the construction phase is complete. More detailed requirements for modifications and maintenance are described in NQA-1-2008 / NQA-1a-2009, Subpart 2.18 "Quality Assurance Requirements for Maintenance of Nuclear Facilities" including preventive maintenance (including vendor recommendations, monitoring and evaluating for degradation of performance, evaluating the effectiveness of preventive maintenance) and corrective maintenance (requiring engineering evaluation for failures identified that could have serious effect on safety or operability, provisions for emergency maintenance work).		requirements in station administrative procedures.
17.2.3.12 – Control of Surveillance Testing and Inspection	2.10 - Inspection 2.11 – Test Control	The existing requirements of UFSAR section 17.2.3.12 – Control of Surveillance Testing and Inspection are included in QAPD sections 2.10 and 2.11.	N	N/A
17.2.3.13 – Radiological Control	Details intentionally not included	There is no specific section dedicated to "Radiological Control" in the new QAPD. Required procedural coverage for the operational phase includes radiation protection and radioactive material	N	Radiological Controls are generally covered by regulations outside of 10 CFR 50, Appendix B, such as 10 CFR 20, STANDARDS FOR PROTECTION AGAINST RADIATION. Operational phase procedures for radiological controls are required as described at QAPD 5.3. In addition, audits of

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		controls.		radiation protection and radioactive material controls are performed per QAPD 2.18, "Audits".
17.2.3.14 – Control of Radioactive Waste	Details intentionally not included	There is no specific section dedicated to "Control of Radioactive Waste" in the new QAPD. Required procedural coverage for the operational phase includes handling of radioactive materials and wastes.	N	Controls for radioactive materials and wastes are generally covered by regulations outside of 10 CFR 50, Appendix B, such as 10 CFR 20, Standards for Protection Against Radiation; 10 CFR 71, Packaging and Transportation of Radioactive Material; and 10 CFR 72, Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste. Operational phase procedures for handling of radioactive materials and wastes are required as described at QAPD 5.3. In addition, audits related to control of radioactive materials and wastes are performed per QAPD 2.18, "Audits". In addition, the requirements of 10 CFR 71, Subpart H and 10 CFR 72, Subpart G, are specifically included within the PVNGS QA Program scope as described at QAPD 1.0.
17.2.4.1 – Policy for Control of Quality Verifications and Self Assessments	2.10 - Inspection 2.11 - Test Control	Level I, Level II, and Level III verifications are not specifically described in the new QAPD. PVNGS will not apply the three-level approach to quality verification as previously described.	N	The elements of the three level approach to verification are similar to the those verification activities described in NEI 11-04A, Part II/Section 2, Quality Assurance Program; NEI 11-04A, Part II/Section 10, Inspection; and NEI 11-04A, Part II/Section 18, Audits, which are intended to meet the requirements of 10 CFR 50, Appendix B. With regard to performance of inspections and tests for the operational phase, NEI 11-04A includes specific exceptions to NQA-1-2008/NQA-1a-2009 regarding persons or organizations performing

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
				inspections and tests, and regarding qualifications of inspection and test personnel. These exceptions have been previously accepted by the NRC. Specific verification activities related to operating status control are intentionally separated from the more traditional quality verifications (inspections) required by 10 CFR 50, Appendix B, Criterion 10, in order to provide clarity in the requirements for the various types of verifications . PVNGS is adopting the guidance of NEI 11-04A, Part II/Section 14, Inspection, Test, and Operating Status, and Part V/Section 4, Control of Systems and Equipment in the Operational Phase, which specifically address verification requirements related to equipment status control.
17.2.4.2 – Level I Verifications	2.3 - Design Control 2.10 - Inspection, 2.14 - Inspection, Test, and Operating Status 5.4 – Control of Equipment and Systems in the Operational Phase	Level I verifications are not specifically detailed in the new QAPD. The terms "worker verifications", "supervisory verifications", "second party verifications", and "independent" inspections are no longer specifically described.	N	The intent of Level I Verifications in the existing PVNGS QA Program was to generically meet the requirements of: 10CFR50, Appendix B, Criterion 3 (design verifications); Criterion 10 (inspections), and Criterion 14 (independent verification of operating activities), and additional operational phase verifications resulting from the Three Mile Island accident (reference NUREG-0737). In the new QAPD, equivalent verification requirements are included in the applicable QAPD sections.
17.2.4.3 – Level II Verifications	2.2 - QA Program	The term "Level II Verifications" is no longer used in the new QAPD.	N	Similar functions are accomplished by adopting NEI 11-04A Part II/Section 2
17.2.4.4 – Level III Verifications	2.2 - QA Program 2.18 - Audits	The term "Level III Verifications" is no longer used in the new QAPD.	N	Similar functions are accomplished by adopting NEI 11-04A Part II/Section 2 (for Assessments),

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
	5.2.2 Independent Review-	"Assessments" are not specifically described.		Part II/Section 18 (for Audits), and Part V/Section 2.2 (for independent review of operating activities).
17.2.5.1 – Policy for Control of Conditions Adverse to Quality and Corrective Actions	2.15 - Nonconforming Materials, Parts, or Components 2.16 – Corrective Action	Overall there is no change in existing requirements, with minor differences for UFSAR 17.2.5.1 and 17.2.5.3 as noted below.	N	N/A
17.2.5.1 – Policy for Control of Conditions Adverse to Quality and Corrective Actions	2.15 - Nonconforming Materials, Parts, or Components 2.16 – Corrective Action	There are no provisions in NEW QAPD requiring Nuclear Assurance Division to concur with all dispositions to significant conditions adverse to quality.	R	Follow-up and verification of corrective actions may be accomplished by various means as described in NEI 11-04A, Revision 0, Part 2/Section 18 and QAPD 2.18, which state: "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."
17.2.5.3 Responsibilities	Details intentionally not included	Responsibilities are more generally described in QAPD 2.1.	N	Functional description of the organizational relationships, authorities, and responsibilities is not considered a reduction in commitment per 10 CFR 50.54(a) (3)(iii) and (iv).
17.2.6.1 – Policy	2.5 – Instructions, Procedures and Drawings 2.6 – Document Control 2.17 – Quality Assurance Records	General discussion on documents and records policy; no overall change in requirements.	N	N/A
17.2.6.2 – Instructions, Procedures, Drawings,	Details intentionally not included	The revised QAPD will no longer include specific requirements for	R	Document controls, including requirements for reviews, will be implemented per NEI 11-04A,

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
and Policies		Nuclear Assurance review of documents and will not identify the specific objectives for such Nuclear Assurance document reviews. The following details are being removed: • Nuclear Assurance review of specific documents • Nuclear Assurance reviews to independently verify that the specific documents have been prepared and reviewed in accordance with established policy and program controls • Nuclear Assurance reviews to verify policy and program requirements have been incorporated.		Revision 0, Part 2/Section 6, "DOCUMENT CONTROL" and revised QAPD 2.6 which state, in part: "The following controls, including electronic systems used to make documents available, are applied to documents and changes thereto: • 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"
17.2.6.2 – Instructions, Procedures, Drawings, and Policies	2.6 - Document Control	There will be no specific QAPD requirement to clearly identify documents as "quality related."	R	PVNGS will meet the requirements of QAPD 2.6, Document Control, which states "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."
17.2.6.3 – Document Control	2.1- Organization	Responsibilities are more generally described in QAPD 2.1.	N	Organizational structure and responsibilities are more generically described in QAPD 2.1.
17.2.6.3 – Document Control	2.6 - Document Control	The listing of documents in the proposed QAPD does not describe	N	The revised QAPD adopts content guidance of NEI 11-04A and includes commitment to NRC

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		the "minimum" documents to be controlled. Some of the "minimum" documents described are not specifically described in the revised QAPD. These documents include: • Documents related to computer software • Operating and Special Orders • Component Classification Evaluations • Equipment Qualification Data Files (EQ Binders) • Operating Licenses		Regulatory Guide 1.28, Revision 4. The revised QAPD does not provide an all-inclusive list of documents to be controlled or attempt to identify every type of document to be controlled. The listing provides examples of the types of documents to be controlled. The specific documents to be controlled and the specific methods used for their control are defined in station administrative procedures.
17.2.6.3 – Document Control	2.6 - Document Control	In the current QAPD, master lists are required to identify the current revision of documents and these master lists are maintained. As an alternative to master lists, documents may be issued as controlled documents and, as such, shall be appropriately stamped. This specific requirement is not included in the proposed QAPD.	R	PVNGS will apply controls to documents and changes thereto as described in NEI 11-04A, Revision 0, Part II/Section 6, "DOCUMENT CONTROL", as follows: "The following controls, including electronic systems used to make documents available, are applied to documents and changes thereto: • A method to identify the correct document (including revision) to be used and control of superseded documents • A method to ensure the correct documents are being used"
17.2.6.3 – Document Control	2.5 – Instructions, Procedures and Drawings 2.6 – Document Control 2.17 – Quality Assurance Records	The current QAPD requires provisions to prohibit unauthorized disclosure of safeguards' information. These provisions shall include identification of the	N	Requirements for protection and disclosure of safeguards information are not directly related to 10 CFR 50 Appendix B. Though these requirements are not specifically called out in the revised QAPD, PVNGS must meet NRC regulatory requirements

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		documents, restrictions on their distribution, and storage in locked security storage containers. The proposed QAPD does not delineate these requirements.		related to security and safeguards information. The applicable NRC regulations and the NRC-approved PVNGS Security Plan provide the licensing basis and commitments for control of security sensitive and safeguards documents, not the QAPD.
17.2.6.4 – Quality Assurance Records	2.17 – Quality Assurance Records UFSAR 13.1 - PVNGS Organization QAPD 2.1 - Organization 1.8 – Conformance to NRC Regulatory Guides 2.4 – Regulatory Commitments	The existing QAPD identifies specific "minimum" records to be maintained and their retention as well as includes direction to apply the guidance for retention of operational phase records as described in Appendix A of ANSI N45.2.9-1974. The proposed QAPD does not specifically describe a list of "minimum" records to be maintained or any specific retention times. The proposed QAPD does not contain these details, however does describe methods to be used by PVNGS to meet Regulatory Position C.1.a(3) of Regulatory Guide 1.28, Revision 4.	R	Records to be maintained for the operational phase and their retention times will be based upon Regulatory Position C.1.a.(3) of Regulatory Guide 1.28, Revision 4, as described in NEI 11-04A, Revision 0, Part II/Section 17, "QUALITY ASSURANCE RECORDS". Appropriate modifications to the wording of NEI 11-04A, Revision 0, Part II/Section 17, are included to address those initial design, construction, and start-up records that are to be maintained to meet previous commitments to Regulatory Guide 1.88 and related guidance contained in ANSI N45.2.9-1974.
Appendix 17.2A (Deleted)	Organizational charts included at QAPD Appendix A.	Organizational charts are included at QAPD Appendix A.	N	This UFSAR appendix providing organizational charts was previously deleted. The overall PVNGS organization, responsibilities, and reporting relationships are functionally described in UFSAR 13.1 and QAPD 2.1.
Appendix 17.2B – Compliance Matrix	QAPD 4.0	Differences in existing and proposed regulatory guide commitments are	N	Specific sections of QAPD Sections 2.0 and 3.0 identify specific details related to NRC Regulatory

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		identified in a separate Regulatory Guide Comparison Matrix.		Guides and endorsed industry standards. QAPD Section 4.0 provides an overall summary of the PVNGS QA Regulatory Guide commitments going forward. PVNGS commitment to R. G. 1.28, Revision 4, which endorses NQA-1-2008/NQA-1a-2009 and retaining certain existing regulatory guide commitments is considered to be equivalent to the previous commitments to the various regulatory guides that endorse ANSI N45.2 and related ANSI N45.2 series daughter standards. Adoption of the additional administrative controls defined by NEI 11-04A, Revision 0, in conjunction with a commitment to Regulatory Guide 1.28, Revision 4, is considered equivalent to previous commitment to Regulatory Guide 1.33, Revision 2.
Appendix 17.2C – Terms and Definitions	QAPD 2.4 (RG 1.28, R4) QAPD 5.1	In general, NRC Regulatory guide 1.28, Revision 4, adopts the NQA-1-2008/NQA-1a-2009 terms and definitions. NEI 11-04A, Part V, Section 1, provides additional terms and definitions for the operational phase.	N	Adopting new QA standards necessitates the adoption of terms and definitions consistent with their use in the context of the new standards. To do otherwise would promote confusion and ambiguity in the interpretation and implementation of the revised QA Program requirements.
Appendix 17.2D – Comparison of QA Plan Requirements with those of 10CFR50, APP.B AND SELECTED ANSI STDS	Details intentionally not included	There is no comparison matrix of QA Plan requirements with those of 10CFR50 Appendix B in the new QAPD. There is no comparison matrix of QA Plan requirements with those of selected industry standards in the new QAPD.	N	The proposed QA Program is structured using the NEI 11-04A, Revision 0 template. NEI 11-04A Part II, Sections 1 through 18, are structured such that the correlation of the 18 criteria of 10CFR50 Appendix B to new QAPD sections is clearly evident. Applicable sections of NQA-1-2008/NQA-1a-2009 are made at the related QAPD sections, including any specific exceptions or clarifications.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
APPENDIX 17.2E DELETED	N/A	N/A	N	Previously deleted. (The Nuclear Assurance document review requirements are described in the text of the QA Program Description contained in Section 17.2)
Appendix 17.2F – Quality Augmented Programs	QAPD 3.0 - NONSAFETY-RELATED SSC QUALITY CONTROL QAPD 2.3 – Design Control	There are no longer specific QAPD sections providing details related to: • Fire Protection • Radwaste Management • Security • Emergency Plans and Equipment • Seismic Category IX • Station Blackout Coping Equipment Implementing details are eliminated.	N	The previous quality augmented programs for items and activities that are significant contributors to plant safety OR to meet PVNGS regulatory commitments are now addressed by QAPD Section 3.0. Format and content are as provided in the NEI 11-04A, Revision 0, Quality Assurance Program Description template. Quality classification for quality augmented, nonsafety-related SSCs is a design control function carried out by the nuclear engineering organization under design controls similar to those for safety-related SSCs and governed by the requirements of 10 CFR 50, Appendix B, Criterion 3. Implementing details for quality augmented programs are described in station procedures consistent with the guidance in NEI 11-04A, Revision 0, Part III.
Appendix 17.2G – Control of Computer Software and Data	QAPD 2.3 – Design Control QAPD 2.4 – Procurement Document Control QAPD 2.11 – Test Control	More detailed requirements are provided in NQA-1-2008 / NQA-1a-2009 Subpart 2.7 "Quality Assurance Requirements for Computer Software for Nuclear Facility Applications" than those currently in UFSAR Appendix 17.2G. QAPD reference to Subpart 2.7 invokes	I	PVNGS has or will implement the enhanced computer software requirements in station procedures as described in the revised QAPD.

Current Quality Assurance Program Description (QAPD) Section	Revised UFSAR or NEW QAPD Section	Differences	R/N/I (Note 1)	Basis for Acceptability
		enhanced controls for software development, procurement, testing, maintenance, and control.		
18.I.B.1.2 – Independent Safety Engineering Group	QAPD 2.1.5.1 - Quality Assurance Management QAPD 2.2 - QA Program QAPD 5.2.1 - Onsite Operating Organization Review	Revised PVNGS evaluation at 18.I.B.1.2 to read: "The program and related procedures for review of operating experience described at UFSAR 18.I.C.5 are the primary method used at PVNGS to review and act upon internal and external operating experience. To augment the program and related procedures described at 18.I.C.5, the Director, Nuclear Assurance, is responsible to monitor and assess operational activities to provide assurance that activities important to safety are performed satisfactorily. Specific functions of the Nuclear Assurance staff are described in the Operations Quality Assurance Program Description (QAPD)"	R	Specific implementing details are removed. The reference to 13.4.4 becomes irrelevant as content of UFSAR 13.4 is being consolidated into the new Operations QAPD. UFSAR 18.I.B.1.2 is also revised to refer to the new Operations QAPD. PVNGS will continue to satisfy the intent of the guidance contained in NUREG-0737 related to the Independent Safety Engineering Group (ISEG) function. Current industry-accepted monitoring and assessment practices, as well as increased access to and use of relevant operating experience by plant staff, does not warrant a separate group of independent safety engineers to accomplish the objective of the ISEG function. The ISEG function is encompassed within the normal operational performance monitoring and assessment activities that are routinely preformed by the independent Nuclear Assurance organization at PVNGS.

ATTACHMENT 7

NEI 11-04A, Revision 0, Appendix 1, Regulatory Guide 1.33, Rev. 2, ANSI N18.7-1976, NQA-1- 2008/NQA-1a-2009 Standards, and NEI 11-04 QAPD Compliance Matrix

(82 Pages Follow)

APPENDIX 1

Regulatory Guide 1.33, Rev. 2, ANSI N18.7-1976, NQA-1-2008/NQA-1a-2009 Standards, and NEI 11-04 QAPD Compliance Matrix

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
1. Scope		
This Standard provides requirements and recommendations for an administrative controls and quality assurance program necessary to provide assurance that operational phase activities at nuclear power plants are carried out without undue risk to the health and safety of the public. The requirements of this Standard apply to all activities affecting the safety-related functions of nuclear power plant structures, systems, and components. It is not intended to apply to test mobile and experimental reactors nor reactors not subject to U.S. Nuclear Regulatory Commission licensing. However, applicable sections of this Standard should be used as they apply to related activities. Activities included are: design changes, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling and modifying.	NQA-1, Introduction to Part I NQA-1, Introduction to Part II QAPD, Part I, Introduction QAPD, Part II, Section 2	
It is recommended that the administrative controls and quality assurance provisions of this Standard be applied to other important plant equipment at a level commensurate with the importance of the equipment to reliable and efficient plant operation. However, it is emphasized that this Standard is directed primarily toward administrative controls and quality assurance associated with safety-related activities, equipment and procedures.	NQA-1, Introduction to Part I NQA-1, Introduction to Part II QAPD, Part I, Introduction QAPD, Part II, Section 2	
This Standard incorporates criteria that permit a degree of flexibility, since administrative practices vary among		NQA-1 and the NEI 11-04 are similar in allowing some

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
organizations operating nuclear power plants.		flexibility based on importance to safety.
The Nuclear Regulatory Commission (NRC) promulgates regulations applicable to many aspects of the design, construction and operation of nuclear power reactors. This Standard contains criteria for administrative controls and quality assurance for nuclear power plants during the operational phase of plant life. This phase is generally considered to commence with initial fuel loading, except for certain preoperational activities. Certain operating activities may commence prior to fuel loading and certain initial construction activities may extend past fuel loading. Owner organizations should identify clearly those activities that fall in these overlapping time periods and should specify whether the activities are to be considered as operational or as construction activities.	NQA-1 Introduction to Part I NQA-1, Introduction to Part II QAPD, Part I, Introduction QAPD, Part II, Section 2	
This Standard is intended to be consistent with applicable criteria for quality assurance, including those given in Title 10, Code of Federal Regulations, Part 50, "Licensing of Production and Utilization Facilities," Appendix B. [1][1] This Standard fully and completely describes the general requirements and guidelines of American National Standard Quality Assurance Program Requirements for Nuclear Power Plants, N45.2-1971, [2] as those requirements and guidelines apply during the operational phase of plant life.	QAPD Part I, Introduction QAPD, Part II, Section 2 QAPD, Part IV	10 CFR 50, Appendix B, for the operational phase is met through a combination of NQA-1 and the QAPD in lieu of a commitment to implement the requirements of ANSI N18.7-1976/ANS-3.2. (Commitment to industry standards is addressed in nuclear facility's FSAR, [Usually Chapter 1, and QAPD referenced in chapter 17]. Most of the listed standards are updated and

[1] Footnote from N18.7 – "Numbers in brackets refer to corresponding numbers in Section 6, References."

<table>
<tr><th>American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions</th><th>NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD</th><th>Comments</th></tr>
<tr><td>Reg. Guide 1.33 – C. Regulatory Position, paragraph 1: The overall quality assurance program requirements for the operation phase that are included in ANSI N18.7-1976/ANS-3.2 are acceptable to the NRC staff and provide an adequate basis for complying with the quality assurance program requirements of Appendix B to 10 CFR Part 50, subject to the following [NOTE: The Regulatory Positions that followed this statement are inserted into the 'best fit' sections of the N18.7-1976/ANS-3.2 text in this column of the table.]:
Reg. Guide 1.33 – C. Regulatory Position 2. Throughout ANSI N18.7-1976/ANS-3.2, other documents required to be included as a part of this standard are identified at the point of reference. The specific acceptability of these standards listed in ANSI N18.7-1976/ANS-3.2 has been addressed in the latest revision of the following regulatory guides:
ANSI Standard — Regulatory Guide
N45.2 — 1.28
N45.2.1 — 1.37
N45.2.2 — 1.38
N45.2.3 — 1.39
N45.2.4 — 1.30
N45.2.5 — 1.94
N45.2.6 — 1.58
N45.2.8 — 1.116
N45.2.9 — 1.88
N45.2.10 — 1.74
N45.2.11 — 1.64
N45.2.13 — 1.123</td><td></td><td>incorporated into NQA-1.
For the QAPD the following cross-reference is provided:

N45.2 is replaced by NQA-1-2008 and NQA-1a-2009 Addenda as indicated in Reg. Guide 1.28, Rev. 4.
Table A-3 of RG 1.28 provides a cross-reference between the RGs, ANSI Standard and their location in NQA, as follows:

<table>
<tr><th>RG</th><th>ANSI</th><th>NQA-1</th></tr>
<tr><td>1.30</td><td>N45.2.4</td><td>Subpart 2.4</td></tr>
<tr><td>1.37</td><td>N45.2.1</td><td>Subpart 2.1</td></tr>
<tr><td>1.38 W[1]</td><td>N45.2.2</td><td>Subpart 2.2</td></tr>
<tr><td>1.39 W[1]</td><td>N45.2.3</td><td>Subpart 2.3</td></tr>
<tr><td>1.58 W</td><td>N45.2.6</td><td>Part I</td></tr>
<tr><td>1.64 W</td><td>N45.2.11</td><td>Part I</td></tr>
<tr><td>1.88 W</td><td>N45.2.9</td><td>Part I</td></tr>
<tr><td>1.94 W[1]</td><td>N45.2.5</td><td>Subpart 2.5</td></tr>
<tr><td>1.116 W[1]</td><td>N45.2.8</td><td>Subpart 2.8</td></tr>
<tr><td>1.123 W</td><td>N45.2.13</td><td>Part I</td></tr>
<tr><td>1.144 W</td><td>N45.2.12</td><td>Part I</td></tr>
</table></td></tr>
</table>

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
N18.1 1.8 N18.17 1.17 N101.4 1.54 *Note:* N45.2.12 is discussed in NRC documents WASH-1283, "Guidance on Quality Assurance Requirements During Design and Procurement Phase of Nuclear Power Plants," (Grey Book) and WASH-1309, "Guidance on Quality Assurance Requirements During the Construction Phase of Nuclear Power Plants," (Green Book) and will be endorsed by a regulatory guide upon its approval as an ANSI standard.		1.146 W | N45.2.23 | Part I W = Withdrawn Reg. Guide W[1] = Withdrawn Reg. Guide after issuance of RG 1.28, Rev.4, June 2010 • N45.2.10 is now NQA-1-2008 and NQA-1a-2009, Part I, Introduction, Section 400; Reg. Guide 1.74 has been withdrawn • N18.1 is now ANS-3.1 • N18.17 and Reg. Guide 1.17 have been withdrawn and the applicable requirements included in 10 CFR Part 73 • N101.4 has been withdrawn and replaced with several other standards as discussed in RG 1.54, Rev. 2)
2. Definitions		
2.1 Limitations.		
The definitions given below are applicable specifically to this Standard. Other terms and their definitions are contained in American National Standard, Quality Assurance Terms and Definitions, N45.2.10 [3].	NQA-1, Introduction to Part I	NQA-1 replaces N45.2 and daughters, including N45.2.10
2.2 Glossary of Terms		
administrative controls. Rules, orders, instructions,	QAPD, Part V, Section 1	

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
procedures, policies, practices and designations of authority and responsibility.		
audit. A formal, independent examination with intent to verify conformance with established requirements.	NQA-1, Introduction to Part I	NQA-1 provides more clarity
emergency procedures. Written procedures which specify actions, including manipulation of plant controls, to reduce the consequence of an accident or potentially hazardous condition which has already occurred, to implement the emergency plan, or to prepare for possible hazardous natural occurrences.	QAPD, Part V, Section 3	The intent of the definition is met by the description of the Emergency Operating Procedures and Emergency Plan Implementing Procedures in the QAPD.
experiments. Performance of those plant operations carried out under controlled conditions in order to establish characteristics or values not previously known.	QAPD, Part V, Section 1	
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).	QAPD, Part V, Section 1	
inspection. Examination, observation, or measurement to determine the conformance of materials, supplies, components, parts, appurtenances, systems, personnel performance, procedures, processes or structures to predetermined requirements.	NQA-1, Introduction to Part I	
maintenance and modification procedures. Written procedures defining the policies and practices by which structures; mechanical, electrical and instrumentation and control systems; and components thereof of a nuclear power plant are kept in a condition of good repair or efficiency so	NQA-1, Part II, Subpart 2.18, Sections 202 and 404.1 QAPD, Part V, Section 4	

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
that they are capable of performing their intended functions. As used in this Standard, these procedures apply to those activities performed by maintenance or contractor personnel to maintain, repair or modify safety-related equipment. Related activities are those actions taken by operating personnel to determine that a planned maintenance activity can be safely performed under the existing plant operating conditions, to authorize the release of equipment to be maintained in accordance with equipment control procedures, and to assure that the equipment has been returned to normal operating status at the completion of the maintenance work including verification of functional acceptability. Procedures for these related activities by operating personnel are considered to be operating procedures, but may be included in maintenance procedures.		
nuclear power plant. Any plant using a nuclear reactor to produce electric power, process steam or space heating.	QAPD, Part V, Section 1	
off-normal condition procedures. Written procedures which specify operator actions for restoring an operating variable to its normal controlled value when it departs from its range or to restore normal operating conditions following a perturbation. Such actions 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.	QAPD, Part V, Section 3	
onsite operating organization. Onsite personnel concerned with operation, maintenance and certain	QAPD, Part V, Section 1	

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technical services.		
operating activities. Work functions associated with normal operation and maintenance of the plant, and technical services routinely assigned to the onsite operating organization.	QAPD, Part V, Section 1	
operating procedures. Written procedures defining the normal method, means and limits of operation of a nuclear power plant, a plant system or systems, or processes, including actions to be taken by operating personnel for removal from and return to service equipment on which maintenance is to be or has been performed (see also maintenance and modification procedures).	QAPD, Part V, Section 4	
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 fuel loading, and ends with plant decommissioning.	QAPD, Part V, Section 1	
owner organization. The organization, including the onsite operating organization, which has overall legal, financial and technical responsibility for the operation of one or more nuclear power plants.	NQA-1, Introduction to Part I, Section 400 QAPD, Part II, Section 1	This term is also defined in ANS-3.1
quality assurance. All those planned and systematic actions necessary to provide assurance that a structure, system or component will perform satisfactorily in service. It applies to all activities associated with doing a job correctly as well as verifying and documenting the	NQA-1, Introduction to Part I	

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satisfactory completion of the work.		
review. A deliberately critical examination, including observation of plant operation, evaluation of audit results, procedures, certain contemplated actions, and after-the-fact investigations of abnormal conditions (see independent review).	QAPD, Part V	
shall, should and may. The word "shall" is used to denote a requirement; the word, "should" to denote a recommendation; and the word "may" to denote permission, neither a requirement nor a recommendation.	NQA-1, Introduction to Part I (as part of the definition of guideline)	The word "may" is not defined in NQA-1 or Regulatory Guide 1.33, but used in NQA-1 to denote permission. These words are also defined in ANS-3.1.
supervision. Direction of personnel activities or monitoring of plant functions by an individual responsible and accountable for the activities he directs or monitors.	QAPD, Part V	
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.	QAPD, Part V	
system. An integral part of a nuclear power plant comprising components which may be operated or used as a separate entity to perform a specific function.	QAPD, Part V	
testing. Performance of those steps necessary to determine that systems or components function in accordance with predetermined specifications.	NQA-1, Introduction to Part I	NQA-1 expounds on the definition.

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3. Owner Organization		
3.1 General.		
The owner organization shall establish an administrative controls and QA program which complies with this Standard. The program shall be in effect at all times during the operational phase to assure that operational phase activities are carried out without undue risk to the health and safety of the public. The program shall require that decisions affecting safety are made at the proper level of responsibility and with the necessary technical advice and review. The owner organization may delegate to other organizations the work of establishing and executing the administrative controls and quality assurance program or any part thereof, in accordance with this Standard, but shall retain responsibility.	NQA-1, Requirement 2 QAPD Policy Statement QAPD Part II, Sections 1 and 2	
3.2 Assignment of Authority and Responsibility.		
It is essential that all members ... involved in operation of nuclear power plants, including those at the highest management levels, recognize the necessity that plants be operated under a well formulated & detailed administrative controls and QAP to assure safety and efficiency. Lines of authority, responsibility and communication shall be established from the highest management level through intermediate levels to and including the onsite operating organization (including offsite organizations assigned responsibility for procurement, design and construction, QA, and technical support activities). These relationships shall be documented and updated, as appropriate, in	NQA-1, Requirement 1 QAPD, Part I, Section 1	

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organizational charts, functional descriptions of departmental responsibilities and relationships and job descriptions for key personnel positions or equivalent. The owner organization shall specify in writing the authority and responsibility assigned to individuals and organizations involved in establishing, executing and measuring the overall effectiveness of the administrative controls and quality assurance program required by this Standard.		
The persons or organizations responsible for defining and measuring the overall effectiveness of the program shall be designated, shall be sufficiently independent from cost and scheduling considerations when opposed to safety considerations, shall have direct access to responsible management at a level where appropriate action can be accomplished, and shall report regularly on the effectiveness of the program to the plant manager and the cognizant offsite management.	NQA-1, Requirement 1	
Persons or organizations performing functions of assuring that the administrative controls and quality assurance program is established and implemented or of assuring that an activity has been correctly performed shall have sufficient authority and organizational freedom to: identify quality problems; initiate, recommend or provide solutions, through designated channels; and verify implementation of solutions.	NQA-1, Requirement 1	
The organizational structure and the functional responsibility assignments shall be such that: (1) Attainment of program objectives is accomplished by	NQA-1, Requirement 1	

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those ... assigned responsibility for performing work. This may include interim examinations, checks, and inspections of the work by the individual performing the work. (2) Verification of conformance to established program requirements is accomplished by a qualified person who does not have responsibility for performing or directly supervising the work. The method and extent of such verification shall be commensurate with the importance of the activity to plant safety and reliability.		
In structuring the organization and assigning responsibility, quality assurance should be recognized as an interdisciplinary function involving many organizational components and, therefore, should not be regarded as the sole domain of a single quality assurance group. For example, it may be more appropriate for nuclear engineers to perform reviews of plant nuclear engineering activities rather than quality assurance engineers because of the special competence required to perform these reviews. Quality assurance encompasses many functions and activities and extends to various levels in all participating organizations, from the top executive to all workers whose activities may influence quality.	NQA-1, Requirement 1	
3.3 Indoctrination and Training.		
Provisions shall be made for indoctrination and training of those personnel in the owner organization performing activities affecting quality to assure that suitable proficiency is achieved and maintained. Such personnel also shall be provided training concerning the administrative controls and quality assurance program	NQA-1, Requirement 2 QAPD, Part II, Section 2	

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which, as a minimum, shall include the following areas: - Overall company policies, procedures, or instructions which establish the program - Procedures or instructions which implement the program related to the specific job-related activity.		
3.4 Onsite Operating Organization		
3.4.1 General.		
A number of factors influence management in its decision regarding the establishment of an onsite operating organization. These include the owner organization's established staffing policies, the physical size and complexity of the nuclear power plant, the number of units, the extent of assistance provided by offsite technical support organizations, the extent of reliance on consultants and the availability of qualified personnel from other sources to assist in activities, such as initial start-up, refueling, maintenance or modification work. A nuclear power plant onsite operating organization may change with time. For example, the number and qualifications of personnel making up the onsite technical support staff can generally be reduced as a plant progresses through initial operation to operational maturity. Management shall give careful consideration to the timing and extent of such changes.	NQA-1, Requirement 1 QAPD, Part II, Section 1	
3.4.2 Requirements for the Onsite Operating Organization.		
The onsite operating organization shall include one or more individuals knowledgeable in the following fields: nuclear power plant operation; nuclear power plant mechanical,	QAPD, Part II, Section 1	

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electrical and electronic systems; nuclear engineering; chemistry and radiochemistry; radiation protection; and quality assurance.		
Initial incumbents or replacements for members of the onsite operating organization and offsite technical support organizations shall have appropriate experience, training and retraining to assure that necessary competence is maintained in accordance with the provisions of American National Standard for Selection and Training of Nuclear Power Plant Personnel, N18.1-1971. [4] Personnel whose qualifications do not meet those specified in N18.1 and who are performing inspection, examination, and testing activities during the operational phase of the plant, including preoperational and start-up testing, shall be qualified to American National Standard Qualifications of Inspection, Examination, and Testing Personnel for the Construction Phase of Nuclear Power Plants, N45.2.6-1973 [5], except that the QA experience cited for Levels I, II, and III should be interpreted to mean actual experience in carrying out the types of inspection, examination, or testing activity, being performed.	NQA-1, Requirement 2 QAPD, Part II, Section 2 QAPD, Part IV, (by commitment to ANS-3.1)	The facility technical specifications also address commitments for training and qualification of the operating staff. Between NQA-1-2008, NQA-1a-2009 Addenda, and the QAPD content, alternative requirements that meet the intent of ANSI N45.2.6 are established.
The owner organization shall designate those positions in the onsite operating organization which shall be filled by personnel holding NRC reactor operator and senior reactor operator licenses. Requirements for the minimum number of personnel holding such licenses who shall be present at the plant under various operating conditions and situations shall also be specified.	QAPD, Part II, Section 1 QAPD, Part IV (by the commitment to ANS-3.1 where it describes functional positions that require an NRC operator license)	The facility technical specifications establish specific requirements for numbers of personnel requiring NRC licenses based on operating conditions/situations.

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The Plant Manager shall have overall responsibility for the execution of the administrative controls and quality assurance program at the plant to assure safety. An individual or organizational unit knowledgeable and experienced in nuclear power plant operational phase activities and quality assurance practices shall be designated and assigned the responsibility to verify that the program is being effectively implemented. Depending on the organizational structure, the individual or organizational unit may report functionally to onsite plant management or an offsite organization (see also 3.2). Reporting to onsite plant management is preferable since such an arrangement usually results in improved communications in identifying problems and initiating corrective action. The individual or organizational unit in this case may receive technical guidance from offsite support groups. This individual's or organizational unit's duties and responsibilities shall be such that the required attention can be devoted, as required, to verifying that the program is being effectively executed. The individual or organizational unit shall report on the effectiveness of the program to the Plant Manager and to other cognizant management as may be designated. Their activities shall be periodically audited by designated offsite personnel.	NQA-1, Requirement 1 NQA-1, Requirement 2 QAPD, Part II, Section 1 QAPD, Part II, Section 18 for assessing and reporting on the effectiveness of the QA program implementation	

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4. Reviews and Audits		
4.1 General.		
Programs for reviews and for audits of activities affecting plant safety during the operational phase shall be established by the owner organization to:	NQA-1, Requirement 18 QAPD, Part II, Sections 1, 2, 3, 5, and 18 QAPD, Part V, Section 2	
(1) Verify that these activities are performed in conformance with this Standard and with company policy and rules, approved operating procedures and license provisions.	NQA-1, Requirement 18 QAPD, Part II, Sections 1, 2, 3, 5, 18 QAPD, Part V, Section 2	
(2) Review significant proposed plant changes, tests and procedures	QAPD, Part II, Sections 5,18 QAPD, Part V, Section 2	
(3) Verify that reportable events, which require reporting to NRC in writing within 24 hours, are promptly investigated and corrected in a manner which reduces the probability of recurrence of such events	QAPD, Part V, Section 2	
(4) Detect trends which may not be apparent to a day-to-day observer	QAPD, Part II, Section 18 QAPD, Part V, Section 2	
These programs for reviews and audits shall, themselves, be periodically reviewed for effectiveness by management of the owner organization.	QAPD, Part II, Section 18.2	
The programs provided for reviews and audits may take different forms. For example, the owner organization may assign these functions to separate established units independent of the onsite operating organization, or appoint a committee comprised of individuals from within		This paragraph contains general guidance and historical information, no requirements are specified.

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or outside the owner organization to perform reviews and exercise overview of audits. Historically, a committee approach was used to provide both review and audit capability .... This approach was employed to make the most efficient use of personnel with pertinent experience and qualifications. In the ensuing period, the availability of competent personnel has significantly increased as the nuclear power industry has expanded and the sources of trained manpower have responded to the resulting demand. This growing pool of talent in the aggregate, is sufficient to encourage alternative approaches to the review and audit committees commonly used in the past.		
In general, the time required of individuals serving as members of independent review groups is a function of the number of nuclear power plants an owner organization has in operation. For this reason, owner organizations contemplating rapid growth and an expanding commitment to nuclear power should regard the use of committees to meet the independent review functions as an interim approach for effective utilization of available technical expertise. In addition, such owner organizations should include in their expansion planning, provisions for early establishment of organizational units to provide independent review, for recruitment of staff, and for an orderly transition to such an organizational structure in the event a committee approach has been used previously to meet the independent review function		This paragraph provides general guidance information, no requirements are specified.
An independent offsite organizational unit may be assigned review responsibilities including responsibility for reviewing audit reports provided by onsite staff members,		This paragraph provides general guidance information, no requirements are specified.

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or both functions may be assigned to an organizational unit that is independent of line responsibility for operating activities. This Standard does not specify an organizational structure for meeting the review and audit functions, but in lieu thereof delineates essential elements of satisfactorily comprehensive programs for review and for audit in the manner best suited to the owner organization involved.		
4.2 Program Description.		
Written programs for both audits and independent reviews shall be prepared that contain: (1) Subjects to be audited and independently reviewed. (2) Responsibility and authority of those supervising audits and conducting independent reviews. These responsibilities shall include the identification of problems and the verification of corrective action. Additional responsibilities may include recommendations to appropriate management of solutions to problems and the approval or disapproval of contemplated actions. (3) Mechanisms for initiating audit and independent review activities. (4) Provisions for use of specialists or subgroups. (5) Authority to obtain access to the nuclear power plant operating records and operating personnel to perform audits and independent reviews. (6) Requirements, for distribution of reports and other records to appropriate staff members and managers in the owner organization. (7) Identification of the management position (or positions, if auditors and reviewers have different reporting chains) to	NQA-1, Requirement 18 QAPD, Part II, Section 18 QAPD, Part V, Section 2	

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which auditors and independent reviewers report. (8) Provisions for assuring that personnel responsible for audit and independent review are kept informed on a timely basis of matters within their scope of responsibility. (9) Provisions for follow-up action, including re-audit of deficient areas where indicated. (10) Other provisions required for effective audits and independent reviews.		
4.3 Independent Review Program.		
Activities occurring during the operational phase shall be independently reviewed on a periodic basis. The independent review program shall be functional prior to initial core loading.	QAPD, Part V, Section 2	
4.3.1 Personnel.		
Personnel assigned responsibility for independent reviews shall be specified, in both number and technical disciplines, and shall collectively have the experience and competence required to review problems in the following areas: (1) Nuclear power plant operations (2) Nuclear engineering (3) Chemistry and radiochemistry (4) Metallurgy (5) Nondestructive testing (6) Instrumentation and control (7) Radiological safety (8) Mechanical and electrical engineering	QAPD, Part V, Section 2	

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(9) Administrative controls and quality assurance practices (10) Other appropriate fields associated with the unique characteristics of the nuclear power plant involved. An individual may possess competence in more than one specialty area. If sufficient expertise is not available from within the owner organization, independent reviews shall be supplemented through outside consultants or organizations. Provisions shall be made to assure that appropriate expertise is brought to bear in reviews of operational phase activities.		
4.3.2 Standing Committees Functioning as Independent Review Bodies		
4.3.2.1 Committee Composition.		
When a standing committee is responsible for the independent review program, it shall be composed of no less than five persons, of whom no more than a minority are members of the onsite operating organization. Competent alternates are permitted if designated in advance. The use of alternates shall be restricted to legitimate absences of principals.	QAPD, Part V, Section 2	
4.3.2.2 Meeting Frequency.		
Formal meetings of personnel assigned to a standing committee functioning as an independent review group shall be scheduled as needed. During the period of initial operation such meetings should be held no less frequently than 1/calendar quarter. Subsequently, the meeting frequency shall not be less than twice a year.	QAPD, Part V, Section 2	

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4.3.2.3 Quorum.		
A quorum for formal meetings of the committee held under the provisions of 4.3.2.2 shall consist of not less than a majority of the principals, or duly appointed alternates, and shall be subject to the following constraints: the chairman (or his duly appointed alternate) shall be present for all formal meetings; and no more than a minority of the quorum shall have line responsibility for operation of the plant.	QAPD, Part V, Section 2	
4.3.2.4 Meeting Records.		
Committee meeting minutes shall be prepared and retained, and disseminated promptly to appropriate members of management having responsibility in the area reviewed. All documentary material reviewed should be identified. Committee decisions and recommendations shall be documented. (See also Section 5.2.12.)	QAPD, Part V, Section 2	
4.3.3 Organizational Units Functioning as Independent Review Bodies.		
An organizational unit assigned responsibility for review of operational phase activities shall report to designated management with authority and responsibility for effective functioning of the unit and not immediately responsible for the performance of the activities to be reviewed. The supervisor of such an organizational unit should schedule periodic formal meetings of his staff, or of appropriate subparts thereof, for the purpose of fostering interaction in reviews of specific operational phase activities.	QAPD, Part V, Section 2	

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4.3.3.1 Documentation of Reviews.		
Written records of reviews shall be prepared and retained. All documentary material reviewed should be identified. Results of reviews ... including recommendations and proposed actions shall be subject to approval of the supervisor of the unit, and shall be disseminated promptly to management with responsibility in the area reviewed. (See also Section 5.2.12.)	QAPD, Part V, Section 2	
4.3.4 Subjects Requiring Independent Review.		
The following subjects shall be reviewed by the independent review body:	QAPD, Part V, Section 2	
(1) Written safety evaluations of changes in the facility as described in the Safety Analysis Report, changes in procedures as described in the Safety Analysis Report and tests or experiments not described in the Safety Analysis Report which are completed without prior NRC approval under the provisions of 10 CFR 50.59(a)(1). [1] This review is to verify that such changes, tests or experiments did not involve a change in the technical specifications or an unreviewed safety question as defined in 10 CFR 50.59(a)(2). [1]	QAPD, Part V, Section 2	
(2) Proposed changes in procedures, proposed changes in the facility, or proposed tests or experiments, any of which involves a change in the technical specifications or an unreviewed safety question as defined in 10 CFR 50.59(c). [1] Matters of this kind shall be referred to the independent review body by the onsite operating organization (see 4.4) following its review, or by other functional organizational units within the owner organization, prior to	QAPD, Part V, Section 2	Note – change in 50.59 language ("unreviewed safety question" no longer used) – but otherwise covered in QAPD, Part V, Section 2.2

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implementation.		
(3) Changes in the technical specifications or license amendments relating to nuclear safety prior to implementation, except in those cases where the change is identical to a previously reviewed proposed change. **Reg. Guide 1.33** – C. Regulatory Position 3. Section 4.3.4, "Subjects Requiring Independent Review," Item (3) states, in part, that changes to the technical specifications or license amendments related to nuclear safety are required to be reviewed by the independent review body prior to implementation. It should be noted that proposed changes to technical specifications or license amendments should be reviewed by the independent review body prior to their submittal to the Commission for approval.	QAPD, Part V, Section 2	
(4) Violations, deviations and reportable events, which require reporting to the NRC in writing within 24 hours, such as:	QAPD, Part V, Section 2	Regulations for reporting have changed, but the intent of this is addressed in QAPD, Part V, Section 2.2
(a) Violations of applicable codes, regulations, orders, technical specifications, license requirements or internal procedures or instructions having safety significance	QAPD, Part V, Section 2	
(b) Significant operating abnormalities or deviations from normal or expected performance of plant safety-related structures, systems, or components	QAPD, Part V, Section 2	
(c) Reportable events, which require reporting to the NRC in writing within 24 hours, as defined in the plant technical specifications Review of events covered under this Section	QAPD, Part V, Section 2	Regulations for reporting have changed, but the intent of this is addressed in QAPD, Part V,

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shall include the results of any investigations made and the recommendations resulting from such investigations to prevent or reduce the probability of recurrence of the event.		Section 2.2
(5) Any other matter involving safe operation of the nuclear power plant which an independent reviewer deems appropriate for consideration, or which is referred to the independent reviewers by the onsite operating organization or by other functional organizational units within the owner organization.	QAPD, Part V, Section 2	
4.4 Review Activities of the Onsite Operating Organization.		
The onsite operating organization shall provide, as part of the normal duties of plant supervisory personnel, timely and continuing monitoring of operating activities to assist the Plant Manager in keeping abreast of general plant conditions and to verify that the day-to-day operating activities are conducted safely and in accordance with applicable administrative controls. These continuing monitoring activities are considered to be an integral part of the routine supervisory function and are important to the safety of plant operation.	QAPD, Part V, Section 2	
The onsite operating organization should perform reviews periodically and as situations demand, to evaluate plant operations and to plan future activities. The important elements of the reviews should be documented. Such reviews serve a useful purpose but shall not take the place of the reviews and audits described in Sections 4.3 and 4.5, respectively. The onsite operating organization should screen subjects of potential concern to independent	QAPD, Part V, Section 2	

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reviewers and perform preliminary investigations (see 4.3.4). The Plant Manager, in carrying out his responsibility for overall safety of plant operations, shall be responsible for timely referral of appropriate matters to management and independent reviewers. **Reg. Guide 1.33** – C. Regulatory Position 5.a. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: a. Section 4.4–The guidelines concerning review activities of the onsite operating organization, except the guideline that refers to screening subjects of potential concern. [**NOTE**: The affected "should" words are underlined in the N18.7 excerpt above.]		
4.5 Audit Program.		
A comprehensive system of planned and documented audits shall be carried out to verify compliance with all aspects of the administrative controls and quality assurance program.	NQA-1, Requirement 18 QAPD, Part II, Section 7 QAPD, Part II, Section 18.	
Audits of selected aspects of operational phase activities shall be performed with a frequency commensurate with their safety significance and in such a manner as to assure that an audit of all safety-related functions is completed within a period of two years. Audits shall include as a minimum verification of compliance and effectiveness of implementation of internal rules, procedures (for example, operating, design,	QAPD, Part II, Section 18	The utilities' have modified their audit programs over the years to include risk-informed scheduling and controlling the scope of the audits as alternate methods of satisfying the amplified requirements stated in RG 1.33 for specific elements to be

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procurement, maintenance, modification, refueling, surveillance, test, security and radiation control procedures and the emergency plan), regulations and license provisions; programs for training, retraining, qualification and performance of operating staff; corrective actions taken following abnormal occurrences; and observation of performance of operating, refueling, maintenance and modification activities, including associated record keeping. **Reg. Guide 1.33** – C. Regulatory Position 4. Section 4.5, "Audit Program," of ANSI N18.7-1976/ANS-3.2 states that audits of selected aspects of operational phase activities shall be performed with a frequency commensurate with their safety significance and in such a manner as to ensure that an audit of all safety-related functions is completed within a period of 2 years. In amplification of this requirement, the following program elements should be audited at the indicated frequencies: a. The results of actions taken to correct deficiencies that affect nuclear safety and occur in facility equipment, structures, systems, or method of operation-at least once per 6 months. b. The conformance of facility operation to provisions contained within the technical specifications and applicable license conditions-at least once per 12 months. c. The performance, training, and qualifications of the facility staff-at least once per 12 months.		audited more frequently than every two years.
Written reports of such audits shall be reviewed by the independent review body and by appropriate members of	NQA-1, Requirement 18	

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management including those having responsibility in the area audited.	QAPD, Part II, Section 18 QAPD, Part V, Section 2.2	
Those performing the audits may be members of the audited organization; however, they shall not audit activities for which they have immediate responsibility. While performing the audit, they shall not report to a management representative who has immediate responsibility for the activity being audited.	NQA-1, Requirement 18	
Appropriate and timely follow-up action, including re-audit of deficient areas, shall be taken.	NQA-1, Requirement 18	
Periodic review of the audit program shall be performed by the independent review body or by a management representative at least semiannually to assure that audits are being accomplished in accordance with requirements of technical specifications and of this Standard.	QAPD, Part V, Section 2	Audits are no longer addressed in the technical specifications. Based on SRP 17.5, the period for evaluating the audit program is two years rather than every six months.
Further guidance on requirements for auditing of quality assurance programs for nuclear power plants exists in draft form.[2]		
5. Program, Policies and Procedures		
5.1 Program Description.		
The total program for providing administrative controls and quality assurance during the operational phase may be described in many diverse documents. For example,	QAPD, Part I, Introduction QAPD, Part II, Section 6	

[2] Footnote from N18.7 "Requirements for auditing of Quality Assurance Programs for Nuclear Power Plants," Proposed American National Standard N45.2.12, trial use (Draft 4, Revision 2) January 1 1976; correspondence should be sent to: Secretary, American National Standards Committee N45, The American Society of Mechanical Engineers, United Engineering Center, 345 East 47 street, New York, NY 10017. The provisions of this draft standard shall be used for audits performed under this section except the audit frequency specified herein shall be used."

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operating procedures may be compiled in one manual, maintenance procedures in a second manual and Quality Assurance procedures in a third. It is not intended that all source documents be compiled in one master document. However, a summary document shall be compiled by each owner organization to identify the sources, to index such source documents to the requirements of this Standard and to provide a consolidated base for description of the program.		
The owner organization shall identify in the program description those structures, systems and components to be covered by the program and the major organizational units and their responsibilities. The program shall provide control over activities affecting the quality of the structures, systems and components to an extent consistent with their importance to safety. The program shall take into account the need for special controls, processes, tests, equipment, tools, and skills to attain the required quality and the need for verification of quality by inspections, evaluation or test.	NQA-1, Requirement 2 QAPD, Part II, Section 2	The applicable licensee's SAR provides more detail on the SSCs and their importance to safety. In most cases this will refer back to the list in the referenced DCD.
5.2 Rules of Practice.		
The owner organization shall establish rules and instructions pertaining to personnel conduct and control, including consideration of job-related factors which influence the effectiveness of operating and maintenance personnel, including such factors as number of hours at duty station, availability on call of professional and supervisory personnel, method of conducting operations, and preparing and retaining plant documents. These rules and instructions should provide a clear understanding of	QAPD, Policy QAPD, Part V	

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operating philosophy and management policies.		
5.2.1 Responsibilities and Authorities of Operating Personnel.		
The responsibilities and authorities of the plant operating personnel shall be delineated. These shall include, as a minimum: (1) The reactor operator's authority and responsibility for shutting the reactor down when he determines that the safety of the reactor is in jeopardy or when operating parameters exceed any of the reactor protection system setpoints and automatic shutdown does not occur. (2) The responsibility to determine the circumstances, analyze the cause, and determine that operations can proceed safely before the reactor is returned to power after a trip or an unscheduled or unexplained power reduction. (3) The senior reactor operator's responsibility to be present at the plant and to provide direction for returning the reactor to power following a trip or an unscheduled or unexplained power reduction. (4) The responsibility to believe and respond conservatively to instrument indications unless they are proved to be incorrect. (5) The responsibility to adhere to the plant's Technical Specifications. (6) The responsibility to review routine operating data to assure safe operation.	QAPD, Part I Section 1 QAPD, Part V	QAPD provides overall responsibilities in general terms. The specific responsibilities described here are located in the organizational standards and administrative controls, Technical Specifications and reinforced through the systematic training programs.
5.2.2 Procedure Adherence.		
Procedures shall be followed, and the requirements for use	NQA-1, Requirements 5 & 6	

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of procedures shall be prescribed in writing. Rules shall be established which provide methods by which temporary changes to approved procedures can be made, including the designation of a person or persons authorized to approve such changes.	QAPD, Part II, Sections 5 & 6	
Temporary changes which clearly do not change the intent of the approved procedure, shall as a minimum be approved by two members of the plant staff knowledgeable in the areas affected by the procedures. At least one of these individuals shall be the supervisor in charge of the shift and hold a senior operator's license on the unit affected. Such changes shall be documented and, if appropriate, incorporated in the next revision of the affected procedure. In the event of an emergency not covered by an approved procedure, operations personnel shall be instructed to take action so as to minimize personnel injury and damage to the facility and to protect health and safety.	QAPD, Part II, Sections 5 & 6	The QAPD requirements only allow temporary changes that do not change the intent of the procedure. All other changes must be done in accordance with the document control program.
Guidance should be provided to identify the manner in which procedures are to be implemented. Examples of such guidance include 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 operator to have committed the procedural steps to memory (3) Verification of completion of significant steps, by initials or signatures of check-off lists.	QAPD, Part II, Section 5	
The types of procedures that shall be present and referred to directly are those developed for extensive or complex jobs where reliance on memory cannot be trusted, e.g., reactor	QAPD, Part II, Section 5.1	

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start-up, tasks which are infrequently performed, and tasks in which operations must be performed in a specified sequence. Procedural steps for which actions should be committed to memory include, for example, immediate actions in emergency procedures. Routine procedural actions that are frequently repeated may not require the procedure to be present. Copies of all procedures shall be available to appropriate members of the plant staff. If documentation of an action is required, the necessary data shall be recorded as the task is performed. Examples of procedures requiring verification are furnished in 5.3.4.1 and 5.3.4.2.		
5.2.3 Operating Orders.		
A mechanism shall be provided for dissemination to the plant staff of instructions of general and continuing applicability to the conduct of business. Such instructions, sometimes also referred to as standing orders or standard operating procedures, should deal with 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, or other such matters. Provisions should be made for periodic review and updating of standing orders. **Reg. Guide 1.33** – C. Regulatory Position 5.b. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of	QAPD, Part V, Section 3.2	

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the standard: b. Section 5.2.3–The guideline concerning review and updating of standing orders. [**NOTE**: The affected "should" word is underlined in the N18.7 excerpt above.]		
5.2.4 Special Orders.		
A mechanism shall be provided for issuing management instructions which have short-term applicability and which require dissemination. Such instructions, sometimes referred to as a special orders, should encompass special operations, housekeeping, data taking, publications and their distribution, plotting process parameters, personnel actions, or other similar matters. Provisions should be made for periodic review, updating and cancellation of special orders. **Reg. Guide 1.33** – C. Regulatory Position 5.c. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: c. Section 5.2.4–The guideline concerning review, updating, and cancellation of special orders. [**NOTE**: The affected "should" word is underlined in the N18.7 excerpt above.]	QAPD, Part V, Section 3.2	
5.2.5 Temporary Procedures.		
Temporary procedures may be issued during the operational phase: to direct operations during testing,	QAPD, Part V, Section 3.2	

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
refueling, maintenance and modifications; to provide guidance in unusual situations not within the scope of the normal procedures; and to insure 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 shall include designation of the period of time during which they may be used and shall be subject to the review process prescribed in 4.3 and 5.2.15 as applicable.	Also, temporary procedures for Maintenance activities are covered under NQA-1, Part II, Subpart 2.18, Section 202.	
Temporary procedures shall be approved by the management representative assigned approval authority	QAPD, Part V, Section 3.2	
5.2.6 Equipment Control.		
Permission to release equipment or systems for maintenance shall be granted by designated operating personnel. Prior to granting permission, such operating personnel shall verify that the equipment or system can be released, and determine how long it may be out of service. Granting of such permission shall be documented. Attention shall be given to the potentially degraded degree of protection when one subsystem of a redundant safety system has been removed for maintenance.	NQA-1, Requirement 14 NQA-1, Part II, Subpart 2.18, Section 205 QAPD, Part V, Section 4	
After permission has been granted to remove the equipment from service, it shall be made safe to work on. Measures shall provide for protection of equipment and workers. Equipment and systems in a controlled status shall be clearly identified. Strict control measures for such equipment shall be enforced.	NQA-1, Requirement 14 QAPD, Part V, Section 4	

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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.	NQA-1, Part II, Subpart 2.18, Section 205 QAPD, Part V, Section 4	
When entry into a closed system is required, control measures shall be established to prevent entry of extraneous material and to assure that foreign material is removed before the system is reclosed.	NQA-1, Subpart 2.3 QAPD, Part II, Section 13 QAPD, Part V, Section 4	
Procedures shall be provided for control of equipment, as necessary, to maintain personnel and reactor safety and to avoid unauthorized operation of equipment. These procedures shall require control measures such as locking or tagging to secure and identify equipment in a controlled status. The procedures shall require independent verifications, where appropriate, to ensure that necessary measures, ... , have been implemented correctly.	NQA-1, Requirement 14 QAPD, Part V, Section 4	
Temporary modifications, such as temporary bypass lines, electrical jumpers, lifted electrical leads, and temporary trip point settings, shall be controlled by approved procedures which shall include a requirement for independent verification. A log shall be maintained of the current status of such temporary modifications.	QAPD, Part II, Section 3 QAPD, Part II, Section 14	
The procedures shall also require that the status of inspections and tests performed upon individual items on	NQA-1, Requirement 14	

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the nuclear power plant be indicated by the use of markings such as stamps, tags, labels, routing cards, or other suitable means. Suitable means include identification numbers which are traceable to records of the status of inspections and tests.		
Procedures shall also provide for the identification of items which have satisfactorily passed required inspections and tests, where necessary to preclude inadvertent bypassing of such inspections and tests. In cases where required documentary evidence is not available, the associated equipment or materials must be considered nonconforming in accordance with Section 5.2.14. Until suitable documentary evidence is available to show the equipment or material is in conformance, affected systems shall be considered to be inoperable and reliance shall not be placed on such systems to fulfill their intended safety functions.	NQA-1, Requirement 14 QAPD, Part II, Section 14	
When equipment is ready to be returned to service, operating personnel shall place the equipment in operation and verify and document its functional acceptability. Attention shall be given to restoration of normal conditions, such as removal of jumpers or signals used in maintenance or testing or such as returning valves, breakers or switches to proper start-up or operating positions from "test" or "manual" positions. When placed into service, the equipment should receive additional surveillance during the run-in period.	NQA-1, Requirement 14 NQA-1, Part II, Subpart 2.18, Section 202 QAPD, Part V, Section 4	
5.2.7 Maintenance and Modifications.		
Maintenance or modifications which may affect functioning of safety-related structures, systems, or components shall	NQA-1, Introduction to Part II NQA-1, Part II, Subpart 2.18	

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
be performed in a manner to ensure quality at least equivalent to that specified in original design bases and requirements, materials specifications and inspection requirements. A suitable level of confidence in structures, systems, or components on which maintenance or modifications have been performed shall be attained by appropriate inspection and performance testing (see also 5.2.17 and 5.3.5).	QAPD, Part V, Section 5	
Maintenance or modification of equipment shall be preplanned and performed in accordance with written procedures, documented instructions or drawings appropriate to the circumstances which conform to applicable codes, standards, specifications, and criteria. Skills normally possessed by qualified maintenance personnel may not require detailed step-by-step delineations in a written procedure.	NQA-1, Requirement 5 NQA-1, Part II, Subpart 2.18, Section 202 QAPD, Part II, Section 5	
Means for assuring quality of maintenance and modification activities (for example, inspections, measurements, tests, welding, heat treatment, cleaning, nondestructive examination and worker qualifications in accordance with applicable codes and standards) and measures to document the performance thereof shall be established. This documentation shall be retained as specified in Section 5.2.12.	NQA-1, Requirement 2 NQA-1, Requirement 3 NQA-1, Requirement 9 NQA-1, Requirement 10 NQA-1, Requirement 11 NQA-1, Requirement 17 NQA-1, Part II, Subpart 2.1 NQA-1, Part II, Subpart 2.3 QAPD, Part II, Sections 2, 3, 9, 10, 11, and 17	
Measures shall be established and documented to identify the inspection and test status of items to be used in	NQA-1, Requirement 14 QAPD, Part II, Section 14	

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
maintenance and modification activities. Normally, the point of control for such items should be the plant storage area.		
The following standards contain useful guidance concerning design and construction-related activities associated with modifications and shall be applied to those activities occurring during the operational phase that are comparable in nature and extent to related activities occurring during initial plant design and construction: American National Standard Installation, Inspection and Testing of Instrumentation and Electric Equipment During the Construction of Nuclear Power Generation Station, N45.2.4-1972 (IEEE 336-1972) [6]; American National Standard Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants, N45.2.5-1974 [7]; American National Standard Qualifications of Inspection, Examination and Testing Personnel for the Construction Phase of Nuclear Power Plants N45.2.6-1973 [5]; American National Standard Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems for Construction Phase of Nuclear Power Plants, N45.2.8-1975 [8] American National Standard Quality Assurance Requirements for the Design of Nuclear Power Plants, N45.2.11-1974 [9]; and American National Standard Quality Assurance for Protective Coating Applied to Nuclear Facilities N101.4-1972 [10]. Considerable care is required in assessing which operational phase activities are comparable in nature and	QAPD, Part IV	ANSI N101.4 has been withdrawn and RG 1.54 revised in October 2010 to address the acceptability of the replacement ANSI Standards.

American National Standard N18.7-1976/ANS-3.2 Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants / Regulatory Guide 1.33, Rev. 2 Regulatory Positions	NQA-1-2008, NQA-1a-2009 Addenda or NEI 11-04 QAPD	Comments
extent to activities normally associated with design and construction.		
5.2.7.1 Maintenance Programs.		
A maintenance program shall be developed to maintain safety-related structures, systems and components at the quality required for them to perform their intended functions.	NQA-1, Part II, Subpart 2.18, Section 100	
Maintenance shall be scheduled and planned so as not to compromise the safety of the plant. Planning shall consider the possible safety consequences of concurrent or sequential maintenance, testing or operating activities. Equipment required to be operable for the prevailing mode shall be available, and maintenance shall be performed in a manner such that license limits are not violated. Planning for maintenance shall include evaluation of the use of special processes, equipment and materials in performance of the task, including assessment of potential hazards to personnel and equipment.	NQA-1, Introduction to Part II NQA-1, Part II, Subpart 2.18, Section 201	
General rules for the development of procedures under a maintenance program which is consistent with the provisions of 5.2.7 shall be written before start-up. These general rules shall form the basis for developing the repair or replacement procedures at the time of failure. Procedures required for maintenance of equipment expected to require recurring maintenance should be written prior to plant operation. As experience is gained in operation of the plant, routine maintenance should be altered to improve equipment performance, and procedures for repair of equipment shall be improved as appropriate.	NQA-1, Part II, Subpart 2.18 QAPD, Part V, Section 3	

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Approved procedures shall be available for repair of safety-related equipment prior to the performance of such repairs (see also Sections 5.2.2 and 5.2.7).		
A preventive maintenance program including procedures as appropriate for safety-related structures, systems and components shall be established and maintained which prescribes the frequency and type of maintenance to be performed. A preliminary program based on service conditions and experience with comparable equipment should be developed prior to fuel loading. The program should be revised and updated as experience is gained with the equipment.	NQA-1, Part II, Subpart 2.18, Section 300	
The causes of malfunctions shall be promptly determined, evaluated and recorded (see also Sections 4.3 and 4.4). Experience with the malfunctioning equipment and similar components shall be reviewed and evaluated to determine whether a replacement component of the same type can be expected to perform its function reliably. If evidence indicates that common components in safety-related systems have performed unsatisfactorily, corrective measures shall be planned prior to replacement or repair of all such components. Replacement components should have received adequate testing or should be of a design for which experience indicates a high probability of satisfactory performance. Consideration shall be given to phased replacement to permit inservice performance of the new component to be evaluated and thereby minimize the possibility of a hidden deficiency producing a systematic failure. An augmented testing and inspection program should be implemented following a large scale component	NQA-1, Requirement 16 NQA-1, Part II, Subpart 2.18, Section 400	

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replacement (or repair) until such time as a suitable level of performance has been demonstrated. **Reg. Guide 1.33** – C. Regulatory Position 5.d. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: d. Section 5.2.7.1–The guidelines that address adequate design and testing of replacement parts. [**NOTE**: The affected "should" words are underlined in the N18.7 excerpt above.]		
5.2.7.2 Modifications.		
Design activities associated with modifications of safety-related structures, systems, and components shall be accomplished in accordance with N45.2.11-1974. [9]	NQA-1, Requirement 3 QAPD, Part II, Section 3	
5.2.8 Surveillance Testing and Inspection Schedule.		
A surveillance testing and inspection program shall be prescribed to insure that safety-related structures, systems, and components will continue to operate, keeping parameters within normal bounds, or will act to put the plant in a safe condition if they exceed normal bounds.	NQA-1, Requirement 10 NQA-1, Requirement 11 QAPD, Part II, Section 11	
Provisions shall be made for performing required surveillance testing and inspections, including ISI. Such provisions shall include the establishment of a master surveillance schedule reflecting the status of all planned in plant surveillance tests and inspections. Frequency of surveillance tests and inspections may be related to the	NQA-1, Requirement 10 NQA-1, Requirement 11 QAPD, Part II, Section 11	

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results of reliability analyses, the frequency and type of service, or age of the item or system, as appropriate.		
Additional control procedures shall be instituted, as necessary, to assure timely conduct of surveillance tests and inspections and appropriate documentation, reporting, and evaluation of the results. Surveillance testing which may increase the probability of plant trips or major transients with accompanying safety concerns should be deferred to periods when such plant trips or transients have a minimum impact on safety and reliability.	NQA-1, Requirement 11	
5.2.9 Plant Security and Visitor Control.		
Procedures shall be 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 shall be confidential and thus accorded limited distribution. The security and visitor control procedures should 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. Also to be considered are 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. See American National Standard Industrial Security for Nuclear Power Plants, N18.17-1973, for guidance and provisions for security measures adequate		Administrative controls are established through the security measures required by regulation (10 CFR 73) and NRC orders. These regulatory requirements have superseded the requirements of ANSI N18.7.

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to protect nuclear power plants. [11]		
5.2.10 Housekeeping and Cleanliness Control.		
Housekeeping practices shall be utilized recognizing requirements for the control of radiation zones and the control of work activities, conditions and environments that can affect the quality of important parts of the nuclear plant. Housekeeping encompasses all activities related to the control of cleanness of facilities, materials, equipment fire prevention and protection including disposal of combustible material and debris and control of access to areas, protection of equipment, radioactive contamination control and storage of solid radioactive waste. Housekeeping practices shall assure that only proper materials, equipment, processes and procedures are utilized and that the quality of items is not degraded as a result of housekeeping practices or techniques.	NQA-1, Part II, Subpart 2.3 QAPD, Part IV	
Where necessary, procedures and work instructions needed to assure compliance with specific requirements shall be available; e.g., inspection and cleaning of electrical bus and control centers, cleaning of control consoles, radioactive decontamination. Particular attention should be given to housekeeping in work and storage areas where important items are handled and stored to preclude damage or contamination. American National Standard Housekeeping During the Construction Phase of Nuclear Power Plants, N45.2.3-1973 [12] shall be applied to those activities occurring during the operational phase that are comparable in nature and extent to related activities occurring during construction.	NQA-1, Requirement 2 NQA-1, Requirement 5 NQA-1, Part II, Subpart 2.3 NQA-1, Part II, Subpart 2.18 QAPD, Part II, Sections 2 QAPD, Part II, Section 5	NQA-1, Subpart 2.3 replaces ANSI N45.2.3

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During maintenance or modification activities, certain portions of safety-related systems may be subject to potential contamination with foreign materials. To prevent such contamination, control measures, including measures for access control, shall be established. Immediately prior to closure an inspection shall be conducted to assure cleanness and the result of such inspection shall be documented. American National Standard Cleaning of Fluid Systems and Associated Components during Construction Phase of Nuclear Power Plant, N45.2.1-1973 [13] shall be applied to activities occurring during the operational phase that are comparable in nature and extent to related activities occurring during construction. Measures for minimizing the introduction of foreign materials during maintenance or modification, or cleaning following maintenance or modification of radioactively contaminated systems or of equipment of high radiation fields require special consideration.	NQA-1, Part II, Subpart 2.1 NQA-1, Part II, Subpart 2.18, Section 203	NQA-1, Subpart 2.1 replaces N45.2.1
5.2.11 Corrective Actions.		
The program shall provide measures to ensure that conditions adverse to plant safety, such as failure, malfunctions, deficiencies, deviations, defective material and equipment, abnormal occurrences, and nonconformances are promptly identified and corrected.	NQA-1, Requirement 16 NQA-1, Part II, Subpart 2.18 QAPD, Part II, Section 16	
In the case of significant conditions adverse to safety, the measures shall assure that the cause of the condition is determined and corrective action taken shall be documented and reported to appropriate levels of management and for independent review in accordance	NQA-1, Requirement 16 NQA-1, Part II, Subpart 2.18, Section 403.2 QAPD, Part II, Section 16 QAPD, Part V, Section 2	

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with Section 4.3.		
5.2.12. Plants Records Management.		
Provisions shall be made for preparation and retention of plant records as appropriate.	NQA-1, Requirement 17 QAPD Part II, Section 17.1	
The responsibility for maintaining records and storing them at a specified location or locations shall be assigned.	NQA-1, Requirement 17	
Retention periods of sufficient duration to assure the ability to reconstruct significant events and satisfy any statutory requirements which apply shall be specified.	NQA-1, Requirement 17, Section 400 QAPD, Part II, Section 17.1	NQA-1, Requirement 17 with the information in Reg. Guide 1.28, Rev. 4 for NQA-1 Part III, Nonmandatory Appendix 17A-1, "Guidance on Quality Assurance Records," in Paragraph 200, "List of Typical Lifetime Records," is equivalent to ANSI N45.2.9
American National Standard Requirements for Collection, Storage and Maintenance of Quality Assurance Records for Nuclear Power Plants, N45.2.9-1974, shall be used for management of plant records during the operational phase. [14]	NQA-1, Requirement 17 QAPD, Part II, Section 17.1	NQA-1, Requirement 17 with the information in Reg. Guide 1.28, Rev. 4 for NQA-1 Part III, Nonmandatory Appendix 17A-1, "Guidance on Quality Assurance Records," in Paragraph 200, "List of Typical Lifetime Records," is equivalent to ANSI N45.2.9
5.2.13 Procurement and Materials Control.		
Measures shall be provided for procurement, documentation and control of those materials and components including spare and replacement parts necessary for plant operation, refueling, maintenance and	NQA-1, Requirement 4 NQA-1, Requirement 8 NQA-1, Requirement 15	NQA-1 Requirements 4 and 7 are equivalent to the requirements of N45.2.13 and replace that standard.

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modification. These measures shall utilize American National Standard Quality Assurance Requirements for the Control of Procurement of Items and Services for Nuclear Power Plants, N45.2.13-1976. The Appendix to N45.2.13 is particularly useful in determining the quality assurance requirements depending on the complexity or safety of the item. [15]. Procedures shall be established and implemented to ensure that purchased materials and components associated with safety-related structures or systems are: (1) Purchased to specifications and codes equivalent to those specified for the original equipment, or those specified by a properly reviewed and approved revision. (In those cases where the original item or part is found to be commercially "off the shelf or without specifically identified quality assurance requirements spare and replacement parts may be similarly procured but care shall be exercised to assure at least equivalent performance. In those cases where the QA requirements of the original item cannot be determined, an engineering evaluation shall be conducted by qualified individuals to establish the requirements and controls. This evaluation shall assure that interfaces, interchangeability, safety, fit and function are not adversely affected or contrary to applicable regulatory or code requirements. The results of this evaluation shall be documented); (2) Produced or fabricated under requirements at least equivalent to that of the original equipment, or those specified by a properly reviewed and approved revision; (3) Packaged and transported in a manner that will ensure	NQA-1, Part II, Subpart 2.2 QAPD, Part II, Section 4 QAPD, Part II, Section 8 QAPD, Part II, Section 15	

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that the quality is not degraded during transit; (4) Properly documented to show compliance with applicable specifications, codes and standards; (5) Properly inspected, identified and stored to protect against damage, deterioration or misuse; (6) Properly controlled to ensure the identification, segregation and disposition of nonconforming material. Special nuclear material and sources shall be shipped and stored as specified in the U.S. Nuclear Regulatory Commission (NRC) fuel license and other applicable regulatory documents.		
5.2.13.1 Procurement Document Control.		
Measures shall be provided to assure that applicable regulatory requirements, design bases and other requirements which are necessary to assure adequate quality are included or referenced in the procedures for procurement of items and services.	NQA-1, Requirement 4	See Requirement 2, paragraph 202, Technical Requirements.
To the extent necessary, procurement documents shall require suppliers to provide a quality assurance program consistent with the pertinent requirements of American National Standard Quality Assurance Program Requirements for Nuclear Power Plants, N45.2-1971. [2]	NQA-1, Requirement 4	The QA requirements of NQA-1-1994 are equivalent to those of ANSI N45.2-1971. See Requirement 2, paragraph 203, Quality Assurance Program Requirements.
Where changes are made to procurement documents, they shall be subject to the same degree of control as was used in the preparation of the original documents.	NQA-1, Requirement 4	See Requirement 2, paragraph 400, Procurement Document Changes.
Procurement documents shall include provisions for the following, as applicable:	NQA-1, Requirement 4	See Requirement 2, paragraph 203, Quality Assurance Program

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(1) Supplier Quality Assurance Program. Identification of quality assurance requirements applicable to the items or services procured.		Requirements.
(2) Basic Technical Requirements. Where specific technical requirements apply, such as drawings, specifications, and industrial codes and standards, they shall be identified by titles and dates of issue in such a way as to clearly set forth the applicable documents. Where procedural requirement apply, in such areas as test and inspection needs, fabrication, cleaning, erecting, packaging, handling, shipping and storage, they too, shall be identified clearly and in such a way as to avoid uncertainty as to source and need.	NQA-1, Requirement 4	See Requirement 2, paragraph 202, Technical Requirements.
(3) Source Inspection and Audit. Provisions for access to the supplier's facilities and records for source inspection and audit when the need for such inspection or audit has been determined.	NQA-1, Requirement 4	See Requirement 2, paragraph 204, Right of Access.
(4) Documentation Requirements. Records to be prepared, maintained, submitted or made available for review, such as drawings, specifications, procedures, procurement documents, inspection and test records, personnel and procedure qualifications, and material, chemical, and physical test results. Instruction on record retention and disposition shall be provided.	NQA-1, Requirement 4	See Requirement 2, paragraph 205, Documentation Requirements.
(5) Lower Tier Procurement. Provisions for extending applicable requirements to lower tier subcontractors and suppliers, including purchaser's access to facilities and records.	NQA-1, Requirement 4	See Requirement 2, paragraph 203, Quality Assurance Program Requirements and paragraph 204, Right of Access.

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5.2.13.2 Control of Purchased Material, Equipment and Services.		
Measures shall be provided to assure that purchased items and services, whether purchased directly or through contractors, conform to the procurement documents.	NQA-1, Requirement 7	
These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor, inspection and audit at the source and examination of items upon delivery.	NQA-1, Requirement 7	
Measures for evaluation and selection of procurement sources include the use of historical quality performance data, source surveys or audits, or source qualification programs.	NQA-1, Requirement 7	See Requirement 7, paragraph 200, Supplier Evaluation and Selection.
Source inspection or audit shall be performed as necessary to assure the required quality of an item. Source inspection or audit may not be necessary when the quality of the item can be verified by review of test reports, inspection upon receipt, or other means.	NQA-1, Requirement 7 QAPD, Part II, Section 7.1	See Requirement 7, paragraph 200, Supplier Evaluation and Selection and paragraph 5, Acceptance of Item or Service.
Where required by code, regulation, or contract requirements documentary evidence that items conform to procurement requirements shall be available at the nuclear power plant site prior to installation or use of such items.	NQA-1, Requirement 7	See Requirement 7, paragraph 501, General.
This documentary evidence shall be retrievable and shall be sufficient to identify the specific requirements such as codes, standards and specifications met by the purchased item.	NQA-1, Requirement 7	See Requirement 7, paragraph 400, Control of Supplier Generated Documents and paragraph 800, Records.
Where not precluded by other requirements, such documentary evidence may take the form of written	NQA-1, Requirement 7	See Requirement 7, paragraph 502, Methods of Acceptance.

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certifications of conformance which identify the requirements met by the items, provided means are available to verify the validity of such certifications.		
The effectiveness of the control of quality shall be assessed by the purchaser at intervals consistent with the importance, complexity and quality of the item or service.	NQA-1, Requirement 7 QAPD, Part II, Section 7.1	See Requirement 7, paragraph 200, Supplier Evaluation and Selection.
5.2.13.3 Identification and Control of Materials, Parts and Components.		
Measures shall be provided for the identification and control of materials, parts, and components including partially fabricated subassemblies.	NQA-1, Requirement 8	
These procedures shall be implemented to provide insurance that only correct and accepted items are used and installed, and relating an item of production (batch, lot, component, part) at any stage, from initial receipt through fabrication, installation, repair or modification, to an applicable drawing, specification, or other pertinent technical document.	NQA-1, Requirement 8	See Requirement 8, paragraph 201, Item Identification.
Physical identification shall be used to the maximum extent possible. Where physical identification is either impractical or insufficient, physical separation, procedural control or other appropriate means shall be employed.	NQA-1, Requirement 8	See Requirement 8, paragraph 202, Physical Identification.
Identification may be either on the item or on records traceable to the item, as appropriate.	NQA-1, Requirement 8	
Where identification marking is employed, the marking shall be clear, unambiguous and indelible, and shall be applied in such a manner as not to affect the function of the item.	NQA-1, Requirement 8	See Requirement 8, paragraph 202, Physical Identification,

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Markings shall be transferred to each part of an item when subdivided and shall not be obliterated or hidden by surface treatment or coatings unless other means of identification are substituted.	NQA-1, Requirement 8	See Requirement 8, paragraph 202, Physical Identification,
When codes, standards or specifications require traceability of materials, parts or components to specific inspection or test records, the program shall be designed to provide such traceability.	NQA-1, Requirement 8	See Requirement 8, paragraph 301, Identification and Traceability of Items.
5.2.13.4 Handling, Storage and Shipping.		
Measures shall be provided to control handling, storage and shipping, including cleaning, packaging and preservation of material and equipment in accordance with established instructions, procedures or drawings, to prevent damage, deterioration and loss.	NQA-1, Requirement 13	See Requirement 13, paragraph 100, Basic,
When necessary for particular items, special coverings, special equipment and special protective environments, such as inert gas atmosphere, specific moisture content levels and temperature levels shall be specified, provided, and their existence verified.	NQA-1, Requirement 13	See Requirement 13, paragraph 300, Procedures,
For critical, sensitive, perishable or high value articles, specific written procedures for handling, storage, packaging, shipping and preservation should be used.	NQA-1, Requirement 13	See Requirement 13, paragraph 300, Procedures,
Special handling tools and equipment should be provided and controlled as necessary to ensure safe and adequate handling. **Reg. Guide 1.33** – C. Regulatory Position 5.e. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections	NQA-1, Requirement 13	See Requirement 13, paragraph, 300, Procedures.

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have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: e. Section 5.2.13.4–The guideline concerning special handling tools and equipment. [**NOTE**: The affected "should" word is underlined above.]		
Special handling tools and equipment shall be inspected and tested in accordance with written procedures and at specified times, to verify that the tools and equipment are adequately maintained.	NQA-1, Requirement 13	See Requirement 13, paragraph 300, Procedures.
Attention shall be given to providing adequate instructions for marking and labeling of items for packaging, shipment and storage. Marking shall be adequate to identify, maintain and preserve the shipment, including indication of the presence of special environments or the need for special control.	NQA-1, Requirement 13	See Requirement 13, paragraph 600, Marking or Labeling
American National Standard for Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants (During the Construction Phase), N45.2.2-1972, shall be applied to those activities occurring during the operational phase that are comparable in nature and extent to related activities occurring during construction. [16]	NQA-1, Part II, Subpart 2.2	NQA-1, Subpart 2.2 is equivalent to the cited ANSI N45.2.2 standard.
5.2.14 Nonconforming Items.		
Measures shall be provided to control items, services or activities which do not conform to requirements (see also Section 5.2.6).	NQA-1, Requirement 15	

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These procedures shall include as appropriate, instructions for identification, documentation, segregation, disposition and notification to affected organizations.	NQA-1, Requirement 15 QAPD, Part II, Section 15	
Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures.	NQA-1, Requirement 15	See Requirement 15, paragraph 404, Disposition.
The responsibility and authority for the disposition of nonconforming items shall be defined.	NQA-1, Requirement 15	See Requirement 15, paragraph 402, Responsibility and Authority.
Repaired and reworked items shall be re-inspected in accordance with applicable procedures.	NQA-1, Requirement 15	See Requirement 15, paragraph 404, Disposition.
Measures which control further processing, delivery or installation of a nonconforming or defective item pending a decision on its disposition shall be established and maintained. Nonconforming items may be: - Dispositioning the item as accept "as is" after evaluation - Scrapping the defective item - Repairing the defective item - Reworking the defective item to complete or correct the item to a drawing or specification. Such measures shall provide assurance that the item is identified as nonconforming and controlled. The measures shall require documentation verifying the acceptability of nonconforming items which have the disposition of "repair" or "use as is." A description of the change, waiver or deviation that has been accepted shall be documented to record the change and denote the as-built condition.	NQA-1, Requirement 15	See Requirement 15, paragraph 200, Identification and paragraph 400, Disposition.

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As a guideline, control of nonconforming items by tagging, marking or other means of identification is acceptable where physical segregation is not practical, although physical segregation and marking are preferred.	NQA-1, Requirement 15	See Requirement 15, paragraph 300, Segregation.
5.2.15 Review, Approval and Control of Procedures.		
The administrative controls and quality assurance program shall provide measures to control and coordinate the approval and issuance of documents, including changes thereto, which prescribe all activities affecting quality. Such documents include those which describe organizational interfaces, or which prescribe activities affecting safety-related structures, systems, or components. These documents also include operating and special orders, operating procedures, test procedures, equipment control procedures, maintenance or modification procedures, refueling, and material control procedures.	NQA-1, Requirement 6 QAPD, Part II, Section 6	
These measures shall assure that documents, including revisions or changes, are reviewed for adequacy by appropriately qualified personnel and approved for release by authorized personnel; and are distributed in accordance with current distribution lists and used by the personnel performing the prescribed activity, and that procedures are provided to avoid the misuse of outdated or inappropriate documents. Procedures for operational phase activities of a nuclear power plant reflect the conditions that exist at the time the procedures are written. These conditions include the technical information available, industry experience, and in the case of the initial procedures for a new plant,	NQA-1, Requirement 6 QAPD, Part II, Section 6	

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assumptions made regarding the detailed behavior of the plant that may not be fully known prior to operation. In order to ensure that the procedures in current use provide the best possible instructions for performance of the work involved, systematic review and feedback of information based on use is required. Each procedure shall be reviewed and approved prior to initial use. The frequency of subsequent reviews shall be specified and may vary depending on the type / complexity of the activity involved, and may vary with time as a given plant reaches operational maturity. Applicable procedures shall be reviewed following an unusual incident, such as an accident, an unexpected transient, significant operator error, or equipment malfunction. Applicable procedures shall be reviewed following any modification to a system. Plant procedures shall be reviewed by an individual knowledgeable in the area affected by the procedure no less frequently than every two years to determine if changes are necessary or desirable. A revision of a procedure constitutes a procedure review. Procedures shall be approved as designated by the owner organization before initial use. Rules shall be established which clearly delineate the review of procedures by knowledgeable personnel other than the originator and the approval of procedures and procedure changes by authorized individuals.		
Changes to documents shall be reviewed and approved by the same organizations that perform the original review and approval unless the owner organization designates another qualified organization.	NQA-1, Requirement 6	See Requirement 6, paragraph 301, Major Changes.

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The reviewing organizations shall have access to pertinent background information upon which to base its approval and shall have adequate understanding of requirements and intent of the original document.	NQA-1, Requirement 6	See Requirement 6, paragraph 301, Major Changes.
Those participating in any activity shall be made aware of, and use, proper and current instructions, procedures, drawings, and engineering requirements for performing the activity. Participating organizations shall have procedures for control of the document and changes thereto to preclude the possibility or use of outdated or inappropriate documents.	QAPD, Part II, Section 6	
Document control measures shall provide for: (1) Identification of individuals or organizations responsible for preparing, reviewing, approving, and issuing documents and revisions thereto (2) Identifying the proper documents to be used in performing the activity (3) Coordination and control of interface documents (4) Ascertaining that proper documents are being used (5) Establishing current and updated distribution lists	NQA-1, Requirement 6 QAPD, Part II, Section 6	See Requirement 6, paragraph 200, Document Control.
5.2.16 Measuring and Test Equipment.		
The method and interval of calibration for each installed instrument and control device shall be defined and shall be based on the type of equipment, stability and reliability characteristics, required accuracies and other conditions affecting calibration.	NQA-1, Requirement 12	
Tools, instruments, testing equipment and measuring devices used for measurements, tests and calibration shall	NQA-1, Requirement 12	See Requirement 12, paragraph 200, Selection and paragraph

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be of the proper range and type and shall be controlled, calibrated and adjusted and maintained at specified intervals or prior to use to assure the necessary accuracy of calibrated devices.		300, Calibration and Control.
When calibration, testing, or other measuring devices are found to be out of calibration, an evaluation shall be made and documented concerning the validity of previous test and the acceptability of devices previously tested from the time of the previous calibration.	NQA-1, Requirement 12	See Requirement 12, paragraph 303, Control.
If any calibration, testing or measuring device is consistently found to be out of calibration, it shall be repaired or replaced.	NQA-1, Requirement 12	See Requirement 12, paragraph 302, Control.
It is not the intent of this Standard to imply a need for special calibration and control measures on rulers, tape measures, levels and other such devices if normal commercial practices provide adequate accuracy.	NQA-1, Requirement 12	See Requirement 12, paragraph 304, Commercial Devices.
Special calibration shall be performed when the accuracy of either installed or calibrating equipment is questionable.	NQA-1, Requirement 12	See Requirement 12, paragraph 302, Control
Records shall be made and equipment suitably marked to indicate calibration status.	NQA-1, Requirement 12	See Requirement 12, paragraph 400, Records.
American National Standard N45.2.4-1972 shall be applied to those activities occurring during the operational phase that are comparable in nature and extent to related activities occurring during construction. [6]	NQA-1, Part II, Subpart 2.4	NQA-1, Part II Subpart 2.4 (ANSI/IEEE Std. 336-1985 IEEE) is equivalent to ANSI N45.2.4. NQA-1, Part II, Subpart 2.16 consists of IEEE Std. 498-1985; however, IEEE has withdrawn this standard. The primary

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		requirements from this standard are included in NQA-1 Requirement 12.
5.2.17 Inspections.		
A program for inspection of activities affecting safety shall be established and executed by or for the organization performing the activity to verify conformance with applicable documented instructions, procedures, and drawings.	NQA-1, Requirement 10 QAPD, Part II, Section 10	
Inspections, examinations, measurements, or tests of material, products, or activities shall be performed for each work operation where necessary to assure quality.	NQA-1, Part II, Subparts 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, and 2.15 establish specific inspections to be performed	
Such inspections shall be performed by qualified individuals other than those who performed or directly supervised the activity being inspected. Inspection of operating activities (work functions associated with normal operation of the plant, routine maintenance, and certain technical services routinely assigned to the onsite operating organization) may be conducted by second-line supervisory personnel or by other qualified personnel not assigned first-line supervisory responsibility for conduct of the work. These independent inspections, i.e., those performed by individuals not assigned first-line supervisory responsibility for the conduct of the work, are not intended to dilute or replace the clear responsibility of first-line supervisors for the quality of work performed under their supervision.	NQA-1, Requirement 10 QAPD, Part II, Section 10 (Note exemption in the QAPD.)	

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For modifications and non-routine maintenance, inspections shall be conducted in a manner similar (frequency, type, and personnel performing such inspections) to that associated with construction phase activities (see also Section 5.2.7).	NQA-1, Requirement 10	See Requirement 10, paragraph 603, Modifications, Repairs and Replacements.
Inspections of safety-related activities shall be performed in accordance with approved written procedures, which set forth the requirements and acceptance limits and specify the inspection responsibilities.	NQA-1, Requirement 10	See Requirement 10, paragraph 200, Inspection Requirements.
If mandatory inspection hold points are required, the specific hold points shall be indicated in appropriate documents.	NQA-1, Requirement 10	See Requirement 10, paragraph 300, Inspection Hold Points.
Information concerning inspection shall be obtained from the related design drawings, specifications and/or other controlled documents.	NQA-1, Requirement 10	See Requirement 10, paragraph 200, Inspection Requirements.
When inspection techniques require specialized qualifications or skills, personnel performing the inspection shall meet applicable licensing requirements, codes, and standards appropriate to the discipline involved (see also Sections 5.2.7, 5.2.6 and 5.3.10).	NQA-1, Requirement 10 NQA-1, Requirement 2	
If inspection is impossible or disadvantageous, indirect control by monitoring processing methods, equipment and personnel shall be provided.	NQA-1, Requirement 10	See Requirement 10, paragraph 500, In-process Inspection.
Both inspection and process monitoring shall be provided when control is inadequate without both. In cases where documented verification of quality implied by the above requirements is not possible or feasible, the extent of inspection or performance testing to verify adequacy of	NQA-1, Requirement 10	See Requirement 10, paragraph 500, In-process Inspection.

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structures, systems, or components for service should be, in general, greater than otherwise required.		
The owner organization shall evaluate inspection results along with test results (see Section 5.2.19) to determine whether the individual inspection and test programs demonstrate that the plant can be operated safely and as designed.	NQA-1, Requirement 10 NQA-1, Requirement 11 NQA-1, Part II, Subpart 2.18, Section 202	
Records shall be kept in sufficient detail to permit adequate confirmation of the inspection program. The person recording the data as well as the person approving the inspection results shall be identified. Deviations, their cause, and any corrective action completed or planned as a result of the deviations shall be documented. Inspection records shall be identified as such and shall be retrievable (see also Section 5.2.12).	NQA-1, Requirement 10 NQA-1, Requirement 11	Inspection records under NQA-1 may be a part of the work documents. See Requirement 10, paragraph 800, Records and Requirement 11, paragraph 600, Test Records.
5.2.18 Control of Special Processes.		
Measures shall be established and documented to assure that special processes, accomplished under controlled conditions in accordance with applicable codes, standards, specifications, criteria, and other special requirements, use qualified personnel and procedures.	NQA-1, Requirement 9	See Requirement 9, paragraph 200, Process Controls
Qualification of personnel, procedures, and equipment shall comply with the requirements of applicable codes and standards.	NQA-1, Requirement 9 NQA-1, Requirement 2	See Requirement 9, paragraph 201, Special Processes.
Special processes are those that require interim in process controls in addition to final inspection to assure quality including such processes as welding, heat treating, chemical cleaning, and nondestructive examination.	NQA-1, Requirement 9 QAPD, Part II, Section 9	

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For special processes not covered by existing codes or standards, or where item quality requirements exceed the requirements of established codes or standards, the necessary qualifications of personnel, procedures, or equipment shall be defined.	NQA-1, Requirement 9	See Requirement 9, paragraph 203, Special Requirements.
5.2.19 Test Control.		
A test program shall be established to assure that testing required to demonstrate that the item will perform satisfactorily in service is identified and documented, and that the testing is performed in accordance with written test procedures which incorporate or reference the requirements and acceptance limits contained in applicable design documents.	NQA-1, Requirement 11 NQA-1, Part II Subpart 2.18 establishes programmatic controls for testing NQA-1, Part II Subparts 2.1, 2.4, 2.5, and 2.8 establish specific testing requirements that apply to the operational phase	
The test program shall cover all required tests including: (1) Tests during the preoperational period to demonstrate that performance of plant systems is in accordance with design intent and that the coordinated operation of the plant as a whole is satisfactory, to the extent feasible. (2) Tests during the initial operational phase to demonstrate the performance of systems that could not be tested prior to operation and to confirm those physical parameters, hydraulic or mechanical characteristics that need to be known, but which could not be predicted with the required accuracy, and to confirm that plant behavior conforms to design criteria. The initial start-up test program shall be planned to permit safe fuel loading and start-up; to increase power in safe increments; and to	NQA-1, Requirement 10 NQA-1, Requirement 11 NQA-1, Part II, Subpart 2.4, ANSI/IEEE Std. 336-1985, Section 7 NQA-1, Part II, Subpart 2.8, Section 500 NQA-1, Part II, Subpart 2.18, Section 207 QAPD, Part II, Section 11	See Requirement 10, paragraph 700, Inspections During Operations. See Requirement 11, paragraph 200, Test Requirements.

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perform major testing at specified power plateaus. If tests require the variation of operating parameters outside of their normal range, the limits within which such variation is permitted shall be prescribed. Prerequisites and record keeping shall be given attention and the scope of the testing shall demonstrate insofar as practicable that the plant is capable of withstanding the design transients and accidents. The suitability of plant operating procedures should be checked to the maximum extent possible during the preoperational and initial start-up test programs. **Reg. Guide 1.33** – C. Regulatory Position 5.f. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: f. Section 5.2.19(2)–The guideline for checking plant operating procedures during the testing program. [**NOTE**: The affected "should" word is underlined in the N18.7 excerpt above.] (3) Surveillance tests during the operational phase to provide assurance that failures or substandard performance do not remain undetected and that the required reliability of safety-related systems is maintained (see Section 5.2.8). (4) Tests during design, fabrication and construction activities associated with plant maintenance and modifications during the operational phase and the demonstration of satisfactory performance following plant		

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maintenance and modifications or procedural changes (see Section 5.2.7).		
5.2.19.1 Preoperational Tests.		
Preoperational tests are generally performed sequentially in accordance with written procedures. Procedures should ensure that prerequisite steps for equipment testing, such as completion of necessary construction, prior testing, safety precautions, and measures to preserve equipment status have been or will be performed (see also Sections 5.2.17 and 5.3.10). A detailed prescribed physical inspection of equipment components and facilities should be performed to ensure readiness for operation. Typical items to be covered include cleanliness, lubrication, setting of limit switches, calibration of instruments, and presence of safety devices. The test procedure should list the checks to be made and include acceptance criteria and reference sources, such as vendor's literature, engineering drawings or plant specifications. A component test is a functional, operational or performance test of an individual piece of equipment or unit system under prescribed conditions. Typical parameters to be examined are direction of rotation, bearing temperatures, vibration, time delays, and ability to operate with remote and local controls. The procedure should list checks to be made and provide acceptance criteria. Consideration should also be given to providing a run-in period to minimize early failures during operation of the plant.	NQA-1, Requirement 11 NQA-1, Part II, Subpart 2.4, ANSI/IEEE Std. 336-1985, Section 7 NQA-1, Part II, Subpart 2.8, paragraph 500 QAPD, Part II, Section 11	NQA-1, Part II Subpart 2.8 is equivalent to the requirements of ANSI N45.2.8 See Requirement 11, paragraph 300, Test Procedures.

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Individual system tests establish the functional adequacy by operation under prescribed conditions. The tests shall be designed to permit evaluation of system performance including, for example, the measurement of flow, temperature, pressure, response time and vibration, transfer of power supply to emergency power and accuracy and response of control devices. The preoperational testing program should demonstrate, as nearly as can be practicably simulated, the overall integrated operation of the plant systems at rated conditions, including simultaneous operation of auxiliary systems. It may be necessary to defer portions of these tests until nuclear heat is available. The procedures used should be similar to those discussed in 5.3.3 and 5.3.4, and they should be modified to require variation in control parameters, such as pump stops and restarts, cycling valves and varying flows so that system performance can be evaluated. For additional requirements in matters relating to preoperational test programs, American National Standard N45.2.8-1975 is generally applicable. [8] **Reg. Guide 1.33** – C. Regulatory Position 5.g. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: g. Section 5.2.19.1–The guidelines for preoperational tests, except the guideline that refers to a run-in period		

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for equipment. In addition to these guidelines, the prerequisite steps for each equipment test should be completed prior to the commencement of the preoperational test. [NOTE: The affected "should" words are underlined in the N18.7 excerpt above.]		
5.2.19.2 Tests Prior to and During initial Plant Operation.		
Prior to placing a nuclear power plant into operation, a preoperational test program shall be performed to demonstrate the functional adequacy of plant components, systems and structures. Following fuel loading an initial start-up test program shall be conducted to evaluate plant performance as the start-up progresses.	NQA-1, Requirement 11, NQA-1, Part II, Subpart 2.8, paragraph 500 QAPD, Part II, Section 11	
Responsibilities		
The ultimate responsibility for the preparation and execution of adequate preoperational and initial start-up test programs rests with the owner organization. If design or construction is performed by other than the owner organization, design organizations involved should participate in definition of the programs, and the construction organization involved may supply manpower or supervision for execution of part or all of the program, but the owner organization shall determine that the program is adequate and that the results are satisfactory.	QAPD, Part II, Section 1	
Scheduling		
A schedule shall be provided and maintained to provide assurance that all necessary tests are performed and	QAPD, Part II, Section 11	

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properly evaluated on a timely basis. Testing shall be scheduled so that the safety of the plant is never dependent on the performance of an untested system (see also Section 5.2.8).		
5.2.19.3 Tests Associated with Plant Maintenance, Modifications or Procedure Changes.		
Tests shall be performed following plant modifications or significant changes in operating procedures to confirm that the modifications or changes reasonably produce expected results and that the change does not reduce safety of operations.	NQA-1, Requirement 11 NQA-1, Part II, Subpart 2.18, paragraph 200 QAPD, Part II, Section 11	See Requirement 11, paragraph 200, Test Requirements.
5.3 Preparation of Instructions and Procedures.		
The administrative controls and quality assurance program shall be carried out throughout plant life in accordance with written procedures. Activities affecting safety at nuclear power plants shall be described by written procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions and procedures. **Reg. Guide 1.33** – Regulatory Position C, Item 1 ANSI N18.7-1976/ANS-3.2 requires the preparation of many procedures to carry out an effective quality assurance program. Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," to this regulatory guide should be used as guidance to ensure minimum procedural coverage for plant operating activities, including related maintenance activities. Appendix A lists typical safety-related activities that should be covered by written	NQA-1, Requirement 5 QAPD, Part II, Section 5; Part V, Section 3	

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procedures but does not provide a complete listing of needed procedures. Many other activities carried out during the operation phase of a nuclear power plant require written procedures not included in Appendix A. Appendix A may also contain procedures that are not applicable to an applicant because of the configuration of the nuclear power plant. The procedures listed in Appendix A may be combined, separated, or deleted to conform to the applicant's procedures plan.		
These procedures shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. These procedures shall provide an approved preplanned method of conducting operations. Procedures shall be prepared and approved prior to implementation as required by 4.3 and 5.2.15.	NQA-1, Requirement 5	
5.3.1 Procedure Scope.		
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.	QAPD, Part V, Section 3	
5.3.2 Procedure Content.		
The format of procedures may vary from plant to plant, depending on the policies of the owner organization. However, procedures shall include, as appropriate, the following elements:	QAPD, Part V, Section 3	
(1) Title. Each procedure should contain a title descriptive of the work or system or unit to which it applies, a revision	QAPD, Part V, Section 3.1	

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number or date, and an approval status.		
(2) Statement of Applicability. The purpose for which the procedure is intended should be clearly stated; for example, for use during reactor or plant start-up. If the purpose is not clear from the title, a separate statement of applicability should be provided, which may identify the reasons for particular operations.	QAPD, Part V, Section 3.1	
(3) References. References, including reference to technical specifications, should be included in procedures as applicable. References should be identified within the body of procedures when the sequence of steps requires other tasks to be performed prior to or concurrent with a particular step within that task.	NQA-1, Introduction to Part II, NQA-1, Part II, Subpart 2.18, paragraph 202 QAPD, Part V, Section 3.1	
(4) Prerequisites. Each procedure should identify those independent actions or procedures which shall be completed and plant conditions which shall exist prior to its use. Prerequisites applicable only to certain sections of a procedure should be so identified.	NQA-1, Introduction to Part II, NQA-1, Part II, Subpart 2.18, paragraph 202 QAPD, Part V, Section 3.1	
(5) Precautions. Precautions should be established to alert the individual performing the task to those important measures which should be used to protect equipment and personnel, including the public, or to avoid an abnormal or emergency situation. It may be convenient to specify precautions separately. Cautionary notes applicable to specific steps in the procedure should be included in the main body of the procedure and should be identified as such.	NQA-1, Introduction to Part II, NQA-1, Part II, Subpart 2.18, paragraph 202 QAPD, Part V, Section 3.1	
(6) Limitations and Actions. Limitations on the parameters being controlled and appropriate corrective measures to	QAPD, Part II, Section 5	

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return the parameter to the normal control band should be specified. It may be convenient to specify limitations and setpoints in a separate section. Where appropriate, quantitative control guides should be provided; for example, an appropriate step of a procedure should say "Manually adjust the feedwater flow controller to maintain the reactor water level at x feet," rather than "Manually adjust the feedwater flow to maintain water level."	QAPD, Part V, Section 3.1	
(7) Main Body. The main body of a procedure should contain step-by-step instructions in the degree of detail necessary for performing a required function or task.	NQA-1, Introduction to Part II NQA-1, Part II Subpart 2.18, paragraph 202 QAPD, Part V, Section 3.1	
(8) Acceptance Criteria. Procedures should contain, where applicable, acceptance criteria against which the success or failure of test-type activity would be judged. In some cases there would be qualitative criteria, i.e., a given event does or does not occur. In other cases quantitative values would be designated.	NQA-1, Introduction to Part II NQA-1, Part II, Subpart 2.18, paragraph 202 QAPD, Part V, Section 3.1	

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(9) Checkoff Lists. Complex procedures <u>should</u> have checkoff lists. These lists may be included as part of the procedure or may be appended to the procedure. **Reg. Guide 1.33** – C. Regulatory Position 5.h. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: h. Section 5.3.2-The guidelines that describe the content (excluding format) of procedures, except for the guidelines that address (1) a separate statement of applicability in Section 5.3.2(2), (2) inclusion of references in procedures, as applicable, in Section 5.3.2(3), and (3) inclusion of quantitative control guides in Section 5.3.2(6). [**NOTE**: The affected "should" words are underlined in the N18.7 excerpts above.]	NQA-1, Introduction to Part II NQA-1, Part II Subpart 2.18, paragraph 202 QAPD, Part V, Section 3.1	
5.3.3 System Procedures.		
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 shall be delineated in system procedures. Procedures for correcting off-normal conditions shall be developed for those events where system complexity may lead to operator uncertainty. System procedures shall contain checkoff lists where appropriate.	QAPD, Part V, Section 3.2	

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5.3.4 General Plant Procedures.		
General plant procedures provide instructions for the integrated operations of the plant. In addition to the characteristics of procedures presented in 5.3.1 and 5.3.2, details concerning specific general plant procedures are emphasized in the following sections.	QAPD, Part V, Section 3.2	
5.3.4.1 Start-up Procedures.		
Start-up procedures shall be provided that include starting the reactor from cold or hot conditions and establishing power operation, with the generator synchronized to the line. Recovery from reactor trips shall be in accordance with the start-up procedure and shall be subject to the determinations set forth in 5.2.1. (1) Prerequisites. Start-up procedures shall include provisions for documented determination that prerequisites have been met, including confirmation that necessary instruments are operable and properly set; valves are properly aligned; necessary systems procedures, tests and calibrations have been completed; and required approvals have been obtained. Checkoff lists are normally used for this purpose. (2) Main Body. The main body of the start-up procedures shall include the major steps of the start-up sequence, including reference to appropriate system procedures. Such major steps shall include or reference detailed instructions for their performance, for example, minimum instrumentation requirements coverage of control rod withdrawal sequence or soluble poison dilution, manipulation of controls, establishment of feed and steam	QAPD, Part V, Section 3.2	

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flow and turbine start-up and synchronization. Checkoff lists should be used for the purpose of confirming completion of major steps in proper sequence.		
5.3.4.2 Shutdown Procedures.		
Shutdown procedures shall be provided to guide operations during and following controlled shutdown or reactor trips and shall include instructions for establishing or maintaining hot standby or cold shutdown conditions, as applicable. The major steps involved in shutting down the plant shall be specified, including detailed instructions for the performance of such actions as monitoring and controlling reactivity, load reduction and cooldown rates, sequence of activating or deactivating equipment, requirements for prompt analyses of causes of reactor trips or abnormal conditions requiring unplanned controlled shutdowns, and provisions for decay heat removal. Checkoff lists should be used for the purpose of confirming completion of major steps in proper sequence.	QAPD, Part V, Section 3.2	
5.3.4.3 Power Operation and Load Changing Procedures.		
Procedures for steady-state power operation and load changing shall be provided that include, for example, provisions for use of control rods, chemical shim, coolant flow control or any other system available for long-or-short term control of reactivity, making deliberate load changes, responding to unanticipated load changes and adjusting operating parameters.	QAPD, Part V, Section 3.2	

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5.3.4.4 Process Monitoring Procedures.		
Procedures for monitoring performance of plant systems shall be required to assure that core thermal margins and coolant quality are maintained at all times, that integrity of fission product barriers is maintained at all times and that engineered safety features and emergency equipment are in a state of readiness to maintain the plant in a safe condition if needed. The limits (maximum and minimum) for significant process parameters shall be identified. The nature and frequency of this monitoring shall be covered by operating procedures, as appropriate.	QAPD, Part V, Section 3.2	
5.3.4.5 Fuel-Handling Procedures.		
Fuel-handling operations shall be performed in accordance with written procedures. These procedures shall specify actions for core alterations, accountability of fuel and partial or complete refueling operations that include, for example, continuous monitoring of the neutron flux throughout core loading, periodic recording of data, audible annunciation of abnormal flux increases and evaluation of core neutron multiplication to verify the safety of loading increments. Provisions shall be made for preparing specific procedures for each refueling outage and for receipt and shipment of fuel. Plant procedures should, nonetheless, prescribe the general preplanning for the fuel-handling program and its associated safety measures and should identify those aspects of the program for which procedures are to be prepared for each refueling outage. (1) Prerequisites. Prerequisites shall be provided in the	QAPD, Part V, Section 3.2	

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fuel-handling procedures that include, for example, the status of plant systems required for refueling; inspection of replacement fuel, control rods, poison curtains and internals; 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. (2) Main Body. The main body of fuel handling procedures shall include requirements for refueling; for example, the status of the core, instructions for proper sequence, orientation, and seating of fuel and components, rules for minimum operable instrumentation, actions to be followed in the event of fuel damage, rules for periods when refueling is interrupted, verification of the shutdown margin and the frequency of determination, communications between control room and the fuel loading station, independent verification of fuel and component location, criteria for stopping refueling and for reducing the size of the fuel loading increment, and a containment evacuation plan and its associated safety measures. Documentation of final fuel and component serial numbers and locations shall be maintained.		
5.3.5 Maintenance Procedures.		
Maintenance procedures shall contain applicable items listed under 5.3.2 and, in addition, measures to cover the features of maintenance described below. (1) Preparation for Maintenance. Maintenance procedures shall reflect considerations listed under 5.2.6. Adherence to applicable radiation protection measures shall be prescribed. These measures shall specify protective clothing	NQA-1, Part II, Subpart 2.18, paragraph 200 QAPD, Part V, Section 3.2	

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and radiation monitoring needed to assure safety. (2) Performance of Maintenance. The procedures shall contain enough detail to permit the maintenance work to be performed correctly and safely, and shall include provisions for conducting and recording results of required tests and inspections. References should be made to vendor manuals, plant procedures, drawings and other sources as applicable. (3) Post Maintenance Check Out and Return to Service. Instructions shall be included, or referenced, for returning the equipment to its normal operating status. (4) Supporting Maintenance Documents. Where appropriate sections of related documents, such as vendor manuals, equipment operating and maintenance instructions, or approved drawings with acceptance criteria provide adequate instructions to assure the required quality of work, the applicable sections of the related documents shall be referenced in the procedure, or may, in some cases, constitute adequate procedures in themselves. Such procedures shall receive the same level of review and approval as operating procedures.		
5.3.6 Radiation Control Procedures.		
Procedures shall be provided for implementation of a radiation control program to meet applicable program requirements. The radiation control program involves the acquisition of data and provision of equipment to perform necessary radiation surveys, measurements and evaluations for the assessment and control of radiation hazards associated with a nuclear power plant. Procedures shall be developed and implemented for: monitoring both	QAPD, Part V, Section 3.2	

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external and internal exposures of employees, utilizing accepted techniques; routine radiation surveys of work areas; 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 of employees and others.		
5.3.7 Calibration and Test Procedures.		
Procedures shall be provided for periodic calibration and testing of safety-related instrumentation and control systems. Procedures shall also be provided for periodic calibration of measuring and test equipment used in activities affecting the quality of these systems. The procedures shall provide for meeting surveillance schedules and for assuring measurement accuracy adequate to keep safety-related parameters within operational and safety limits.	QAPD, Part V, Section 3.2	
5.3.8 Chemical-Radiochemical Control Procedures.		
Procedures shall be provided for chemical and radiochemical control activities. They should include, for example, 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. Procedures shall also be provided for the control, treatment and management of radioactive wastes and control of radioactive calibration sources.	QAPD, Part V, Section 3.2	

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5.3.9 Emergency Procedures.		
Procedures shall be provided to guide operations during potential emergencies. They shall be written so that a trained operator will know in advance the expected course of events that will identify an emergency and the immediate action he should take. Since emergencies may not follow anticipated patterns, the procedures should provide sufficient flexibility to accommodate variations. Emergency procedures that cover actions for manipulations of controls to prevent accidents or lessen their consequences should be based on a general sequence of observations and actions. Emphasis should be placed on operator responses to observations and indications in the control room; that is, when immediate operator actions are required to prevent or mitigate the consequences of a serious condition, procedures should require that those actions be implemented promptly. The emergency procedure format given in 5.3.9.1 provides a basis for coping with emergencies and is an acceptable format for prescribing operator observations and actions. Emergency procedures may contain supplemental background information to further aid operators in taking proper emergency actions, but this information shall be separated from the procedural actions. It is extremely difficult to distinguish between procedures prepared for the purpose of correcting off-normal conditions which in themselves do not constitute actual emergency situations, but which conceivably can degenerate into true emergencies in the absence of positive corrective action, and procedures required for coping with true emergencies	QAPD, Part V, Section 3.2	Requirements for Emergency Procedures have been updated through the years through industry initiatives and lessons learned.

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that have already occurred. Some owner organizations choose the term "Off-normal Procedures" for the same purpose that others choose "Emergency Procedures." When initially available intelligence provided to operating personnel via instrument readings, physical conditions, and personal observations may not clearly indicate the difference between a simple operational problem and a serious emergency, the actions outlined in the emergency procedures shall be based on a conservative course of action by the operating crew. Considerable judgment on the part of competent personnel is required before departing from the emergency procedure. **Reg. Guide 1.33** – C. Regulatory Position 5.i. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: i. Section 5.3.9–The guideline concerning emergency procedures requiring prompt implementation of immediate operator actions when required to prevent or mitigate the consequences of a serious condition. [**NOTE**: The affected "should" words are underlined in the N18.7 excerpt above.]		
5.3.9.1 Emergency Procedure Format and Content.		
Emergency procedures shall include, as appropriate, the following elements: (1) Title. The title <u>should</u> be descriptive of the emergency	QAPD, Part V, Section 3.2	Requirements for Emergency Procedures have been updated through the years through industry initiatives and lessons

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for which the procedure is provided. (2) Symptoms. Symptoms should be included to aid in the identification of the emergency. They should include alarms, operating conditions and probable magnitudes of parameter changes. If a condition is peculiar only to the emergency under consideration, it should be listed first. (3) Automatic Actions. The automatic actions that will probably occur as a result of the emergency should be identified. (4) Immediate Operator Actions. These steps should specify immediate actions for operation of controls or confirmation of automatic actions that are required to stop the degradation of conditions and mitigate their consequences. Examples include the following: (a) The verification of automatic actions. This step is based on equipment operating as designed and the sequence of events following an expected course. Since variations from the expected course may occur, operators should be prepared to manipulate controls as necessary to cope with the problem. However, the procedure should caution the operator not to place systems in "manual" unless misoperation in "automatic" is apparent, and should require him to make frequent checks for proper operation of systems placed in manual control. (b) Assurance that reactor is in a safe condition. This step usually means shutdown of the reactor with sufficient reactivity margin and establishment of required core cooling. (c) Notification to plant personnel of the nature of the		learned.

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emergency. (d) Determination that the reactor coolant system pressure boundary is intact. (e) Confirmation of the availability of adequate power sources. (f) Confirmation that containment and exhaust systems are operating properly in order to prevent uncontrolled release of radioactivity. (5) Subsequent Operator Actions. Steps <u>should</u> be included to return the reactor to a normal condition or to provide for a safe extended shutdown period under abnormal or emergency conditions. **Reg. Guide 1.33** – C. Regulatory Position 5.j. The guidelines (indicated by the verb "should") of ANSI N18.7-1976/ANS-3.2 contained in the following sections have sufficient safety importance to be treated the same as the requirements (indicated by the verb "shall") of the standard: j. Section 5.3.9.1–The guidelines that describe the content (excluding format) for: the title in Section 5.3.9.1(1); the inclusion of symptoms to aid in identification in Section 5.3.9.1(2); automatic actions in Section 5.3.9.1(3); immediate operator action, excluding those guidelines contained in the examples, in Section 5.3.9.1(4); and subsequent operator actions in Section 5.3.9.1(5). [**NOTE**: The affected "should" words are underlined in the N18.7 excerpt above.]		

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5.3.9.2 Events of Potential Emergency.		
Potential emergency conditions shall be identified and procedures for coping with them shall be prepared. The following categories of events may, depending upon the design of the plant, be considered as examples of potential emergencies for which procedures are written and for which immediate action is indicated: (1) Loss of coolant from identified and unidentified sources, from small loss to design-basis-accident loss (2) Reactor transients and excursions (3) Failure of vital equipment (4) Loss or degradation of vital power sources (5) Civil disturbances (6) Abnormally high radiation levels (7) Excessive release of radioactive liquid or gaseous effluent (8) Malfunction of reactivity control system (9) Loss of containment integrity (10) Conditions that require use of standby liquid poison systems (11) Possible natural occurrences (12) Fires	QAPD, Part V, Section 3.2	The list contained in N18.7 is provided as examples and is not stated in the QAPD. NRC regulatory guidance and the applicable facility SAR and Emergency Plans will provide the basis for what procedures are necessary.
5.3.9.3 Procedures for Implementing Emergency Plan.		
Implementing procedures for emergency plan actions shall contain, as appropriate, the following elements: (1) Individual assignment of authorities and responsibilities for performance of specific tasks to specific	QAPD, Part V, Section 3.2	

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individuals or staff positions. (2) Protective action levels and protective measures outlined for the emergency identified. (3) Specific actions to be taken by coordinating support groups. (4) Procedures for medical treatment and handling of contaminated individuals. (5) Special equipment requirements for items such as medical treatment, emergency personnel removal, specific radiation detection, personnel dosimetry and rescue operations, procedures for making this equipment available, plus operating instructions for such equipment, and provisions for its periodic inspection and maintenance. (6) Identification of emergency communications network, including communications required for personnel identification and effective coordination of all support groups. (7) Description of alarm signals in each facility. At sites with multiple units, alarm signals should be consistent from one unit to another. (Signals for initiating protective measures should be clear and distinct from process or operational alarm system to avoid confusion.) (8) Procedures required to restore the plant to normal conditions following an emergency. (9) Requirements for periodically testing of procedures, communications network and alarm systems to assure that they function properly.		