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DRAFT REGULATORY GUIDE

Contact: P.F. Prescott
(301) 415-3026

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(Proposed Revision 4 of Regulatory Guide 1.28, dated August 1985)

QUALITY ASSURANCE PROGRAM REQUIREMENTS (DESIGN AND CONSTRUCTION)

A. INTRODUCTION

The regulatory framework that the U.S. Nuclear Regulatory Commission (NRC) has established for nuclear power plants consists of regulations and supporting guidelines, including, but not limited to, General Design Criterion (GDC) 1, "Quality Standards and Records," as set forth in Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," of the *Code of Federal Regulations* (10 CFR Part 50) (Ref. 1). 10 CFR Part 50.34(b)(6)(ii) requires managerial and administrative controls to be used to assure safe operation Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing plants," sets forth the requirements for such controls.

This regulatory guide describes methods that the NRC staff considers acceptable for complying with the provisions of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50 for establishing and implementing a quality assurance (QA) program for the design and construction of nuclear power plants and fuel reprocessing plants.

The methods described in this revision are similar to the methods described in Regulatory Guide (RG) 1.28, "Quality Assurance Program Requirements (Design and Construction)," Revision 3 (Ref. 2), which is the previously published version of this regulatory guide. RG 1.33, "Quality Assurance Program Requirements (Operation)" (Ref. 3) addresses additional guidance for the establishment and execution of QA programs for nuclear power plants during the operations phase.

The NRC issues regulatory guides to describe to the public methods that the staff considers acceptable for use in implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific problems or postulated accidents, and to provide guidance to applicants and licensees. Regulatory guides are not substitutes for regulations and compliance with them is not required.

This regulatory guide contains information collection requirements covered by 10 CFR Part 50 that the Office of Management and Budget (OMB) approved under OMB control number 3150-0011. The NRC may neither conduct nor sponsor, and a person is not required to respond to, an information collection request or requirement unless the requesting document displays a currently valid OMB control number.

B. DISCUSSION

Background

The NRC issued RG 1.28, Revision 3, in August 1985. The guide provided a comprehensive description of the evolution of American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME) NQA-1, "Quality Assurance Program Requirements for Nuclear Power Plants" (Ref. 4), and the history of the consolidation of NRC-endorsed QA standards. The methods described in this revision are generally equivalent to the methods described in Revision 3 of this regulatory guide, which endorsed NQA-1-1983 through the 1983 addenda referred to as the NQA-1a-1983 Addenda. A number of standards were consolidated in NQA-1-1983 and NQA-1a-1983 Addenda. RG 1.28, Revision 3, consolidated the regulatory guides that endorsed the consolidated standards. The consolidation was described in that revision.

Proposed RG 1.28, Revision 4, extends the scope of the NRC's endorsement to include NQA-1, Part II, which contains amplifying QA requirements for certain specific work activities that occur at various stages of a facility's life. The work activities include, but are not limited to, management, planning, site investigation, design, computer software use, commercial-grade dedication, procurement, fabrication, installment, inspection, and testing. Appendix A to this regulatory guide gives an overview and continuation of the history and consolidation of NRC-endorsed standards.

C. REGULATORY POSITION

The Part I and Part II requirements included in the NQA-1a-2008 Addenda to NQA-1-2008, "Quality Assurance Requirements for Nuclear Facility Applications" (Ref. 5), for the implementation of a QA program during the design and construction phases of nuclear power plants and fuel reprocessing plants are acceptable to the NRC staff and provide an adequate basis for complying with the requirements of Appendix B to 10 CFR Part 50, subject to the additions and modifications of NQA-1a-2008 Addenda to NQA-1-2008 identified below.

1. Quality Assurance Records

a. Lifetime and Nonpermanent Records

(1) Paragraph 400, "Classification," of Requirement 17, "Quality Assurance Records," states that records shall be classified as "lifetime" or "nonpermanent" and maintained by the "Owner" or an

authorized agent. Paragraph 401, "Lifetime Records," identifies lifetime records as those records that meet one or more of the following criteria:

(a) those that would be of significant value in demonstrating the capability for safe operation;
(b) those that would be of significant value in maintaining, reworking, repairing, replacing, or modifying an item;
(d) those that would be of significant value in determining the cause of an accident or malfunction of an item; and
(d) those that provide required baseline data for inservice inspections.

The owner or an authorized agent must maintain lifetime records for the life of the particular item while it is installed in the plant or stored for future use.

(2) Paragraph 402, "Nonpermanent Records," identifies nonpermanent records as those records that must show evidence that an activity was performed in accordance with the applicable requirements; however, the owner or an authorized agent does not need to retain these records for the life of the item because they do not meet the criteria for lifetime records. However, the owner or an authorized agent shall maintain nonpermanent records for the identified retention period.

(3) Revision 3 of this regulatory guide provided guidance on the retention period for programmatic and product nonpermanent records. However, because there are additional regulatory requirements for specific records and established industry practice, this guidance was deemed obsolete and no longer necessary. Nonmandatory Appendix 17A-1, "Guidance on Quality Assurance Records," in Paragraph 200, "List of Typical Lifetime Records," lists typical lifetime records containing information that meets Requirement 17 of Part I. Note that the nomenclature of these records may vary. For records not listed in Appendix 17A-1, the type of record that most nearly describes the record in question should be followed with respect to its retention classification. The applicant or licensee should be cognizant that the list is not considered to be all-inclusive. The applicant or licensee itself is responsible for ensuring, in accordance with QA Criterion XVII, "Quality Assurance Records," of Appendix B to 10 CFR Part 50, that it maintains sufficient records to furnish evidence of activities affecting quality.

b. Regulatory Issue Summary 2000-18

(1) In Regulatory Issue Summary (RIS) 2000-18, "Guidance on Managing Quality Assurance Records in Electronic Media" (Ref. 6), the NRC staff provided applicants and licensees with a way to satisfy the requirements for the maintenance of QA records. The guidance should also be applied to the recordkeeping and maintenance requirements in other parts of the regulations that accept the storage of records in the form of electronic media. The NRC reminds licensees and applicants that the guidance in Generic Letter (GL) 88-18, "Plant Record Storage on Optical Disks," (Ref. 7), remains relevant and acceptable.

(2) Attachment 1 to RIS 2000-18 lists guidance documents on establishing an electronic recordkeeping system to maintain the integrity, authenticity, and acceptability of QA records during their required retention period in accordance with the requirements of Appendix B to 10 CFR Part 50 and other regulations for the storage of QA records in electronic media. These guidance documents also describe methods that the licensee or applicant can use to authenticate electronic records; to prevent their alteration or falsification; to protect them from, or to recover them following, a disaster; and to manage their software configuration. Although the complete set of guidance documents referenced in Attachment 1 to RIS 2000-18 constitutes an acceptable method for satisfying the provisions of Appendix B to 10 CFR Part 50 and other regulations for the storage of QA records in electronic media, this guidance does not supersede current QA record commitments in an applicant's or licensee's QA program description.

2. Audits

Paragraph 200, "Scheduling," of Requirement 18, "Audits," states that audits shall be scheduled in a manner to provide coverage and coordination with ongoing activities, based on the status and importance of the activity. Additional audits of specific subjects shall supplement scheduled audits when necessary to provide adequate coverage.

a. Internal Audits

(1) Internal audits of organization and facility activities, conducted before placing the facility in operation, should be performed in such a manner as to ensure 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.

(2) Applicable elements of an organization's QA program should be audited at least once each year or at least once during the life of the activity, whichever is shorter. In determining the scope of the audit, an evaluation of the activity being audited may be useful. The evaluation may include results of previous QA program audits and the results of audits from other sources, including the nature and frequency of identified deficiencies and any significant changes in personnel, the organization, or the QA program.

b. External Audits

(1) After award of a contract, the applicant or licensee may determine, based on the evaluation conducted in accordance with Position 2.b(4) below, that external audits are not necessary for procuring items (a) that are relatively simple and standard in design, manufacturing, and testing and (b) that are adaptable to standard or automated inspections or tests of the end product to verify quality characteristics after delivery.

(2) Procurement audits of suppliers are not necessary for procuring items that are relatively simple and standard in design, manufacturing, and testing and that are adaptable to standard or automated inspections or tests of the end product to verify quality characteristics after delivery. For other procurement actions not covered by the above exceptions, audits should be conducted as described below.

(3) The applicant or licensee should either audit its supplier's QA program on a triennial basis or arrange for such an audit. The triennial period begins when an audit is performed. The licensee or applicant may perform an audit when the supplier has completed sufficient work to demonstrate that its organization is implementing a QA program that has the required scope for purchases placed during the triennial period. If a subsequent contract or a contract modification significantly enlarges the scope or changes the methods or controls for activities performed by the same supplier, the licensee or applicant should conduct an audit of the modified requirements, thus starting a new triennial period. If the supplier is implementing the same QA program for other customers as that proposed for use on the auditing party's contract, the pre-award survey may serve as the first triennial audit. Therefore, when a pre-award survey is employed as the first triennial audit, it should satisfy the same audit elements and criteria as those used on other triennial audits.

(4) The applicant or licensee should perform or arrange for annual evaluations of suppliers. It should document these evaluations and take the following considerations into account, where applicable:

(a) the review of supplier-furnished documents and records such as certificates of conformance, nonconformance notices, and corrective actions;

(b) results of previous source verifications, audits, and receiving inspections;
(c) operating experience of identical or similar products furnished by the same supplier; and
(d) results of audits from other sources (e.g., ASME or NRC audits).

Applicants and licensees should note that in Information Notice (IN) 86-21, "Recognition of American Society of Mechanical Engineers Accreditation Program for N Stamp Holders," (Ref. 8) the NRC staff informed applicants and licensees that the NRC recognizes the ASME Accreditation Program and associated certificates of authorization as evidence that the holder of the certificate of authorization has a documented QA program that meets the requirements of Appendix B to 10 CFR Part 50. However, recognition of the ASME Accreditation Program applies only to the programmatic aspects of the QA programs. Applicants and licensees or their subcontractors should ensure that the suppliers are effectively implementing their approved QA programs.

(5) If more than one purchaser buys from a single supplier, a purchaser may either perform or arrange for an audit of the supplier on behalf of itself and other purchasers to reduce the number of external audits of the supplier. The scope of this audit should satisfy the needs of all the purchasers, and the audit report should be distributed to all the purchasers for whom the audit was conducted. Nevertheless, each of the purchasers relying on the results of an audit performed on behalf of several purchasers remains individually responsible for the adequacy of the audit.

(6) For procurement of commercial-grade calibration services for safety-related applications, laboratory accreditation programs administered by the National Institute of Standards and Technology and by the American Association of Laboratory Accreditation, as recognized through the mutual recognition arrangement of the International Accreditation Program (ILAC), are acceptable in lieu of a supplier audit, commercial-grade survey, or in-process surveillance provided that all of the following conditions are met:

(a) The alternative method is documented in the QA program description.
(b) Accreditation is to ANSI/ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories."
(c) Use of the alternative method is limited to domestic accreditation bodies accepted as signatories (full members) to the ILAC mutual recognition arrangement.
(d) The scope of the accreditation covers the contracted services.
(e) Purchase documents impose additional technical and administrative requirements to satisfy necessary QA program and technical requirements.
(f) Purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.
(g) Purchase documents require identification of the laboratory equipment/standards used.
(h) The alternative method is limited to the domestic calibration service suppliers.
(i) The alternative method is applicable to subsuppliers of calibration service suppliers, provided the above conditions are met.

D. IMPLEMENTATION

The purpose of this section is to provide information to applicants and licensees regarding the NRC's plans for using this draft regulatory guide. The NRC does not intend or approve any imposition or backfit in connection with its issuance.

The NRC has issued this draft guide to encourage public participation in its development. The NRC will consider all public comments received in development of the final guidance document. In some cases, applicants or licensees may propose an alternative or use a previously established acceptable alternative method for complying with specified portions of the NRC's regulations. Otherwise, the

methods described in this guide will be used in evaluating compliance with the applicable regulations for license applications, license amendment applications, and exemption requests.

REGULATORY ANALYSIS

Statement of the Problem

Significant improvements have been made to NQA-1 since 1985 when the NRC endorsed RG 1.28, Revision 3. These improvements have been incorporated into the standard through the issuance of NQA-1a-2008 Addenda to NQA-1-2008. The NRC has also consolidated the expectation for a QA program for nuclear power plants into one document. A new standard review plan section on QA programs entitled, "Quality Assurance Program Description-Design Certification, Early Site Permit, and New License Applicants," (see Section 17.5 of NUREG-0800, Ref. 9), contains the NRC's consolidated expectations. NUREG-0800, Section 17.5 references NQA-1.

Additionally, the NRC has issued generic letters and bulletins to establish new guidance or to clarify guidance in problem areas within QA programs. Also, alternatives that the NRC has approved as part of the licensing process needed to be addressed so that applicants and licensees are aware of them for their consideration when reviewing or revising their QA programs. This proposed RG 1.28, Revision 4, is needed to incorporate appropriate new features from the generic letters and bulletins, and to address the alternatives approved as part of the licensing process.

Objective

The objectives of this regulatory action are as follows:

- Present NRC guidance on QA programs.
- Endorse changes to QA requirements developed through the consensus process.
- Establish a new point of broad reorientation and update for NRC guidance related to QA.
- Provide more detailed guidance to support the implementation of Section 17.5 of NUREG-0800.

Alternative Approaches

The NRC staff considered the following alternative approaches:

Do not revise Regulatory Guide 1.28.
Update Regulatory Guide 1.28.

Alternative 1: Do Not Revise Regulatory Guide 1.28

Under this alternative, the NRC would not revise this guidance, and the original version of this regulatory guide would continue to be used. This alternative is considered the baseline or "no-action" alternative and, as such, involves no value/impact considerations.

Alternative 2: Update Regulatory Guide 1.28

Under this alternative, the NRC would update Regulatory Guide 1.28, taking into consideration the updated NRC guidance for review of QA programs and changes to QA requirements developed through the consensus process.

One benefit of this action is that it would enhance reactor safety by providing licensees with the latest guidance for QA program requirements in one consensus standard.

The impact to the NRC would be the costs associated with preparing and issuing the regulatory guide. The impact to the public would be the voluntary costs associated with reviewing and providing comments to the NRC during the public comment period. The value to the NRC staff and its applicants would be the benefits associated with enhanced efficiency and effectiveness in using a common guidance document as the technical basis for license applications and other interactions between the NRC and its regulated entities.

Conclusion

Based on this regulatory analysis, the staff recommends that the NRC revise RG 1.28. The staff concludes that the proposed action will enhance reactor and fuel cycle safety by providing licensees with the latest guidance for QA program requirements in one consensus standard. It could also lead to cost savings for the industry, especially with regard to applications for standard plant design certifications and combined licenses.

REFERENCES

1. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," U.S. Nuclear Regulatory Commission, Washington, DC.[1]

2. Regulatory Guide 1.28, "Quality Assurance Program Requirements (Design and Construction)," Revision 3, U.S. Nuclear Regulatory Commission, Washington, DC.

3. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2, U.S. Nuclear Regulatory Commission, Washington, DC.

4. ANSI/ASME NQA-1-1983, "Quality Assurance Program Requirements for Nuclear Power Plants," American National Standards Institute/American Society of Mechanical Engineers, New York, NY.[2]

5. ASME NQA-1a-2008 Addenda to ASME NQA-1-2008, "Quality Assurance Requirements for Nuclear Facility Applications," American Society of Mechanical Engineers, New York, NY.

6. Regulatory Issue Summary, (RIS) 2000-18, "Guidance on Managing Quality Assurance Records in Electronic Media," U.S. Nuclear Regulatory Commission, Washington, DC, October 23, 2000.

7. Generic Letter (GL) 88-18, "Plant record Storage on Optical Disk," U.S. Nuclear Regulatory Commission, Washington, DC.

8. Information Notice (IN) 86-21, "Recognition of American Society of Mechanical Engineers Accreditation Program for N Stamp Holders," U.S. Nuclear Regulatory Commission, Washington, DC.

9. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)," Section 17.5, " Quality Assurance Program Description – Design Certification, Early Site Permit and New License Applicants," U.S. Nuclear Regulatory Commission, Washington, DC, Revision 0, January 2006.

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[1] All NRC regulations listed herein are available electronically through the Electronic Reading room on the NRC's public Web site as are other NRC published documents such as NUREGs, Generic Letters and Regulatory Guides,, go to: http://www.nrc.gov/reading-rm/doc-collections//. Copies are also available for inspection or copying for a fee from the NRC's Public Document Room (PDR) at 11555 Rockville Pike, Rockville, MD; the mailing address is USNRC PDR, Washington, DC 20555; telephone 301-415-4737 or (800) 397-4209; fax (301) 415-3548; and e-mail pdr.resource@nrc.gov.

[2] Copies of the non-NRC documents included in these references may be obtained directly from the publishing organizations.

APPENDIX A

EVOLUTION OF QUALITY ASSURANCE STANDARDS AND THE ENDORSING REGULATORY GUIDES

Regulatory Guide (RG) 1.28 (Safety Guide 28) was issued in 1972 and endorsed the general requirements and guidelines for establishing and executing a quality assurance (QA) program during the design and construction phases of nuclear power plants provided in American National Standards Institute (ANSI) N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants." This standard provided general requirements for establishing and executing a QA program during the design, construction, and operation of nuclear power plants. ANSI N45.2-1971 was later revised to update its requirements and expand its applicability to other nuclear facilities that were subject to Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities," of the *Code of Federal Regulations* (10 CFR Part 50). The revised standard was subsequently approved and designated ANSI/American Society of Mechanical Engineers (ASME) N45.2-1977, "Quality Assurance Program Requirements for Nuclear Facilities." In February 1979, the NRC issued RG 1.28, Revision 2, which, with additional supplemental provisions, also endorsed the QA program requirements of ANSI/ASME N45.2-1977.

The ASME Nuclear Quality Assurance Committee subsequently prepared NQA-1-1979, which included requirements and guidance for establishing and executing QA programs for the design, construction, operation, and decommissioning of nuclear facilities. This standard was based on ANSI/ASME N45.2-1977; ANSI N46.2-1978, "Quality Assurance Program Requirements for Post Reactor Nuclear Fuel Cycle Facilities," Revision 1; and the standards in the N45.2-1971 series listed in Table A-1.

Table A-1. Standards in the ANSI N45.2-1971 Series

STANDARD	STANDARD TITLE
N45.2.6	Qualification of Inspection, Examination, and Testing Personnel for Nuclear Power Plants
N45.2.9	Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants
N45.2.10	Quality Assurance Terms and Definitions
N45.2.11	Quality Assurance Requirements for the Design of Nuclear Power Plants
N45.2.12	Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants
N45.2.13	Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants
N45.2.23	Qualifications of Quality Assurance Program Audit Personnel for Nuclear Power Plants

NQA-1-1979 was issued, and was revised in 1983. The NQA-2-1983 standard incorporated the requirements of the QA standards listed in Table A-2, which were not included in NQA-1

Table A-2. QA Standards Incorporated into NQA-2-1983

STANDARD	STANDARD TITLE
N45.2.1	Cleaning of Fluid Systems and Associated Components for Nuclear Power Plants
N45.2.2	Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants
N45.2.3	Housekeeping During the Construction Phase of Nuclear Power Plants
N45.2.5	Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations during the Construction Phase of Nuclear Power Plants
N45.2.8	Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants
N45.2.15	Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants
N45.2.20	Supplementary Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants

In 1985, RG 1.28, Revision 3, with supplemental provisions, endorsed NQA-1-1983 through the NQA-1a-1983 Addenda. NQA-1 was revised in 1986 and 1989 to incorporate "lessons learned" in the post-Three-Mile-Island period. NQA-1 was also revised in 1986, 1989, 1994, 1997, and 2000. However, the NRC did not endorse later versions of the standard through the regulatory guide process. Proposed RG 1.28, Revision 4, seeks to endorse, with supplemental provisions, NQA-1a-2008 Addenda to NQA-1-2008.

The NRC withdrew several regulatory guides related to QA in 1991. The ANSI standards endorsed by the regulatory guides were incorporated into NQA-1-1983, which was endorsed by RG 1.28, Revision 3, issued in August 1985. The withdrawal of a regulatory guide does not alter any prior or existing licensee commitments based on the use of the withdrawn regulatory guide. Licensees with prior or existing commitments to the withdrawn standards may continue to implement those provisions or revise their commitments to adopt an acceptable version of the ASME NQA-1 standard.

Table A-3 provides a cross-reference of the regulatory guide, the standard endorsed by the regulatory guide, and the standard's location within NQA-1a-2008 Addenda to NQA-1-2008.

Table A-3. RG Cross-Reference, RG-Endorsed Standard, and Standard Location

RG	RG TITLE	RG-ENDORSED STANDARD/ (LOCATION)	STANDARD TITLE
1.30	Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment	IEEE* 336, ANSI N45.2.4 (Part II), (Subpart 2.4) * Institute of Electrical and Electronics Engineers, Inc.	Installation, Inspection, and Testing Requirements for Power, Instrumentation, and Control Equipment at Nuclear Facilities
1.33	Quality Assurance Program Requirements (Operation)	ANSI/ANS* 3.2 (Not in NQA-1) *American Nuclear Society	Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants
1.37	Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants	ANSI N45.2.1 (Part II) (Subpart 2.1)	Cleaning of Fluid Systems and Associated Components during the Construction Phase of Nuclear Power Plants
1.38	Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants	ANSI N45.2.2 (Part II) (Subpart 2.2)	Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants during the Construction Phase
1.39	Housekeeping Requirements for Water-Cooled Nuclear Power Plants	ANSI N45.2.3 (Part II) (Subpart 2.3)	Housekeeping during the Construction Phase of Nuclear Power Plants
1.58	Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel (Withdrawn)	ANSI N45.2.6 (Part I)	Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants
1.64	Quality Assurance Requirements for the Design of Nuclear Power Plants (Withdrawn)	ANSI N45.2.11 (Part I)	Quality Assurance Requirements for the Design of Nuclear Power Plants
1.88	Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records (Withdrawn)	ANSI N45.2.9 (Part I)	Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants
1.94	Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants	ANSI N45.2.5 (Part II) (Subpart 2.5)	Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Steel during the Construction Phase of Nuclear power Plants

RG	RG TITLE	RG-ENDORSED STANDARD/ (LOCATION)	STANDARD TITLE
1.116	Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems	ANSI N45.2.8 (Part II) (Subpart 2.8)	Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems
1.123	Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants (Withdrawn)	ANSI N45.2.13 (Part I)	Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants
1.144	Auditing of Quality Assurance Programs for Nuclear Power Plants (Withdrawn)	ANSI N45.2.12 (Part I)	Requirements for Auditing of Quality Assurance Program for Nuclear Power Plants
1.146	Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants	ANSI N45.2.23 (Part I)	Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants
1.152	Criteria for Programmable Digital Computer Software in Safety-Related Systems of Nuclear Power Plants	ANSI/IEEE-ANS-7-4.3.2 (Part II) (Subpart 2.7)	Application Criteria for Programmable Digital Computer System in Safety Systems of Nuclear Power Plants
	No existing guide	ANSI N45.2.20 (Part II) NA (Subpart 2.20)	Supplementary Quality Assurance Requirements for Subsurface Investigation for Nuclear Power Plants
	No existing guide	NQA-1 (Part II) (Subpart 2.18)	Quality Assurance Requirements for Maintenance of Nuclear Facilities
	No existing guide	IEEE 498 ANSI N45.2.16 (Part II) (Subpart 2.16)	Supplementary Requirements for the Calibration and Control of Measuring and Test Equipment Used in the Construction and Maintenance of Nuclear Facilities