



# REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

## REGULATORY GUIDE 1.28

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# QUALITY ASSURANCE PROGRAM CRITERIA (DESIGN AND CONSTRUCTION)

## A. INTRODUCTION

This regulatory guide (RG) describes methods that the staff of the U.S. Nuclear Regulatory Commission (NRC) considers acceptable for complying with the provisions of Title 10, of the *Code of Federal Regulations*, Part 50, “Domestic Licensing of Production and Utilization Facilities” (10 CFR Part 50) (Ref. 1), and Title 10, of the *Code of Federal Regulations*, Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants” (10 CFR Part 52) (Ref. 2), which refer to 10 CFR Part 50, Appendix B, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants,” for establishing and implementing a quality assurance (QA) program for the design and construction of nuclear power plants and fuel reprocessing plants.

The regulatory framework that the NRC has established for nuclear power plants consists of regulations and supporting guidelines, including, but not limited to, General Design Criterion 1, “Quality Standards and Records,” as set forth in Appendix A, “General Design Criteria for Nuclear Power Plants,” to 10 CFR Part 50. The regulations at 10 CFR 50.34(a)(7) and 10 CFR 52.79(a)(25), require a description of the QA program to be applied to the design, fabrication, construction, and testing of the structures, systems, and components of the facility.

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.

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The NRC issues regulatory guides to describe and make available to the public methods that the NRC staff considers acceptable for use in implementing specific parts of the agency’s regulations, techniques that the staff uses in evaluating specific problems or postulated accidents, and data that the staff needs in reviewing applications for permits and licenses. Regulatory guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions that differ from those set forth in regulatory guides will be deemed acceptable if they provide a basis for the findings required for the issuance or continuance of a permit or license by the Commission.

This guide was issued after consideration of comments received from the public.

Regulatory guides are issued in 10 broad divisions: 1, Power Reactors; 2, Research and Test Reactors; 3, Fuels and Materials Facilities; 4, Environmental and Siting; 5, Materials and Plant Protection; 6, Products; 7, Transportation; 8, Occupational Health; 9, Antitrust and Financial Review; and 10, General.

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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 (Ref.3). The guide provided a comprehensive description of the development 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 applicable to design and construction. NQA-1-1983 and the NQA-1a-1983 Addenda consolidated a number of standards. RG 1.28, Revision 3, consolidated the RGs that endorsed the consolidated standards. ANSI/ASME NQA-2, “Quality Assurance Requirements for Nuclear Power Plants,” (Ref.5) was not endorsed at the time RG 1.28, revision 3 was revised. Subsequently, a revision to NQA-1 in the 1994 timeframe combined the guidance which had been included in NQA-2. NQA-2 was combined into what is now known as NQA-1, Part II, “Quality Assurance Requirements for Nuclear Facility Applications.” RG 1.28, Appendix A, “Evolution of Quality Assurance Standards and the Endorsing Regulatory Guides,” provides an overview of the history and consolidation of NRC-endorsed standards.

The methods described in this revision are generally equivalent to the methods described in RG 1.28, Revision 3, which endorsed NQA-1-1983 through the NQA-1a-1983 Addenda. RG 1.28, Revision 4, extends the scope of the NRC’s endorsement to include NQA-1, Part II. Part II 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, installation, inspection, and testing.

RG 1.33, “Quality Assurance Program Requirements (Operation),” Revision 2, issued February 1978 (Ref. 6), addresses additional guidance for the establishment and execution of QA programs for nuclear power plants during the operations phase.

## **C. REGULATORY POSITION**

The Part I and Part II requirements included in NQA-1-2008 and the NQA-1a-2009 Addenda, “Quality Assurance Requirements for Nuclear Facility Applications” (Ref. 7, 8), 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-1-2008 and the NQA-1a-2009 Addenda identified below.

1. Quality Assurance Records
  - a. Lifetime and Nonpermanent Records
    - (1) Paragraph 400, “Classification,” of Requirement 17, “Quality Assurance Records,” provides guidance on the retention of “lifetime” and “nonpermanent” records. Paragraph 401, “Lifetime Records,” discusses the scope and responsibilities related to these records. 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 ...”show evidence that an activity was performed in accordance with the applicable requirements”... 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, Paragraph 700, “Retention,” specifies that document retention periods are documented and records maintained for their retention period.
- (3) NQA-1 Part III, 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. The list of typical lifetime records in nonmandatory Appendix 17A-1 should be considered for guidance purposes only. 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,” dated October 23, 2000 (Ref. 9), 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,” dated October 20, 1988 (Ref. 10), 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

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 the award of a contract, the applicant or licensee may determine, based on the evaluation conducted in accordance with Regulatory 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. For other procurement actions not covered by the above exceptions, audits should be conducted as described below.
- (2) 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 preaward survey (Ref. 7) may serve as the first triennial audit. Therefore, when a preaward survey is used as the first triennial audit, it should satisfy the same audit elements and criteria as those used on other triennial audits.
- (3) 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 all the purchasers for whom the audit was conducted should receive the audit report. 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.
- (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., Nuclear Procurement Issues Committee audit reports or NRC inspection reports).

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," dated March 31, 1986 (Ref. 11), 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) A general 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 in which the 90-day general 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 backwards by performing the activity early.

## **D. IMPLEMENTATION**

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

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.

## REFERENCES

1. 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” U.S. Nuclear Regulatory Commission, Washington, DC.<sup>1</sup>
2. 10 CFR Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants,” U.S. Nuclear Regulatory Commission, Washington, DC.
3. Regulatory Guide 1.28, “Quality Assurance Program Requirements (Design and Construction),” Revision 3, U.S. Nuclear Regulatory Commission, Washington, DC.<sup>2</sup>
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.<sup>3</sup>
5. ANSI/ASME NQA-2-1983, “Quality Assurance Requirements for Nuclear Power Plants,” American National Standards Institute/American Society of Mechanical Engineers, New York, NY.
6. Regulatory Guide 1.33, “Quality Assurance Program Requirements (Operation),” Revision 2, U.S. Nuclear Regulatory Commission, Washington, DC.
7. ASME NQA-1-2008, “Quality Assurance Requirements for Nuclear Facility Applications,” American Society of Mechanical Engineers, New York, NY.
8. ASME NQA-1a-2009 Addenda to ASME NQA-1-2008, “Quality Assurance Requirements for Nuclear Facility Applications,” American Society of Mechanical Engineers, New York, NY.
9. RIS 2000-18, “Guidance on Managing Quality Assurance Records in Electronic Media,” U.S. Nuclear Regulatory Commission, Washington, DC, October 23, 2000.<sup>4</sup>

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<sup>1</sup> All NRC regulations listed herein are available electronically through the Electronic Reading Room on the NRC’s public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/cfr/>. 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](mailto:pdr.resource@nrc.gov).

<sup>2</sup> All regulatory guides listed herein were published by the U.S. Nuclear Regulatory Commission. Most are available electronically through the Electronic Reading Room on the NRC’s public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/reg-guides/>.

<sup>3</sup> Copies of American Society of Mechanical Engineers (ASME) standards may be purchased from ASME, Three Park Avenue, New York, New York 10016-5990; telephone (800) 843-2763. Purchase information is available through the ASME Web-based store at <http://www.asme.org/Codes/Publications/>.

<sup>4</sup> All regulatory issue summaries (RISs) listed herein were published by the U.S. Nuclear Regulatory Commission and are available electronically through the Electronic Reading Room on the NRC’s public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/gen-comm/reg-issues/>. 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](mailto:pdr.resource@nrc.gov).

10. GL 88-18, "Plant Record Storage on Optical Disks," U.S. Nuclear Regulatory Commission, Washington, DC, October 20, 1988.<sup>5</sup>
11. IN 86-21, "Recognition of American Society of Mechanical Engineers Accreditation Program for N Stamp Holders," U.S. Nuclear Regulatory Commission, Washington, DC, March 31, 1986.<sup>6</sup>

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<sup>5</sup> All generic letters (GLs) listed herein were published by the U.S. Nuclear Regulatory Commission and are available electronically through the Electronic Reading Room on the NRC's public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/gen-comm/gen-letters/>. 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 20555-0001; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415-3548; and e-mail [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov).

<sup>6</sup> All information notices (INs) listed herein were published by the U.S. Nuclear Regulatory Commission and are available electronically through the Electronic Reading Room on the NRC's public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/>. 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](mailto:pdr.resource@nrc.gov).

## **BIBLIOGRAPHY**

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," Revision 0, U.S. Nuclear Regulatory Commission, Washington, DC, January 2006.



## APPENDIX A

### EVOLUTION OF QUALITY ASSURANCE STANDARDS AND THE ENDORSING REGULATORY GUIDES

In June 1972, the U.S. Nuclear Regulatory Commission (NRC) issued Regulatory Guide (RG) 1.28, “Assurance Program Requirements (Design and Construction)” (Safety Guide 28), to endorse the general requirements<sup>1</sup> (Footnote) 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<sup>1</sup> 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<sup>1</sup> and expand its applicability to other nuclear facilities that were subject to Title 10, of the *Code of Federal Regulations*, Part 50, “Domestic Licensing of Production and Utilization Facilities” (10 CFR Part 50), Appendix B, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants.” 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<sup>1</sup> of ANSI/ASME N45.2-1977.

The ASME Nuclear Quality Assurance Committee subsequently prepared NQA-1-1979, which included requirements<sup>1</sup> 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

<sup>1</sup> Regulatory Guides do not constitute requirements. Thus the term ‘requirement’ is taken from its use, in context of the referenced standards.

NQA-1-1979 was issued, and subsequently revised in 1983. NQA-2-1983 incorporated additional existing QA standards, listed in Table A-2, which not been included in NQA-1-1979. NQA-1 and NQA-2 were later combined into a single, multipart document that is currently NQA-1.

**Table A-2. N45.2 Standards Incorporated into NQA-2-1983**

<b>STANDARD</b>	<b>STANDARD TITLE</b>
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 period after Three Mile Island. 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 RG process.

The NRC withdrew several RGs related to QA in 1991. NQA-1-1983 incorporates the ANSI standards endorsed by the RGs. The withdrawal of an RG does not alter any prior or existing licensee commitments based on the use of the withdrawn RG. 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 RG, the standard endorsed by the RG, and the location of the standard within the NQA-1a-2009 Addenda to NQA-1-2008.

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

<b>RG</b>	<b>RG TITLE</b>	<b>RG-ENDORSED STANDARD (LOCATION)</b>	<b>STANDARD TITLE</b>
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)	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)	Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

<b>RG</b>	<b>RG TITLE</b>	<b>RG-ENDORSED STANDARD (LOCATION)</b>	<b>STANDARD TITLE</b>
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
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

<b>RG</b>	<b>RG TITLE</b>	<b>RG-ENDORSED STANDARD (LOCATION)</b>	<b>STANDARD TITLE</b>
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 (Withdrawn)	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 (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

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