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Technical Lead
Tuan Le

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(Proposed Revision 5 of Regulatory Guide 1.26, dated March 2007)

QUALITY GROUP CLASSIFICATIONS AND STANDARDS FOR WATER-, STEAM-, AND RADIOACTIVE-WASTE-CONTAINING COMPONENTS OF NUCLEAR POWER PLANTS

A. INTRODUCTION

Purpose

This regulatory guide (RG) describes a quality classification system related to specified national standards that may be used to determine quality standards acceptable to the staff of the U.S. Nuclear Regulatory Commission (NRC) for satisfying 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, of the *Code of Federal Regulations* (10 CFR 50), "Domestic Licensing of Production and Utilization Facilities" (Ref. 1), for components containing water, steam, or radioactive material in light-water-cooled nuclear power plants.

Applicable Rules and Regulations

- 10 CFR 50, Appendix A, GDC 1 requires that structures, systems, and components (SSCs) important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. This RG provides guidance on the quality standards appropriate to various classes of SSCs.

- 10 CFR 50.55a, "Codes and Standards," subsections 50.55a(c), 50.55a(d), and 50.55a(e) state that certain systems and components of boiling- and pressurized-water-cooled nuclear power reactors must be designed, fabricated, erected, and tested in accordance with the standards for Class 1, 2, and 3[1] components given in Section III, "Nuclear Power Plant Components," of the American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code (BPV Code) (Ref. 2)

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1 In editions of the ASME BPV Code published before 1971, Section III uses the terms Class A, Class B, and Class C in lieu of Class 1, Class 2, and Class 3.

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or equivalent quality standards. This is referenced in Footnote 9 to 10 CFR 50.55a as the guidance for quality group classifications which are to be included in safety analysis reports. In addition, ASME *Operation and Maintenance of Nuclear Power Plants* (OM Code), Division 1, “Section IST: Rules for Inservice Testing of Light-Water Reactor Power Plants” (Ref. 3), covers an equipment scope that is further described in Section B below. This code is incorporated by reference in 10 CFR 50.55a.

- 10 CFR 50.69, “Risk-informed categorization and treatment of structures, systems, and components for nuclear power reactors,” provides a voluntary risk-informed process for categorizing and treating (e.g., inspecting and testing) SSCs that may be used as an alternative to the process described in this regulatory guide.

Related Guidance

- NUREG-0800, “Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants,” SRP Section 3.2.2, “System Quality Group Classification” (Ref. 4), provides guidance to the NRC staff in reviewing quality group classification of SSCs for nuclear power plant applications.

- RG 1.143, “Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants” (Ref. 5), provides specific guidance on the classification of radioactive waste management systems.

- NUREG-0800, SRP Section 17.5, “Quality Assurance Program Description – Design Certification, Early Site Permit, and New License Applicants” (Ref. 6), provides expectations for new reactor applicants related to assurance of quality for certain non-safety related SSCs.

- RG 1.201, “Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to their Safety Significance” (Ref. 7), provides guidance for complying with the NRC’s voluntary requirements in 10 CFR 50.69, which is described further in Section B below.

Purpose of Regulatory Guides

The NRC issues RGs 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. Regulatory guides are not substitutes for regulations and compliance with them is not required. Methods and solutions that differ from those set forth in RGs 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.

Paperwork Reduction Act

This RG contains information collections that are covered by the requirements of 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

Reason for Revision

This revision of the guide (Revision 5) does not present new technical requirements, but clarifies content (e.g., the definition of Quality Group A and the scope of the OM Code), corrects errors (e.g., a misplaced footnote), and provides additional references to related classification systems such as 10 CFR 50.69 and industry and international standards that may be proposed by applicants or licensees as an alternative means to comply with NRC requirements.

Background

In the early 1970s, the NRC staff developed a quality classification system to provide licensees with guidance for satisfying GDC 1. The system consists of four quality groups, A through D; methods for assigning components to those quality groups; and specific quality standards applied to each quality group. When the NRC issued Revision 2 and Revision 3 of this guide, 10 CFR 50.55a, "Codes and Standards," required that only components of the reactor coolant pressure boundary be designed, fabricated, erected, and tested to the highest available national standards; this corresponded to the quality standards for Quality Group A of the NRC system. Revision 4 was issued to align this guide with the final rule (Ref. 8), published on March 15, 1984, amending 10 CFR 50.55a to incorporate by reference the criteria in Section III of the ASME Code, as they relate to the design and fabrication of Class 2 and 3 components (Quality Group B and C components, respectively). Revision 5 of this guide provides better correlation between wording differences that exist between the ASME Code and the rule that were not addressed in Revision 4.

Because the quality group classification system is well-established, this revision of RG 1.26 retains the method described in previous versions for determining acceptable quality standards for Quality Group B, C, and D components. Other systems not covered by this guide, such as instrument and service air, diesel engines and their generators and auxiliary support systems, diesel fuel, emergency and normal ventilation, fuel handling, and radioactive waste management systems, should be designed, fabricated, erected, and tested to quality standards commensurate with the safety function to be performed. The evaluation to establish the quality group classification of these other systems should consider the guidance provided for quality groups B, C, and D in Staff Regulatory Guidance, Sections 1, 2, and 3 of this guide.

As additional background information, the following paragraphs provide summary information and references related to other systems of classification and treatment that are related to, but separate from, the information presented in this RG.

The American Nuclear Society (ANS) has prepared ANSI/ANS-58.14-2011, "Safety and Pressure Integrity Classification Criteria for Light Water Reactors" (Ref. 9), to provide criteria for the safety classification of items in light water reactor nuclear power plants, and for the assignment of pressure integrity classes to pressure-retaining items. In ANSI/ANS-58.14, the categories with respect to safety classification are denoted by the terms "safety-related," "non-safety-related with augmented requirements," and "non-safety-related," and by Classes C-1 through C-5 for pressure integrity classification. As indicated in footnote 39 in ANSI/ANS-58.14, ANS Classes C-1 through C-4 generally correspond to Quality Groups A through D, respectively, as defined in 10 CFR 50.55a and RG 1.26. As described below in Section D, use of this alternative classification approach instead of the approach presented in this guide may be deemed acceptable if an applicant or licensee provide sufficient basis and information for the NRC staff to verify that the proposed alternative demonstrates compliance with GDC 1 and 10 CFR 50.55a.

As mentioned above, the ASME OM Code is incorporated into the NRC's requirements in 10 CFR 50.55a. The OM Code specifies that its scope includes: (a) pumps and valves that are required to perform a specific function in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident; (b) pressure relief devices that protect systems or portions of systems that perform one or more of the three functions identified in (a) above; and (c) dynamic restraints (snubbers) used in systems that perform one or more of the three functions identified in (a) above, or to ensure the integrity of the reactor coolant pressure boundary. A user of RG 1.26 should confirm that its classification process considers the scope of pumps, valves, and dynamic restraints specified in ASME OM Code.

As mentioned above, RG 1.201 provides guidance for complying with the NRC's voluntary requirements in 10 CFR 50.69. RG 1.201 specifies regulatory positions for the acceptable use of the process described in Nuclear Energy Institute (NEI) 00-04, "10 CFR 50.69 SSC Categorization Guideline" (Ref. 10), to determine the safety significance of SSCs and place them into the appropriate risk-informed safety class (RISC) categories. Through this process, the safety significance of SSCs is determined using an integrated decision-making process, which incorporates both risk and traditional engineering insights. The process considers the safety functions of SSCs to include both the design-basis functions (derived from the safety-related definition) and functions credited for preventing and/or mitigating severe accidents. A user of RG 1.26 should be aware of the differences in the safety classification process in RG 1.201 when 10 CFR 50.69 will be implemented.

Harmonization with International Standards

The International Atomic Energy Agency (IAEA) has established a series of safety guides and standards constituting a high level of safety for protecting people and the environment. IAEA safety guides present international good practices and increasingly reflect best practices to help users striving to achieve high levels of safety. Pertinent to this RG, IAEA Specific Safety Guide SSG-30, "Safety Classification of Structures, Systems and Components in Nuclear Power Plants" (Ref. 11), provides recommendations and guidance for identifying and classifying SSCs important to safety on the basis of their function and safety significance. SSG-30 provides high level guidance for developing safety categories and safety classes of SSCs in nuclear power plants with the use of probabilistic risk assessment considerations in the safety classification process. This RG also addresses classification of SSCs according to their safety significance and is consistent with the basic safety principles provided in SSG-30, though the implementation details are different. As described below in Section D, use of this alternative classification approach instead of the approach presented in this guide may be deemed acceptable if an applicant or licensee provide sufficient basis and information for the NRC staff to verify that the proposed alternative demonstrates compliance with GDC 1 and 10 CFR 50.55a.

Documents Discussed in Staff Regulatory Guidance

This RG approves for use, in part, the use of one or more codes or standards developed by external organizations, and other third party guidance documents, some of which (e.g., portions of the ASME BPV Code) have been incorporated by reference into NRC regulations as a requirement. These codes, standards and third party guidance documents may contain references to other codes, standards or third party guidance documents ("secondary references"). If a secondary reference has itself been incorporated by reference into NRC regulations as a requirement, then licensees and applicants must comply with that standard as set forth in the regulation. If the secondary reference has been endorsed in a RG as an acceptable approach for meeting an NRC requirement, then the standard constitutes a method acceptable to the NRC staff for meeting that regulatory requirement as described in the specific RG. If the secondary reference has neither been incorporated by reference into NRC regulations nor approved for use in a RG, then the secondary reference is neither a legally-binding requirement nor a "generic" NRC approved acceptable approach for meeting an NRC requirement. However, licensees and applicants may consider and use the information in the secondary reference, if appropriately justified, consistent with current regulatory practice, and consistent with applicable NRC requirements.

C. STAFF REGULATORY GUIDANCE

1. Quality Group A

Quality Group A, while not explicitly defined in 10 CFR 50.55a(c), corresponds to the category of components presented in 10 CFR 50.55a(c)(1). As stated in 10 CFR 50.55a(c)(1), these components must meet the requirements for Class 1 components in Section III of the ASME BPV Code. This category is limited to components that are part of the reactor coolant pressure boundary, except for the portions excluded by 10 CFR 50.55a(c)(2) that are included in Quality Group B below. This exclusion applies to components whose failure would not prevent the reactor from being shut down and cooled down in an orderly fashion with normal makeup and components that are or can be isolated from the reactor coolant system by two valves in series (with automatic closure of open valves). While 10 CFR 50.55a does not explicitly refer to Quality Group A, it has been defined as such since the initial revision of this regulatory guide. Because this scope is well-defined, no further guidance is presented in this regulatory guide for Quality Group A.

2. Quality Group B

The Quality Group B standards given in Table 1 on page 7 of this guide should be applied to water- and steam-containing pressure vessels, heat exchangers (other than turbines and condensers), storage tanks, piping, pumps, and valves that are either (1) part of the reactor coolant pressure boundary, as defined in 10 CFR 50.2, "Definitions," but excluded from the requirements of 10 CFR 50.55a(c)(1) for reactor coolant pressure boundary components pursuant to paragraph (c)(2) of that section (as mentioned above in the section on Quality Group A), or (2) not part of the reactor coolant pressure boundary but part of the following:

(a) systems or portions of systems[2] important to safety that are designed for (i) emergency core cooling, (ii) post-accident containment heat removal, or (iii) post-accident fission product removal;

(b) systems or portions of systems important to safety that are designed for (i) reactor shutdown or (ii) residual heat removal;

(c) those portions of the steam systems of boiling-water reactors extending from the outermost containment isolation valve up to but not including the turbine stop and bypass valves,[3] and connected piping up to and including the first valve that is either normally closed or capable of automatic closure during all modes of normal reactor operation; alternatively, for boiling-water reactors containing a shutoff valve (in addition to the two containment isolation valves) in the main steamline and the main feedwater line, those portions of the steam and feedwater systems extending from the outermost containment isolation valves up to and including the shutoff valve

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2 The system boundary includes those portions of the system necessary to accomplish the specified safety function and connected piping up to and including the first valve (including a safety or relief valve) that is either normally closed or capable of automatic closure when the safety function is required. This footnote applies wherever the phrase "systems or portions of [those] systems" appears in this guide.

3 The turbine stop valve and turbine bypass valve, although not included in Quality Group B, should be subjected to a quality assurance program at a level generally equivalent to Quality Group B.

or the first valve that is either normally closed or capable of automatic closure during all modes of normal reactor operation;

(d) those portions of the steam and feedwater systems of pressurized-water reactors extending from and including the secondary side of steam generators up to and including the outermost containment isolation valves, and connected piping up to and including the first valve (including a safety or relief valve) that is either normally closed or capable of automatic closure during all modes of normal reactor operation.

(e) systems or portions of systems that are connected to the reactor coolant pressure boundary and are not capable of being isolated from the boundary during all modes of normal reactor operation by two valves, each of which is either normally closed or capable of automatic closure.

2. Quality Group C

The Quality Group C standards given in Table 1 on page 7 of this guide should be applied to water-, steam-, and radioactive-waste-containing pressure vessels; heat exchangers (other than turbines and condensers); storage tanks; piping; pumps; and valves that are not part of the reactor coolant pressure boundary or included in Quality Group B but part of the following:

(a) cooling water and auxiliary feedwater systems or portions of those systems important to safety that are designed for (i) emergency core cooling, (ii) post-accident containment heat removal, (iii) post-accident containment atmosphere cleanup, or (iv) residual heat removal from the reactor and from the spent fuel storage pool (including primary and secondary cooling systems), although Quality Group B includes portions of those systems that are required for their safety functions and that (i) do not operate during any mode of normal reactor operation and (ii) cannot be tested adequately;

(b) cooling water and seal water systems or portions of those systems important to safety that are designed for the functioning of components and systems important to safety, such as reactor coolant pumps, diesels, and the control room;

(c) systems or portions of systems that are connected to the reactor coolant pressure boundary and are capable of being isolated from that boundary during all modes of normal reactor operation by two valves, each of which is either normally closed or capable of automatic closure[4]; and

(d) systems, other than radioactive waste management systems[5], not covered by Regulatory Positions 2(a) through 2(c) (above) that contain or may contain radioactive material and whose postulated failure would result in conservatively calculated potential offsite doses [using meteorology as recommended in RG 1.3, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss-of-Coolant Accident for Boiling-Water Reactors" (Ref. 12), and RG 1.4, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss-of-Coolant Accident for Pressurized-Water Reactors" (Ref. 13)] that exceed 0.5 rem to the whole body or its equivalent to any part of the body; only single component failures need be assumed for those systems located in Seismic Category I structures, and no credit should be taken for automatic isolation from other components in the system or for treatment of released material, unless the isolation or treatment capability is designed to the appropriate seismic and quality group

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4 Components in influent lines may be classified as Quality Group D if they are capable of being isolated from the reactor coolant pressure boundary by an additional valve that has high leaktight integrity.

5 As noted above, RG 1.143 provides specific guidance on the classification of radioactive waste management systems.

standards and can withstand loss of offsite power and a single failure of an active component.

3. Quality Group D

The Quality Group D standards given in Table 1 on page 7 of this guide should be applied to water- and steam-containing components that are not part of the reactor coolant pressure boundary or included in Quality Groups B or C, but are part of systems or portions of systems that contain or may contain radioactive material.

Table 1

Components	QUALITY STANDARDS		
	Quality Group B	**Quality Group C**	**Quality Group D**
Pressure Vessels	ASME BPV Code, Section III, "Rules for Construction of Nuclear Facility Components,"[6] Class 2	ASME BPV Code, Section III, "Rules for Construction of Nuclear Facility Components,"[6] Class 3	ASME BPV Code, Section VIII, Division 1, "Rules for Construction of Pressure Vessels" (Ref. 14)
Piping	Class 2	Class 3	ASME B31.1 (Ref. 15)
Pumps	Class 2	Class 3	Manufacturers' standards
Valves	Class 2	Class 3	ASME B31.1
Atmospheric Storage Tanks	Class 2	Class 3	API-650 (Ref. 16), AWWA D-100 (Ref. 17), or ASME B96.1 (Ref. 18
0-15 psig Storage Tanks	Class 2	Class 3	API-620 (Ref. 19)

D. IMPLEMENTATION

The purpose of this section is to provide information on how applicants and licensees[7] may use this guide and information regarding the NRC's plans for using this RG. In addition, it describes how the NRC staff complies with 10 CFR 50.109, "Backfitting" and any applicable finality provisions in 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants" (Ref. 20).

Use by Applicants and Licensees

Applicants and licensees may voluntarily[8] use the guidance in this document to demonstrate compliance with the underlying NRC regulations. Methods or solutions that differ from those described in this RG may be deemed acceptable if they provide sufficient basis and information for the NRC staff to verify that the proposed alternative demonstrates compliance with the appropriate NRC regulations. Current licensees may continue to use guidance the NRC found acceptable for complying with the identified regulations as long as their current licensing basis remains unchanged**.**

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6 See 10 CFR 50.55a for guidance regarding the ASME Code edition and addenda to be applied. In addition, other RGs or Commission regulations cover the specific applicability of code cases, where appropriate. Applicants and licensees proposing the use of code cases not covered by guides or regulations should demonstrate that an acceptable level of quality and safety would be achieved.

7 In this section, "licensees" refers to licensees of nuclear power plants under 10 CFR Parts 50 and 52; and the term "applicants" refers to applicants for licenses and permits for (or relating to) nuclear power plants under 10 CFR Parts 50 and 52, and applicants for standard design approvals and standard design certifications under 10 CFR Part 52.

8 In this section, "voluntary" and "voluntarily" means that the licensee is seeking the action of its own accord, without the force of a legally binding requirement or an NRC representation of further licensing or enforcement action.

Licensees may use the information in this RG for actions which do not require NRC review and approval such as changes to a facility design under 10 CFR 50.59, "Changes, Tests, and Experiments." Licensees may use the information in this RG or applicable parts to resolve regulatory or inspection issues.

Use by NRC Staff

The NRC staff does not intend or approve any imposition or backfitting of the guidance in this RG. The NRC staff does not expect any existing licensee to use or commit to using the guidance in this RG, unless the licensee makes a change to its licensing basis. The NRC staff does not expect or plan to request licensees to voluntarily adopt this RG to resolve a generic regulatory issue. The NRC staff does not expect or plan to initiate NRC regulatory action which would require the use of this RG. Examples of such unplanned NRC regulatory actions include issuance of an order requiring the use of the RG, requests for information under 10 CFR 50.54(f) as to whether a licensee intends to commit to use of this RG, generic communication, or promulgation of a rule requiring the use of this RG without further backfit consideration.

During regulatory discussions on plant specific operational issues, the staff may discuss with licensees various actions consistent with staff positions in this RG, as one acceptable means of meeting the underlying NRC regulatory requirement. Such discussions would not ordinarily be considered backfitting even if prior versions of this RG are part of the licensing basis of the facility. However, unless this RG is part of the licensing basis for a facility, the staff may not represent to the licensee that the licensee's failure to comply with the positions in this RG constitutes a violation.

If an existing licensee voluntarily seeks a license amendment or change and (1) the NRC staff's consideration of the request involves a regulatory issue directly relevant to this new or revised RG and (2) the specific subject matter of this RG is an essential consideration in the staff's determination of the acceptability of the licensee's request, then the staff may request that the licensee either follow the guidance in this RG or provide an equivalent alternative process that demonstrates compliance with the underlying NRC regulatory requirements. This is not considered backfitting as defined in 10 CFR 50.109(a)(1) or a violation of any of the issue finality provisions in 10 CFR Part 52.

Additionally, an existing applicant may be required to comply to new rules, orders, or guidance if 10 CFR 50.109(a)(3) applies.

If a licensee believes that the NRC is either using this RG or requesting or requiring the licensee to implement the methods or processes in this RG in a manner inconsistent with the discussion in this Implementation section, then the licensee may file a backfit appeal with the NRC in accordance with the guidance in NRC Management Directive 8.4, "Management of Facility-Specific Backfitting and Information Collection" (Ref. 21), and NUREG-1409, "Backfitting Guidelines" (Ref. 22).

REFERENCES[9]

1. *U.S. Code of Federal Regulations (CFR)*, Title 10, "Energy," Part 50, "Domestic Licensing of Production and Utilization Facilities," U.S. Nuclear Regulatory Commission (NRC), Washington, DC.

2. American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code, Section III, "Nuclear Power Plant Components," New York, NY.[10]

3. ASME *Operation and Maintenance of Nuclear Power Plants*, Division 1, "Section IST: Rules for Inservice Testing of Light-Water Reactor Power Plants," New York, NY.

4. U.S. Nuclear Regulatory Commission (NRC), NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 3.2.2, "System Quality Group Classification," Washington, D.C.

5. NRC, Regulatory Guide (RG) 1.143, "Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants," Washington, DC.

6. NRC, NUREG-0800, Section 17.5, "Quality Assurance Program Description - Design Certification, Early Site Permit and New License Applicants," Washington, D.C.

7. NRC, RG 1.201, "Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to their Safety Significance," Washington, DC.

8. NRC, "Codes and Standards for Nuclear Power Plants," *Federal Register*, Vol. 49, p. 9711 (49 FR 9711), Washington, DC, March 15, 1984.[11]

9. American National Standards Institute (ANSI) and American Nuclear Society (ANS), ANSI/ANS-58.14-2011, "Safety and Pressure Integrity Classification Criteria for Light Water Reactors," Washington, DC.[12]

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9 Publicly available documents from the U.S. Nuclear Regulatory Commission (NRC) are available electronically through the NRC Library on the NRC's public Web site at http://www.nrc.gov/reading-rm/doc-collections/. The documents can also be viewed on-line for free or printed for a fee in 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.

10 Copies of ASME standards may be purchased from ASME, Two Park Avenue, New York, New York 10016-5990; Telephone (800) 843-2763. Purchase information is available through the ASME Web site store at http://www.asme.org/Codes/Publications/.

11 All *Federal Register* notices listed herein were issued by the U.S. Nuclear Regulatory Commission. Copies are available for inspection or copying for a fee from the NRC's Public Document Room at 11555 Rockville Pike, Rockville, MD; the PDR's mailing address is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; email PDR@nrc.gov.

12 Copies of ANSI standards may be purchased from ANSI, 1819 L Street, NW., Washington, DC 20036, on their Web site at http://webstore.ansi.org/; telephone (202) 293-8020; fax (202) 293-9287; or e-mail storemanager@ansi.org.

10. Nuclear Energy Institute (NEI) 00-04, "10 CFR 50.69 SSC Categorization Guideline," Washington, DC, July 2005.[13]

11. International Atomic Energy Agency (IAEA) SSG-30, "Safety Classification of Structures, Systems, and Components in Nuclear Power Plants," Vienna, Austria, 2014.[14]

12. NRC, RG 1.3, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss-of-Coolant Accident for Boiling-Water Reactors," Washington, DC.

13. NRC, RG 1.4, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss-of-Coolant Accident for Pressurized-Water Reactors," Washington, DC.

14. ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, "Rules for Construction of Pressure Vessels," New York, NY.

15. ASME Standard B31.1, "Power Piping," New York, NY.

16. American Petroleum Institute (API), API-650, "Welded Steel Tanks for Oil Storage," Washington, DC.[15]

17. American Water Works Association, (AWWA) D-100, "Welded Steel Tanks for Water Storage," Denver, Colorado.[16]

18. ASME Standard B96.1, "Welded Aluminum-Alloy Storage Tanks," New York, NY.

19. API-620, "Design and Construction of Large, Welded, Low-Pressure Storage Tanks," Washington, DC.

20. CFR, Title 10, Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," U.S. Nuclear Regulatory Commission, Washington, DC.

21. NRC, Management Directive (MD) 8.4, "Management of Facility-Specific Backfitting and Information Collection," Washington, DC, October 9, 2013. (ADAMS Accession No. ML12059A460).

22. NRC, NUREG-1409, "Backfitting Guidelines," Washington, D.C., July 1990. (ADAMS Accession No. ML032230247).

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13 Publications from NEI are available at their Web site: http://www.nei.org/ or by contacting the headquarters at Nuclear Energy Institute, 1776 I Street NW, Washington DC 20006-3708, Phone: 202-739-800, Fax 202-785-4019.

14 Copies of International Atomic Energy Agency (IAEA) documents may be obtained through their Web site: WWW.IAEA.Org/ or by writing the International Atomic Energy Agency P.O. Box 100 Wagramer Strasse 5, A-1400 Vienna, Austria. Telephone (+431) 2600-0, Fax (+431) 2600-7, or E-Mail at Official.Mail@IAEA.Org.

15 Copies of API standards may be purchased through their Web site at: http://global.ihs.com/?RID=API1&MID=Q023 or by contacting API Headquarters at 1220 L Street, NW Washington, DC 20005-4070 USA Phone 202-682-8000, Web Site: http://www.api.org/ or E-Mail : standards@api.org.

16 Copies of AWWA standards may be purchased from the American Water Works Association, 6666 W. Quincy Ave., Denver, CO 80235 ; telephone (202) 682-8000; http://www.awwa.org/bookstore/Category.cfm?cat=ALLSTD.