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10 CFR Part 50

American Society of Mechanical Engineers (ASME) Codes and New and Revised ASME Code Cases; Proposed Rule

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

RIN 3150–AI35

[NRC 2008–0554]

American Society of Mechanical Engineers (ASME) Codes and New and Revised ASME Code Cases

AGENCY: Nuclear Regulatory Commission (NRC).

ACTION: Proposed rule.

SUMMARY: The NRC proposes to amend its regulations to incorporate by reference the 2005 Addenda through 2008 Addenda of Section III, Division 1, and the 2005 Addenda through 2008 Addenda of Section XI, Division 1, of the ASME *Boiler and Pressure Vessel Cod*e (ASME B&PV Code); and the 2005 Addenda and 2006 Addenda of the ASME Code for Operation and *Maintenance of Nuclear Power Plants* (ASME OM Code). The NRC also proposes to incorporate by reference ASME Code Case N–722–1, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials Section XI, Division 1," and Code Case N–770, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR [Pressurized-Water Reactor] Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material with or without Application of Listed Mitigation Activities."

DATES: Submit comments by July 19, 2010. Comments received after this date will be considered if it is practical to do so, but the NRC is able to ensure consideration only of comments received on or before this date.

ADDRESSES: Please include Docket ID NRC–2008–0554 in the subject line of your comments For instructions on submitting comments and accessing documents related to this action, *see* Section I, "Submitting Comments and Accessing Information" in the **SUPPLEMENTARY INFORMATION** section of this document. You may submit comments by any one of the following methods.

Federal Rulemaking Web Site: Go to *http://www.regulations.gov* and search for documents filed under Docket ID NRC–2008–0554. Address questions about NRC dockets to Carol Gallagher, telephone 301–492–3668, e-mail *Carol.Gallager@nrc.gov.*

Mail comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, ATTN: Rulemakings and Adjudications Staff.

E-mail comments to: Rulemaking.Comments@nrc.gov. If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at 301–415–1677.

Hand-deliver comments to: 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 a.m. and 4:15 p.m. Federal workdays. (Telephone 301–415–1677)

Fax comments to: Secretary, U.S. Nuclear Regulatory Commission at 301–415–1101.

You may submit comments on the information collections by the methods indicated in the Paperwork Reduction Act Statement.

FOR FURTHER INFORMATION CONTACT: L. Mark Padovan, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone 301–415–1423, e-mail *Mark.Padovan@nrc.gov.*

SUPPLEMENTARY INFORMATION:

I. Submitting Comments and Accessing Information

Comments submitted in writing or in electronic form will be posted on the NRC Web site and on the Federal rulemaking Web site Regulations.gov. Because your comments will not be edited to remove any identifying or contact information, the NRC cautions you against including any information in your submission that you do not want to be publicly disclosed. The NRC requests that any party soliciting or aggregating comments received from other persons for submission to the NRC inform those persons that the NRC will not edit their comments to remove any identifying or contact information, and therefore, they should not include any information in their comments that they do not want publicly disclosed.

You can access publicly available documents related to this document, including the following documents, using the following methods:

NRC's Public Document Room (PDR): The public may examine, and have copied for a fee, publicly-available documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland.

NRC's Agencywide Documents Access and Management System (ADAMS): Publicly available documents created or received at the NRC are available electronically at the NRC's Electronic Reading Room at *http://www.nrc.gov/reading-rm/adams.html.* From this page, the public can gain entry into ADAMS, which provides text and image files of NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC's PDR reference staff at 1–800–397–4209, 301–415–4737, or by e-mail to *pdr.resource@nrc.gov.*

Federal Rulemaking Web Site: Public comments and supporting materials related to this proposed rule can be found at *http://www.regulations.gov* by searching on Docket ID NRC–2008–0554.

Document	PDR	Rulemaking Web site	Reading room
ASME B&PV Code*	X		
ASME Code Case N–770*	X		
ASME Code Case N–772–1*	X		

Document	PDR	Rulemaking Web site	Reading room
ASME OM Code*	X		
EPRI Report NP–5151**, "Evaluation of Reactor Vessel Beltline Integrity Following Unanticipated Operating Events," April 1987			
Final Safety Evaluation by the Office of Nuclear Reactor Regulation on Topical Report NEI 94–01, Revision 2, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," June 25, 2008	X		ML081140105
GALL Report, NUREG–1801, Rev.1, September 2005:			
Volume 1,	X		ML052770419
Volume 2	X		ML052780376
NQA–1*, "Quality Assurance Requirements for Nuclear Facilities," 1994 Edition			
NUREG–1800, Rev. 1, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants, September 2005	X		ML052770566
Regulatory and Backfit Analysis for proposed rule	X	X	ML092510270
Regulatory Guide 1.178, "An Approach for Plant-Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping"	X		
Regulatory Guide 1.193, Revision 2, "ASME Code Cases not Approved for Use."	X		ML072470294
Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities"	X		
Standard Review Plan 3.9.8, "Risk-Informed Inservice Inspection of Piping"	X		

* Available on the ASME Web site.
** Available on the EPRI Web site.

II. Background

The ASME develops and publishes the ASME B&PV Code, which contains requirements for the design, construction, and inservice inspection (ISI) of nuclear power plant components; and the ASME OM Code, which contains requirements for inservice testing (IST) of nuclear power plant components. The ASME issues new editions of the ASME B&PV Code every 3 years and issues addenda to the editions yearly except in years when a new edition is issued. Periodically, the ASME publishes new editions and addenda of the ASME OM Code. The new editions and addenda typically revise provisions of the Codes to broaden their applicability, add specific elements to current provisions, delete specific provisions, and/or clarify them to narrow the applicability of the provision. The revisions to the editions and addenda of the Codes do not significantly change Code philosophy or approach.

The ASME B&PV and OM Codes are national voluntary consensus standards, and are required by the National Technology Transfer and Advancement Act of 1995, Public Law 104–113, to be used by government agencies instead of government-unique standards, unless the use of such a standard is inconsistent with applicable law or is otherwise impractical. It has been the NRC's practice to review new editions and addenda of the ASME B&PV and OM Codes and periodically update 10 CFR 50.55a to incorporate newer editions and addenda by reference. The NRC approves and/or mandates the use of editions and addenda of the Codes in 10 CFR 50.55a through the rulemaking process of "incorporation by reference." As such, each provision of the Codes incorporated by reference into, and mandated by, 10 CFR 50.55a constitutes a legally-binding NRC requirement imposed by rule. As the Codes are consensus documents, there may be disagreement among the technical experts regarding what constitutes an acceptable level of safety. The NRC proposed conditions enhance the provisions in the Code in instances where the NRC has determined that the provisions do not provide an acceptable level of safety. In other instances, research data or experience has shown that certain Code provisions are unnecessarily conservative, and the NRC has determined that the Code revisions are acceptable. This rulemaking is the latest in a series of rulemakings which incorporate by reference new editions and/or addenda of the Codes which are approved for use, either unconditionally or with conditions. The editions and addenda of the ASME B&PV and OM Codes were last incorporated by reference into the regulations in a final rule dated September 10, 2008 (73 FR 52730), as corrected on October 2, 2008 (73 FR 57235), incorporating Section III of the 2004 Edition of the ASME B&PV Code, Section XI of the 2004 Edition of the ASME B&PV Code, and the 2004 Edition of the ASME OM Code, subject to NRC conditions.

III. Discussion of NRC Approval of New Edition and Addenda to the Codes, ASME Code Cases N–722–1 and N–770, and Other Proposed Changes to 10 CFR 50.55a

The NRC proposes to amend its regulations to incorporate by reference the 2005 Addenda through 2008 Addenda of Section III, Division 1, and Section XI, Division 1 of the ASME B&PV Code; and the 2005 Addenda and 2006 Addenda of the ASME OM Code into 10 CFR 50.55a. The NRC also proposes to incorporate by reference Code Case N–770, and revision 1 to Code Case N–722, which was incorporated by reference into the NRC's regulations on September 10, 2008 (73 FR 52729).

The NRC follows a three-step process to determine acceptability of new provisions in new editions and addenda to the Codes, and the need for conditions on the uses of these Codes. This process was employed in the review of the Codes that are the subjects of this proposed rule. First, NRC staff actively participates with other ASME committee members with full involvement in discussions and technical debates in the development of new and revised Codes. This includes a technical justification in support of each new or revised Code. Second, the NRC committee representatives discuss the Codes and technical justifications with other cognizant NRC staff to ensure an adequate technical review. Finally, the proposed NRC position on each Code is reviewed and approved by NRC management as part of the rulemaking amending 10 CFR 50.55a to incorporate by reference new editions and addenda of the ASME Codes, and conditions on

their use. This regulatory process, when considered together with the ASME's own process for developing and approving ASME Codes provides reasonable assurances that the NRC approves for use only those new and revised Code edition and addenda (with conditions as necessary) that provide reasonable assurance of adequate protection to public health and safety and that do not have significant adverse impacts on the environment.

The NRC reviewed changes to the Codes in the editions and addenda of the Codes identified in this rulemaking. The NRC concluded, in accordance with the process for review of changes to the Codes, that each of the editions and addenda of the Codes, and the 1994 Edition of NQA–1, are technically adequate, consistent with current NRC regulations, and approved for use with the specified conditions. Table 1 identifies where the NRC proposes to change (clarify the regulation; or impose new, revise existing, or remove conditions in) 10 CFR 50.55a. Due to the extent of the proposed revisions to 10 CFR 50.55a(b)(2), the NRC is proposing to revise this portion of the regulations in its entirety, including the redesignation of paragraphs within the section. These proposed redesignations are also outlined in Table 1 of this document.

TABLE 1—REDESIGNATION OF PARAGRAPHS AND DESCRIPTION OF PROPOSED CHANGES TO 10 CFR 50.55a

Proposed regulation	Current regulation	Description of proposed changes
Applicant/Licensee-Proposed Alternatives to the Requirements of 10 CFR 50.55a		
Paragraph (a)	Paragraph (a)	Revise to title the paragraph *Quality standards, ASME Codes and IEEE standards, and alternatives.*
Paragraph (a)(3)	Paragraph (a)(3)	Revise to clarify that an alternative is to be submitted to, and approved by, the NRC prior to implementing the alternative.
Standards Approved for Incorporation by Reference		
Introductory text to paragraph (b)	Introductory text to paragraph (b)	Revise to title the paragraph *Standards approved for incorporation by reference.* Revise to incorporate by reference the ASME B&PV Code, Section III, Division 1 (excluding Non-mandatory Appendices), and Section XI, Division 1, and ASME OM Code, which are referenced in paragraphs (b)(1), (b)(2), and (b)(3) of this section. In addition, ASME Code Cases N–722–1 and N-770 would be incorporated by reference.
ASME B&PV Code, Section III		
Introductory text to paragraph (b)(1)	Introductory text to paragraph (b)(1).	Revise to clarify the wording and include the 1974 Edition (Division 1) through the 2008 Addenda (Division 1), subject to conditions. Change "limitations and modifications" to "conditions."
Paragraph (b)(1)(ii)	Paragraph (b)(1)(ii), "Weld leg dimensions".	Revise the current conditions on the use of stress indices used for welds in piping design under Subarticles NB–3600, NC–3600, and ND–3600. Make editorial corrections and additions.
Introductory text to paragraph (b)(1)(iii).	Introductory text to paragraph (b)(1)(iii), "Seismic design of piping".	Revise to include the latest addenda to Section III of the ASME B&PV Code (2006 Addenda through the 2008 Addenda) and Subarticle NB–3200 of the 2004 Edition through the 2008 Addenda of the ASME B&PV Code subject to the condition outlined in paragraph (b)(1)(iii)(B). Change "limitation" to "condition."
Paragraphs (b)(1)(iii)(A), (b)(1)(iii)(B), and (b)(1)(iii)(C).		Add new conditions on the use of Subarticles NB–3200, NB–3600, NC–3600 and ND–3600 identified in the introductory text to paragraph (b)(1)(iii).
Paragraph (b)(1)(iv)	Paragraph (b)(1)(iv) "Quality assurance".	Revise to incorporate by reference the 1994 Edition of NQA–1, "Quality Assurance Requirements for Nuclear Facilities."
Paragraph (b)(1)(vii)		Add a new condition to prohibit the use of paragraph NB–7742 of the 2006 Addenda up to and including the 2007 Edition and 2008 Addenda of the ASME B&PV Code, Section III.
ASME B&PV Code, Section XI		
Introductory text to paragraph (b)(2)	Introductory text to paragraph (b)(2).	Revise to clarify the wording and incorporate by reference the 2005 Addenda through 2008 Addenda of the ASME B&PV Code into § 50.55a; only Subsections IWA, IWB, IWC, IWD, IWE, IWF, IWL; Mandatory and Non-Mandatory Appendices of Division 1 are incorporated by reference into 10 CFR 50.55a, with conditions. Change "limitations and modifications" to "conditions."
NA	Paragraph (b)(2)(i), "Limitations on specific editions and addenda".	Remove because licensees are no longer using the 1974 and 1977 Editions and addenda of the ASME B&PV Code.
Paragraph (b)(2)(i)	Paragraph (b)(2)(ii), "Pressure-retaining welds in ASME Code Class 1 piping (applies to Table IWB–2500 and IWB–2500–1 and Category B–J".	Redesignate paragraph (b)(2)(ii) as paragraph (b)(2)(i).
NA	Paragraph (b)(2)(iii), "Steam generator tubing (modifies Article IWB–2000)".	Remove because the condition in the paragraph is redundant to the 1989 Edition through the 2008 Addenda of Section XI.

TABLE 1—REDESIGNATION OF PARAGRAPHS AND DESCRIPTION OF PROPOSED CHANGES TO 10 CFR 50.55a—Continued

Proposed regulation	Current regulation	Description of proposed changes
NA	Paragraph (b)(2)(iv), "Pressure retaining welds in ASME Code Class 2 piping".	Remove because licensees are no longer using these older editions and addenda of the code.
NA	Paragraph (b)(2)(v), re: Evaluation procedures and acceptance criteria for austenitic piping.	Remove because licensees are no longer using the Winter 1983 Addenda and the Winter 1984 Addenda of Section XI.
Paragraph (b)(2)(ii)	Paragraph (b)(2)(vi), "Effective edition and addenda of Subsection IWE and Subsection IWL, Section XI".	Redesignate paragraph (b)(2)(vi) as paragraph (b)(2)(ii). Change "modified and supplemented" to "conditioned."
Paragraph (b)(2)(iii)	Paragraph (b)(2)(vii), "Section XI references to OM Part 4, OM Part 6 and OM Part 10 (Table IWA–1600–1)".	Redesignate paragraph (b)(2)(vii) as paragraph (b)(2)(iii).
Paragraph (b)(2)(iv)	Paragraph (b)(2)(viii), "Examination of concrete containments".	Redesignate paragraph (b)(2)(viii) as paragraph (b)(2)(iv), and revise the introductory text to remove the conditions in redesignated paragraphs (b)(2)(iv)(F) and (b)(2)(iv)(G) when using the 2007 Edition with 2008 Addenda of the ASME Code, Section XI.
Paragraph (b)(2)(v)	Paragraph (b)(2)(ix), "Examination of metal containments and the liners of concrete containments".	Redesignate paragraph (b)(2)(ix) as paragraph (b)(2)(v), and revise the introductory text to remove the conditions in redesignated paragraphs (b)(2)(v)(F), (b)(2)(v)(G), (b)(2)(v)(H) and (b)(2)(v)(I) when applying the 2004 Edition with 2006 Addenda through the 2007 Edition with 2008 Addenda of the ASME Code, Section XI and remove the condition in redesignated paragraph (b)(2)(v)(I) when applying the 2004 Edition, up to and including, the 2005 Addenda. Add a new condition as paragraph (b)(2)(v)(J) on the use of Article IWE–5000 of Subsection IWE when applying the 2007 Edition up to and including the 2008 Addenda of the ASME Code, Section XI.
Paragraph (b)(2)(vi)	Paragraph (b)(2)(x), "Quality assurance".	Redesignate paragraph (b)(2)(x) as paragraph (b)(2)(vi).
Paragraph (b)(2)(vii)	Paragraph (b)(2)(xi) [Reserved]	Redesignate paragraph (b)(2)(xi) as paragraph (b)(2)(vii).
Paragraph (b)(2)(viii)	Paragraph (b)(2)(xii), "Underwater welding".	Redesignate paragraph (b)(2)(xii) as paragraph (b)(2)(viii).
Paragraph (b)(2)(ix)	Paragraph (b)(2)(xiii) [Reserved] ...	Redesignate paragraph (b)(2)(xiii) as paragraph (b)(2)(ix).
Paragraph (b)(2)(x)	Paragraph (b)(2)(xiv), "Appendix VIII personnel qualification".	Redesignate paragraph (b)(2)(xiv) as paragraph (b)(2)(x).
Paragraph (b)(2)(xi)	Paragraph (b)(2)(xv), "Appendix VIII specimen set and qualification requirements".	Redesignate paragraph (b)(2)(xv) as paragraph (b)(2)(xi) and revise it so that existing conditions would not apply to the 2007 Edition through the 2008 Addenda of Section XI. Change "provisions" to "conditions" in the introductory text to redesignated paragraphs (b)(2)(xi), (b)(2)(xi)(B), (b)(2)(xi)(C), (b)(2)(xi)(D), (b)(2)(xi)(E), (b)(2)(xi)(F), (b)(2)(xi)(G), (b)(2)(xi)(K), and (b)(2)(xi)(K)(*1*). Change "provisions of" to "conditions in" in paragraph (b)(2)(xi)(G)(3). Change "modified" and "modification" to "conditioned" and "condition" in (b)(2)(xi)(K)(*2*)(*i*), (b)(2)(xi)(K)(*2*)(*iii*), (b)(2)(xi)(K)(*3*)(*i*), (b)(2)(xi)(K)(*3*)(*ii*), (b)(2)(xi)(K)(*4*), and (b)(2)(xi)(L), where applicable.
Paragraph (b)(2)(xii)	Paragraph (b)(2)(xvi), "Appendix VIII single side ferritic vessel and piping and stainless steel piping examination".	Redesignate paragraph (b)(2)(xvi) as paragraph (b)(2)(xii). Change "modified" to "conditioned" in redesignated paragraphs (b)(2)(xii)(A) and (b)(2)(xii)(B).
Paragraph (b)(2)(xiii)	Paragraph (b)(2)(xvii), "Reconciliation of Quality Requirements".	Redesignate paragraph (b)(2)(xvii) as paragraph (b)(2)(xiii).
Paragraph (b)(2)(xiv)(A)	Paragraph (b)(2)(xviii)(A), "Certification of NDE personnel".	Redesignate paragraph (b)(2)(xviii)(A) as paragraph (b)(2)(xiv)(A).
Paragraph (b)(2)(xiv)(B)	Paragraph (b)(2)(xviii)(B), "Certification of NDE personnel".	Redesignate paragraph (b)(2)(xviii)(B) as paragraph (b)(2)(xiv)(B), and revise it so that existing condition would not apply to the 2007 Edition through the 2008 Addenda of Section XI.
Paragraph (b)(2)(xiv)(C)	Paragraph (b)(2)(xviii)(C), "Certification of NDE personnel".	Redesignate paragraph (b)(2)(xviii)(C) as paragraph (b)(2)(xiv)(C), and revise it such that the existing conditions on the qualification of VT–3 examination personnel would not apply to the 2005 Addenda through the 2008 Addenda of Section XI.
Paragraph (b)(2)(xv)	Paragraph (b)(2)(xix), "Substitution of alternative methods".	Redesignate paragraph (b)(2)(xix) as paragraph (b)(2)(xv), and revise it so that existing conditions for the substitution of alternative examination methods would not apply when using the 2005 Addenda through the 2008 Addenda.
Paragraph (b)(2)(xvi)	Paragraph (b)(2)(xx), "System leakage tests".	Redesignate paragraph (b)(2)(xx) as paragraph (b)(2)(xvi).
Paragraph (b)(2)(xvii)	Paragraph (b)(2)(xxi), "Table IWB–2500–1 examination requirements".	Redesignate paragraph (b)(2)(xxi) as paragraph (b)(2)(xvii).

TABLE 1—REDESIGNATION OF PARAGRAPHS AND DESCRIPTION OF PROPOSED CHANGES TO 10 CFR 50.55a—Continued

Proposed regulation	Current regulation	Description of proposed changes
Paragraph (b)(2)(xviii)	Paragraph (b)(2)(xxii), "Surface examination".	Redesignate paragraph (b)(2)(xxii) as paragraph (b)(2)(xviii).
Paragraph (b)(2)(xix)	Paragraph (b)(2)(xxiii), "Evaluation of thermally cut surfaces".	Redesignate paragraph (b)(2)(xxiii) as paragraph (b)(2)(xix).
Paragraph (b)(2)(xx)	Paragraph (b)(2)(xxiv), "Incorporation of the performance demonstration initiative and addition of ultrasonic examination criteria".	Redesignate paragraph (b)(2)(xxiv) as paragraph (b)(2)(xx), and revise it so that existing condition would not apply when using the 2007 Edition through the 2008 Addenda.
Paragraph (b)(2)(xxi)	Paragraph (b)(2)(xxv), "Mitigation of defects by modification".	Redesignate paragraph (b)(2)(xxv) as paragraph (b)(2)(xxi).
Paragraph (b)(2)(xxii)	Paragraph (b)(2)(xxvi), "Pressure testing class 1, 2, and 3 mechanical joints".	Redesignate paragraph (b)(2)(xxvi) as paragraph (b)(2)(xxii).
Paragraph (b)(2)(xxiii)	Paragraph (b)(2)(xxvii), "Removal of insulation".	Redesignate paragraph (b)(2)(xxvii) as paragraph (b)(2)(xxiii), and revise it to refer to IWA–5242 of the 2003 Addenda through the 2006 Addenda or IWA–5241 of the 2007 Edition through the 2008 Addenda of Section XI of the ASME B&PV Code for performing VT–2 visual examination of insulated components in systems borated for the purpose of controlling reactivity.
New paragraph (b)(2)(xxiv), "Analysis of flaws".	NA	Add to place conditions on the use of Section XI, Nonmandatory Appendix A, "Analysis of Flaws."
New paragraph (b)(2)(xxv), "Evaluation of unanticipated operating events".	NA	Add to place condition specifying that Section E–1200 of the ASME B&PV Code, Section XI, Nonmandatory Appendix E, "Evaluation of Unanticipated Operating Events," is not acceptable for use.
New paragraph (b)(2)(xxvi), "Nonmandatory Appendix R".	NA	Add condition that would require licensees to submit an alternative in accordance with § 50.55a(a)(3), and obtain NRC authorization of the proposed alternative prior to implementing Section XI, Non-Mandatory Appendix R, RI–ISI programs.
ASME OM Code		
Introductory text to paragraph (b)(3)	Introductory text to paragraph (b)(3).	Revise to incorporate by reference the 2005 and 2006 Addenda of the ASME OM Code; Subsections ISTA, ISTB, ISTC, ISTD; Mandatory Appendices I and II; and Nonmandatory Appendices A through H and J of the ASME OM Code into § 50.55a. Change "limitations and modifications" to "conditions."
Paragraph (b)(3)(v)	Paragraph (b)(3)(v), "Subsection ISTD".	Revise to recognize that snubbers are tested in accordance with Section ISTD of the ASME OM Code when using the 2006 Addenda and later editions and addenda of Section XI of the ASME B&PV Code.
Paragraph (b)(3)(vi)	Paragraph (b)(3)(vi), "Exercise interval for manual valves".	Revise to state that this paragraph applies only when using the 1999 through 2005 Addenda of the ASME OM Code, as the 2006 Addenda of the ASME OM Code was revised to be consistent with the conditions in paragraph (b)(3)(vi).
Reactor Coolant Pressure Boundary, Quality Group B Components, and Quality Group C Components		
Paragraphs (c)(3), (d)(2) and (e)(2)	Paragraphs (c)(3), (d)(2) and (e)(2).	Revise to replace "but—" with "subject to the following conditions" at the end of the introductory text to the paragraphs for clarity.
Inservice Testing		
Paragraphs (f)(2), (f)(3)(v), and (f)(4).	Paragraphs (f)(2), (f)(3)(v), and (f)(4).	Change "limitations and modifications" to "conditions."
Paragraph (f)(5)(iv)	Paragraph (f)(5)(iv)	Revise to clarify that licensees are required to submit requests for relief based on impracticality within 12 months after the expiration of the IST interval for which relief is being sought.
Inservice Inspection		
Paragraph (g)(2)	Paragraph (g)(2)	Revise to include provisions for examination and testing snubbers in Subsection ISTD of the ASME OM Code, and the optional ASME code cases listed in Regulatory Guide 1.192. Change "limitations and modifications" to "conditions."
Paragraph (g)(3)(i)	Paragraph (g)(3)(i)	Revise to include provisions for examination and testing snubbers in Subsection ISTD of the ASME OM Code, and the optional ASME code cases listed in Regulatory Guide 1.192.
Paragraph (g)(3)(ii)	Paragraph (g)(3)(ii)	Revise to include the provisions for examination and testing snubbers in Subsection ISTD of the ASME OM Code, and the optional ASME code cases listed in Regulatory Guide 1.192.
Paragraph (g)(3)(v)	Paragraph (g)(3)(v)	Change "limitations and modifications" to "conditions."

TABLE 1—REDESIGNATION OF PARAGRAPHS AND DESCRIPTION OF PROPOSED CHANGES TO 10 CFR 50.55a—Continued

Proposed regulation	Current regulation	Description of proposed changes
Introductory text to paragraph (g)(4)	Introductory text to paragraph (g)(4).	Revise to include the provisions for examination and testing snubbers in Subsection ISTD of the ASME OM Code. Change "limitation" to "condition" and "modifications" to "conditions."
Paragraph (g)(4)(i)	Paragraph (g)(4)(i)	Revise to include the provisions for examination and testing snubbers in Subsection ISTD of the ASME OM Code, and the optional ASME code cases listed in Regulatory Guide 1.192. Change "limitations and modifications" to "conditions."
Paragraph (g)(4)(ii)	Paragraph (g)(4)(ii)	Revise to include the provisions for examination and testing snubbers in Subsection ISTD of the ASME OM Code, and the optional ASME code cases listed in Regulatory Guide 1.192. Change "limitations and modifications" to "conditions."
Paragraph (g)(4)(iii)	Paragraph (g)(4)(iii)	Revise to provide the proper references to Section XI, Table IWB–2500–1, "Examination Category B–J," Item Numbers B9.20, B9.21 and B9.22.
Paragraph (g)(4)(iv)	Paragraph (g)(4)(iv)	Change "limitations and modifications" to "conditions."
Paragraph (g)(5)(iii)	Paragraph (g)(5)(iii)	Revise to clarify that a request for relief must be submitted to the NRC no later than 12 months after the examination has been attempted during a given ISI interval and the ASME B&PV Code requirement determined to be impractical.
Paragraph (g)(5)(iv)	Paragraph (g)(5)(iv)	Revise to clarify that licensees are required to submit requests for relief based on impracticality within 12 months after the expiration of the ISI interval for which relief is being sought.
Paragraph (g)(6)(ii)(B)	Paragraph (g)(6)(ii)(B)	Change "modifications and limitations" to "conditions."
Paragraphs (g)(6)(ii)(E)(*1*), (g)(6)(ii)(E)(*2*), and (g)(6)(ii)(E)(*3*).	Paragraphs (g)(6)(ii)(E)(*1*), (g)(6)(ii)(E)(*2*), and (g)(6)(ii)(E)(*3*), "Reactor coolant pressure boundary visual inspections".	Revise to update the requirements to Code Case N–722–1.
New paragraph (g)(6)(ii)(F), "Inspection requirements for class 1 pressurized water reactor piping and vessel nozzle butt welds".	NA	Add to incorporate ASME Code Case N–770, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities, Section XI, Division 1," with conditions, into 10 CFR 50.55a.
Footnote 1	Footnote 1	Revise footnote 1 to clarify what portion of welds has to be inspected during the plant interval that remains after January 1, 2009.

For redesignated paragraphs in 10 CFR 50.55a, Table 2 cross-references the proposed regulations with the current regulations, and Table 3 cross-references the current regulations with the proposed regulations.

TABLE 2—CROSS REFERENCE OF PROPOSED REGULATIONS WITH CURRENT REGULATIONS

Proposed regulation	Current regulation	Description of proposed redesignations
ASME B&PV Code, Section XI		
Paragraph (b)(2)(i)	Paragraph (b)(2)(ii)	Redesignate paragraph (b)(2)(ii) as paragraph (b)(2)(i).
Paragraph (b)(2)(ii)	Paragraph (b)(2)(vi)	Redesignate paragraph (b)(2)(vi) as paragraph (b)(2)(ii).
Paragraph (b)(2)(iii)	Paragraph (b)(2)(vii)	Redesignate paragraph (b)(2)(vii) as paragraph (b)(2)(iii).
Paragraph (b)(2)(iv)	Paragraph (b)(2)(viii)	Redesignate paragraph (b)(2)(viii) as paragraph (b)(2)(iv).
Paragraph (b)(2)(v)	Paragraph (b)(2)(ix)	Redesignate paragraph (b)(2)(ix) as paragraph (b)(2)(v).
Paragraph (b)(2)(vi)	Paragraph (b)(2)(x)	Redesignate paragraph (b)(2)(x) as paragraph (b)(2)(vi).
Paragraph (b)(2)(vii)	Paragraph (b)(2)(xi)	Redesignate paragraph (b)(2)(xi) as paragraph (b)(2)(vii).
Paragraph (b)(2)(viii)	Paragraph (b)(2)(xii)	Redesignate paragraph (b)(2)(xii) as paragraph (b)(2)(viii).
Paragraph (b)(2)(ix)	Paragraph (b)(2)(xiii)	Redesignate paragraph (b)(2)(xiii) as paragraph (b)(2)(ix).
Paragraph (b)(2)(x)	Paragraph (b)(2)(xiv)	Redesignate paragraph (b)(2)(xiv) as paragraph (b)(2)(x).
Paragraph (b)(2)(xi)	Paragraph (b)(2)(xv)	Redesignate paragraph (b)(2)(xv) as paragraph (b)(2)(xi).
Paragraph (b)(2)(xii)	Paragraph (b)(2)(xvi)	Redesignate paragraph (b)(2)(xvi) as paragraph (b)(2)(xii).
Paragraph (b)(2)(xiii)	Paragraph (b)(2)(xvii)	Redesignate paragraph (b)(2)(xvii) as paragraph (b)(2)(xiii).
Paragraph (b)(2)(xiv)(A)	Paragraph (b)(2)(xviii)(A)	Redesignate paragraph (b)(2)(xviii)(A) as paragraph (b)(2)(xiv)(A).
Paragraph (b)(2)(xiv)(B)	Paragraph (b)(2)(xviii)(B)	Redesignate paragraph (b)(2)(xviii)(B) as paragraph (b)(2)(xiv)(B).
Paragraph (b)(2)(xiv)(C)	Paragraph (b)(2)(xviii)(C)	Redesignate paragraph (b)(2)(xviii)(C) as paragraph (b)(2)(xiv)(C).
Paragraph (b)(2)(xv)	Paragraph (b)(2)(xix)	Redesignate paragraph (b)(2)(xix) as paragraph (b)(2)(xv).
Paragraph (b)(2)(xvi)	Paragraph (b)(2)(xx)	Redesignate paragraph (b)(2)(xx) as paragraph (b)(2)(xvi).
Paragraph (b)(2)(xvii)	Paragraph (b)(2)(xxi)	Redesignate paragraph (b)(2)(xxi) as paragraph (b)(2)(xvii).
Paragraph (b)(2)(xviii)	Paragraph (b)(2)(xxii)	Redesignate paragraph (b)(2)(xxii) as paragraph (b)(2)(xviii).
Paragraph (b)(2)(xix)	Paragraph (b)(2)(xxiii)	Redesignate paragraph (b)(2)(xxiii) as paragraph (b)(2)(xix).
Paragraph (b)(2)(xx)	Paragraph (b)(2)(xxiv)	Redesignate paragraph (b)(2)(xxiv) as paragraph (b)(2)(xx).
Paragraph (b)(2)(xxi)	Paragraph (b)(2)(xxv)	Redesignate paragraph (b)(2)(xxv) as paragraph (b)(2)(xxi).
Paragraph (b)(2)(xxii)	Paragraph (b)(2)(xxvi)	Redesignate paragraph (b)(2)(xxvi) as paragraph (b)(2)(xxii).

TABLE 2—CROSS REFERENCE OF PROPOSED REGULATIONS WITH CURRENT REGULATIONS—Continued

Proposed regulation	Current regulation	Description of proposed redesignations
Paragraph (b)(2)(xxiii)	Paragraph (b)(2)(xxvii)	Redesignate paragraph (b)(2)(xxvii) as paragraph (b)(2)(xxiii).

TABLE 3—CROSS REFERENCE OF CURRENT REGULATIONS WITH PROPOSED REGULATIONS

Current regulation	Proposed regulation	Description of proposed redesignations
ASME B&PV Code, Section XI		
Paragraph (b)(2)(ii)	Paragraph (b)(2)(i)	Redesignate paragraph (b)(2)(ii) as paragraph (b)(2)(i).
Paragraph (b)(2)(vi)	Paragraph (b)(2)(ii)	Redesignate paragraph (b)(2)(vi) as paragraph (b)(2)(ii).
Paragraph (b)(2)(vii)	Paragraph (b)(2)(iii)	Redesignate paragraph (b)(2)(vii) as paragraph (b)(2)(iii).
Paragraph (b)(2)(viii)	Paragraph (b)(2)(iv)	Redesignate paragraph (b)(2)(viii) as paragraph (b)(2)(iv).
Paragraph (b)(2)(ix)	Paragraph (b)(2)(v)	Redesignate paragraph (b)(2)(ix) as paragraph (b)(2)(v).
Paragraph (b)(2)(x)	Paragraph (b)(2)(vi)	Redesignate paragraph (b)(2)(x) as paragraph (b)(2)(vi).
Paragraph (b)(2)(xi)	Paragraph (b)(2)(vii)	Redesignate paragraph (b)(2)(xi) as paragraph (b)(2)(vii).
Paragraph (b)(2)(xii)	Paragraph (b)(2)(viii)	Redesignate paragraph (b)(2)(xii) as paragraph (b)(2)(viii).
Paragraph (b)(2)(xiii)	Paragraph (b)(2)(ix)	Redesignate paragraph (b)(2)(xiii) as paragraph (b)(2)(ix).
Paragraph (b)(2)(xiv)	Paragraph (b)(2)(x)	Redesignate paragraph (b)(2)(xiv) as paragraph (b)(2)(x).
Paragraph (b)(2)(xv)	Paragraph (b)(2)(xi)	Redesignate paragraph (b)(2)(xv) as paragraph (b)(2)(xi).
Paragraph (b)(2)(xvi)	Paragraph (b)(2)(xii)	Redesignate paragraph (b)(2)(xvi) as paragraph (b)(2)(xii).
Paragraph (b)(2)(xvii)	Paragraph (b)(2)(xiii)	Redesignate paragraph (b)(2)(xvii) as paragraph (b)(2)(xiii).
Paragraph (b)(2)(xviii)(A)	Paragraph (b)(2)(xiv)(A)	Redesignate paragraph (b)(2)(xviii)(A) as paragraph (b)(2)(xiv)(A).
Paragraph (b)(2)(xviii)(B)	Paragraph (b)(2)(xiv)(B)	Redesignate paragraph (b)(2)(xviii)(B) as paragraph (b)(2)(xiv)(B).
Paragraph (b)(2)(xviii)(C)	Paragraph (b)(2)(xiv)(C)	Redesignate paragraph (b)(2)(xviii)(C) as paragraph (b)(2)(xiv)(C).
Paragraph (b)(2)(xix)	Paragraph (b)(2)(xv)	Redesignate paragraph (b)(2)(xix) as paragraph (b)(2)(xv).
Paragraph (b)(2)(xx)	Paragraph (b)(2)(xvi)	Redesignate paragraph (b)(2)(xx) as paragraph (b)(2)(xvi).
Paragraph (b)(2)(xxi)	Paragraph (b)(2)(xvii)	Redesignate paragraph (b)(2)(xxi) as paragraph (b)(2)(xvii).
Paragraph (b)(2)(xxii)	Paragraph (b)(2)(xviii)	Redesignate paragraph (b)(2)(xxii) as paragraph (b)(2)(xviii).
Paragraph (b)(2)(xxiii)	Paragraph (b)(2)(xix)	Redesignate paragraph (b)(2)(xxiii) as paragraph (b)(2)(xix).
Paragraph (b)(2)(xxiv)	Paragraph (b)(2)(xx)	Redesignate paragraph (b)(2)(xxiv) as paragraph (b)(2)(xx).
Paragraph (b)(2)(xxv)	Paragraph (b)(2)(xxi)	Redesignate paragraph (b)(2)(xxv) as paragraph (b)(2)(xxi).
Paragraph (b)(2)(xxvi)	Paragraph (b)(2)(xxii)	Redesignate paragraph (b)(2)(xxvi) as paragraph (b)(2)(xxii).
Paragraph (b)(2)(xxvii)	Paragraph (b)(2)(xxiii)	Redesignate paragraph (b)(2)(xxvii) as paragraph (b)(2)(xxiii).

The following paragraphs contain the NRC's evaluation of the changes to the Code editions and addenda (including new Code provisions) and Code Cases N–722–1 and N–770, where the NRC proposes to add new, revise existing, or remove conditions in 10 CFR 50.55a.

Quality Standards, ASME Codes and Institute of Electrical and Electronics Engineers (IEEE) Standards, and Alternatives

10 CFR 50.55a(a)

The NRC proposes to add the paragraph heading "Quality standards, ASME Codes and IEEE standards, and alternatives" to § 50.55a(a). This will be consistent with paragraph headings throughout 10 CFR 50.55a.

Applicant/Licensee-Proposed Alternatives to the Requirements of 10 CFR 50.55a

10 CFR 50.55a(a)(3)

The current regulations at § 50.55a(a)(3) do not clearly convey that alternatives to the requirements of §§ 50.55a(c), (d), (e), (f), (g), and (h) must be submitted to, and authorized by, the NRC prior to implementing the alternatives. Licensees have misinterpreted § 50.55a(a)(3) and erroneously concluded that it is permissible to obtain NRC authorization of an alternative after its implementation. The NRC proposes to add a sentence to § 50.55a(a)(3) to clarify that an alternative must be submitted to, and authorized by, the NRC prior to implementing the alternative.

Standards Approved for Incorporation by Reference

10 CFR 50.55a(b)

The NRC proposes to add the paragraph heading "Standards approved for incorporation by reference" to § 50.55a(b). This will be consistent with paragraph headings throughout 10 CFR 50.55a.

The question has arisen many times in the past of whether Subsection NE, "Class MC Components;" Subsection NF, "Supports;" Subsection NG, "Core Support Structures;" and Appendices of the ASME B&PV Code, Section III, are NRC requirements. The NRC is clarifying in this section how the regulations in 10 CFR 50.55a apply to these Section III subsections and appendices. This discussion sets forth the NRC's views regarding the applicable NRC requirements, clarifies which portions of Section III are approved for use by applicants and licensees, identifies which portions of Section III are NRC requirements, and which portions of Section III are not covered by the regulations in 10 CFR 50.55a. The requirements of Subsection NH, "Class 1 Components in Elevated Temperature Service," of Section III are already addressed in § 50.55a(b)(1)(vi), and the bases for these requirements have been discussed in the final rule (69 FR 58804) issued on October 1, 2004, that amended 10 CFR 50.55a to incorporate by reference the 2001 Edition up to and including the 2003 Addenda of the ASME Code, Section III.

First, it should be noted that in 10 CFR 50.55a, the NRC mandates the use of Section III, Division 1, rules for ASME Code Class 1, 2, and 3 components in 10 CFR 50.55a(c), (d) and (e), respectively. Specifically, 10 CFR 50.55a(c), (d) and (e) state that for applicants constructing a nuclear power plant, those components which are part of the reactor coolant pressure boundary must meet the requirements for Class 1 components in Section III (*e.g.,*

Subsection NB, "Class 1 Components"); components classified as Quality Group B must meet the requirements for Class 2 components (*e.g.,* Subsection NC, "Class 2 Components"); and components classified as Quality Group C must meet the requirements for Class 3 components (*e.g.,* Subsection ND, "Class 3 Components"). The NRC considers the rules of Subsection NCA and Section III mandatory appendices to be mandated as well, but only as they apply to Class 1, 2, and 3 components because the language in 10 CFR 50.55a(c), (d) and (e) also covers general requirements in Subsection NCA and mandatory appendices in Section III that are applicable to Class 1, 2, and 3 components.

In addition, the introductory text of 10 CFR 50.55a(b) states, in part, that the ASME Code, Section III, is approved for incorporation by reference by the Director of the Federal Register pursuant to 5 U.S.C. 552(a) and 1 CFR part 51. However, the regulatory language does not identify specific subsections in Section III that are incorporated by reference, and one can only assume that all of Section III (including all subsections, appendices and Division 2 and 3 rules) are incorporated by reference. Although it is clear that Subsections NB, NC and ND are regulatory requirements because they are mandated by 10 CFR 50.55a(c), (d) and (e) as discussed in this document, the lack of specific rule language in 10 CFR 50.55a mandating the use of Subsections NE, NF, and NG have created confusion about the regulatory requirements applicable to Subsections NE, NF, and NG. Subsection NE provides rules for constructing metal containment components (Class MC). Subsection NF provides rules for constructing supports for Class 1, 2, 3, and MC components. Subsection NG provides rules for constructing reactor core support structures. In this sense, "constructing" is an all-inclusive term that comprises the design, fabrication, installation, examination, testing, inspection and selection of materials for nuclear power plant components.

The NRC is, therefore, clarifying that when Subsections NE, NF and NG are incorporated by reference, but not mandated, these subsections are not NRC requirements. Rather, the NRC considers Subsections NE, NF and NG to be approved by the NRC for use by applicants and licensees of nuclear power plants by virtue of the NRC's overall approval of Section III, Division 1 rules without condition. In this manner, approval of the rules in Subsections NE, NF and NG is similar to regulatory guidance provided in NRC regulatory guides in that it provides an acceptable method for meeting NRC requirements and, in this particular case, in 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 1, "Quality standards and records." Applicants and licensees may propose means other than those specified by the provisions in Subsections NE, NF and NG for meeting the applicable regulation. It should be noted that the NRC reviews an applicant's proposed means of meeting the requirements of GDC 1 as part of its review of an application for each manufacturing license, standard design approval, standard design certification and combined license under 10 CFR part 52 and for each construction permit and operating license under 10 CFR part 50 using the guidelines of NRC NUREG–0800, "Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants—LWR Edition." During its review of new reactor designs under 10 CFR part 52, the NRC is reviewing the criteria and extent of compliance of standard plant designs and combined licenses with the rules of the specific edition and addenda to Subsections NE, NF and NG for applicability to these new reactor designs. The process being used by the NRC in the review of Subsections NE, NF, and NG for new reactors as described in this document is essentially the same process used by the NRC for the licensing of all nuclear power plants since the SRP was first issued in 1975. Therefore, this clarification does not establish new positions or requirements in the regulatory application of Subsections NE, NF and NG to the construction of nuclear power plants.

Because the NRC staff participates on the ASME Code committees in the development of and revisions to Subsections NE, NF and NG, the NRC is cognizant of the acceptability of the Code rules applicable to Subsections NE, NF and NG. NRC use of consensus technical standards meets the requirements of Public Law 104–113, "National Technology Transfer and Advancement Act of 1995," which requires Federal agencies to use technical standards that are developed by voluntary consensus standards bodies, instead of government-unique standards, as a means to carry out policy objectives or activities determined by Federal agencies, unless contrary to law or the use of the standard is impractical.

Consistent with this discussion, the NRC does not propose to substantially change the language in the introductory text to 10 CFR 50.55a(b). The NRC proposes to modify the regulatory language in the introductory text of 10 CFR 50.55a(b) to clarify that non-mandatory appendices are excluded from Section III rules that are incorporated by reference because the NRC does not review the acceptability of non-mandatory Section III appendices. Similarly, the NRC proposes to clarify in the introductory text of 10 CFR 50.55a(b) that only Division 1 rules of Section III and Section XI are incorporated by reference (*i.e.,* Divisions 2 and 3 rules are not incorporated by reference and are not approved by the NRC regulations in 10 CFR 50.55a). The NRC is also proposing to incorporate by reference ASME Code Case N–722–1, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials Section XI, Division 1," and Code Case N–770, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR [Pressurized-Water Reactor] Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material with or without Application of Listed Mitigation Activities."

ASME B&PV Code, Section III

The NRC proposes to:

- Revise the current regulations in § 50.55a(b)(1), (b)(1)(ii), and (b)(1)(iii) to detail the specific ASME B&PV Code, Section III Subsections which are referenced in the ensuing paragraphs.
- Revise the current requirements in these paragraphs to include the latest editions and addenda incorporated into Section III of the ASME B&PV Code with respect to the regulations regarding seismic design.
- Clarify the current wording of the introductory text of § 50.55a(b)(1).
- Modify the current conditions in § 50.55a(b)(1)(ii) on the use of stress indices used for welds in piping design under Subarticles NB–3600, NC–3600, and ND–3600.
- Add three new requirements at § 50.55a(b)(1)(iii)(A), (b)(1)(iii)(B), and (b)(1)(iii)(C) to impose conditions on the use of Subarticles NB–3200, NB–3600, NC–3600 and ND–3600 identified in § 50.55a(b)(1)(iii).

Introductory Text to 10 CFR 50.55a(b)(1)

The proposed amendment to the introductory text of § 50.55a(b)(1) would revise the language to clarify that references to Section III refer to Section III of the ASME Boiler and Pressure Vessel Code.

10 CFR 50.55a(b)(1)(ii) and (b)(1)(iii) Weld-Leg Dimensions and Seismic Design of Piping

The current requirements regarding piping seismic rules in Section III the ASME B&PV Code were first introduced in the 1994 Addenda to the ASME B&PV Code. These rules were subsequently modified in the 2001 Edition and 2002 Addenda to the ASME B&PV Code. The current regulations in § 50.55a(b)(1)(ii) outline the conditions on the use of stress indices used for welds in piping design under Subarticles NB–3600, NC–3600, and ND–3600. The current regulations in § 50.55a(b)(1)(iii) only allow the use of ASME B&PV Code, Section III, 1993 Addenda and earlier editions with respect to Subarticles NB–3200, NB–3600, NC–3600, and ND–3600.

The current version of the ASME B&PV Code does not adequately address the seismic design requirements specified in Subparagraphs NB–3683.2(c), NB–3683.4(c)(1) and (c)(2), and Paragraph NB–3656, Figures NB–3222–1, NC–3673.2(b)–1, and ND–3673.2(b)–1 and Table 3681(a)–1 of the ASME B&PV Code. The proposed amendment would modify § 50.55a(b)(1)(ii) to address the NRC's concern about the undersized weld-leg dimension of less than 1.09t that makes the weld weaker than the pipe. Additional requirements regarding the stress indices identified in the proposed addition to the regulations (*i.e.* § 50.55a(b)(1)(iii)(A)) are warranted based on industry testing which supports the NRC's position. Additionally, the proposed requirement in § 50.55a(b)(1)(iii)(B) would resolve an issue identified by the NRC staff regarding the inclusion of reversing dynamic loads when calculating the primary bending stresses for Level B service limits. The proposed condition in § 50.55a(b)(1)(iii)(C) is part of the ASME B&PV Code requirements for applying the seismic design rules in Subarticles NB–3600, NC–3600, and ND–3600 in the 2006 Addenda through the 2008 Addenda.

The current regulations in § 50.55a(b)(1) and (b)(1)(iii) reference the current seismic design requirements of Section III of the ASME B&PV Code. The proposed modification would allow the use of the latest edition and addenda of Section III of the ASME B&PV Code with the three proposed additional requirements at § 50.55a(b)(1)(iii)(A), (b)(1)(iii)(B), and (b)(1)(iii)(C) which would provide three conditions on the use of the latest ASME B&PV Code edition and addenda. The current requirements in § 50.55a(b)(1)(ii) limit the use of certain stress indices used for welds in the piping design portions of Section III of the ASME B&PV Code. The proposed modification would also revise the current conditions on the use of the stress indices outlined in § 50.55a(b)(1)(ii).

The proposed condition identified in § 50.55a(b)(1)(ii) would address the NRC concerns with the undersized welds ($C_x = 0.75\ t_n$), which are not acceptable because the current ASME Code design rules would result in a circumferential, fillet-welded or socket-welded joint where the weld size is smaller than the adjoining pipe wall thickness. An editorial addition would also be included in the proposed condition and would reflect the addition of a condition on the use of paragraph NB–3683.4(c)(2). The use of paragraph NB–3683.4(c)(1) is currently not allowed and would continue to be prohibited in the proposed rulemaking. The addition of the condition on the use of paragraph NB–3683.4(c)(2) is purely editorial in nature since, by imposing a condition on the use of NB–3683.4(c)(1), the regulations would inherently impose a condition on the use of NB–3683.4(c)(2) given their use within Section III of the ASME B&PV Code. Therefore, this condition would not be new from a technical standpoint. Also, an editorial correction would be made regarding Footnote 11, which should be the Footnote 13 for the 2004 Edition through the 2008 Addenda in Figure NC–3673.2(b)–1 and Figure ND–3673.2(b)–1.

The proposed addition identified as § 50.55a(b)(1)(iii)(A) would address the NRC's position regarding the B_2' indices in paragraph NB–3656 of Section III of the ASME B&PV Code. The NRC proposes this condition to capture the dynamic strain aging effects that were reflected in the testing performed by Battelle Columbus Laboratories which concluded that ferritic steels tend to have lower margins and a decrease in toughness at higher temperatures due to dynamic strain aging. (*See* NUREG/CR–6226, "Effect of Dynamic Strain Aging on the Strength and Toughness of Nuclear Ferritic Piping at LWR Temperatures" for the Battelle testing results). Therefore, this additional requirement would provide the means necessary to prevent significant reductions in the margins of ferritic steel components (elbows and tees) at high temperatures, thus providing better assurance of the materials' structural integrity.

The proposed addition identified as § 50.55a(b)(1)(iii)(B) would address the NRC's position regarding Note (1) of Figure NB–3222–1 of Section III of the ASME B&PV Code. The NRC proposes this condition based on the premise that while the inclusion of reversing dynamic loads in the calculation of primary bending stresses for Level B service limits may not be warranted when the Operating Basis Earthquake is not included in the design basis for the facility, at other times these loads must be considered. Such is the case when a licensee's Operating Basis Earthquake level is more than one-third the value of the Safe Shutdown Earthquake. However, the current wording of Note (1) in Figure NB–3222–1 of Section III of the ASME B&PV Code does not account for this situation. Therefore, the NRC proposes to include this condition on the use of the latest addenda of Section III of the ASME B&PV Code.

The proposed addition identified as § 50.55a(b)(1)(iii)(C) would address the NRC's position regarding the limitation of D_o/t ratio of ASME Class 1, 2 and 3 piping when applying Subarticles NB–3600, NC–3600 and ND–3600 in the 2006 Addenda through the 2008 Addenda of Section III of the ASME B&PV Code. In the 1994 Addenda, the D_o/t ratio was identified by ASME Code Committee to be 50 or less for applying the seismic rules in Subarticles NB–3600, NC–3600 and ND–3600. This upper limit for D_o/t was revised to be 40 in the 2002 Addenda through the 2008 Addenda based on EPRI testing associated with reversing dynamic seismic loading. However, the 2007 Edition allows D_o/t to be greater than 50 in Note 1 to Table NB 3681(a)–1 and Note 3 to Figures NC/ND–3673.2(b)–1. NUREG–1367 limits D_o/t to no more than 50 for functional capability considerations. To ensure consistency with ASME B&PV Code requirements found in paragraphs NB–3656, NC–3655, and ND–3655, D_o/t should be limited to no more than 40. Furthermore, the use of D_o/t larger than 40 would be beyond the piping configuration included in the EPRI testing, and thus is not justified for design considerations. Therefore, the NRC concludes that the applicable D_o/t for the seismic design of piping as limited by the ASME B&PV Code in Subarticles NB–3600, NC–3600, and ND–3600 in the 2006 Addenda through the 2008 Addenda must not be greater than 40 as addressed in § 50.55a(b)(1)(iii)(C).

10 CFR 50.55a(b)(1)(iv) Quality Assurance

The proposed amendment would revise § 50.55a(b)(1)(iv) to be consistent with a revised quality assurance provision in the 2006 Addenda of the ASME B&PV Code, Section III,

Subsection NCA. The proposed amendment would allow the use of 1994 Edition of NQA–1, "Quality Assurance Requirements for Nuclear Facility Applications," when using the 2006 Addenda of Section III of the ASME B&PV Code and later editions and addenda. The reference to ASME NQA–1 in Article 4000 of the ASME B&PV Code, Section III was updated to a later edition of NQA–1 in the 2006 Addenda. NCA–4110(b) was revised to require that the N–Type Certificate Holders comply with the Basic Requirements and Supplements of the ASME NQA–1–1994 Edition. Previous editions/addenda of the ASME B&PV Code, Section III referenced earlier editions and addenda of ASME NQA–1. There are no significant differences between of NQA–1–1994 Edition and the editions and addenda of NQA–1 currently referenced in the regulation. The NRC has reviewed and found the changes to Subsection NCA that reference the 1994 Edition of NQA–1 to be acceptable.

10 CFR 50.55a(b)(1)(vii) Capacity Certification and Demonstration of Function of Incompressible-Fluid Pressure-Relief Valves (New)

The proposed addition identified as § 50.55a(b)(1)(vii) would modify requirements in Subsection NB of the ASME B&PV Code, Section III, for certifying the capacity of incompressible-fluid, pressure-relief valves when the testing facility has less than the full range of pressure capability necessary for achieving valve set-pressure conditions during the testing. In the 2006 Addenda, new requirements were added to the ASME B&PV Code, Section III, that have a parallel structure in paragraphs NB–7742, NC–7742, and ND–7742 for Class 1, 2, and 3 incompressible-fluid, pressure-relief valves, respectively. These new paragraphs address new valve designs having a range of possible sizes and set-pressure conditions. The method described in these paragraphs for performing the tests and evaluating data involves performing tests at less than the highest value of the set-pressure range, and establishing an incompressible fluid flow coefficient of discharge that then allows extrapolation of capacities to higher pressures.

These paragraphs are new, and did not exist in prior editions or addenda of the ASME B&PV Code, Section III. These new paragraphs address circumstances in which a certified test facility lacks the fluid-pressure capability at the necessary flow rate for testing a new, incompressible-fluid, pressure-relief valve design. The NRC has identified no issues with performing the tests at less than the highest value of the set-pressure range for incompressible-fluid, pressure-relief valves, and finds these new requirements for Class 2 and 3 components acceptable as described in paragraphs NC–7742 and ND–7742. However, the NRC has identified missing words from paragraph NB–7742 for Class 1 components. The parallel structure of the counterpart paragraphs (NC–7742 and ND–7742) reveals that the words "for the design and the maximum set pressure" are missing from subparagraph NB–7742(a)(2). Without these words, the paragraph is confusing, illogical, and could lead to a non-conservative interpretation of the required test pressures for new Class 1 incompressible-fluid, pressure-relief valve designs. Because the new paragraph NB–7742 does not contain the above-described words, the NRC finds that the paragraph is not acceptable for use. New Class 1 incompressible-fluid, pressure-relief valve designs must be tested at the highest values of set-pressure ranges as required by prior editions and addenda of the ASME B&PV Code, Section III.

ASME B&PV Code, Section XI

The current regulations in § 50.55a(b)(2) incorporate by reference ASME B&PV Code, Section XI, 1970 Edition through the 1976 Winter Addenda; and the 1977 Edition (Division 1) through the 2004 Addenda (Division 1), subject to the conditions identified in current § 50.55a(b)(2)(i) through (b)(2)(xxvii). The proposed amendment would revise the introductory text to § 50.55a(b)(2) to incorporate by reference the 2005 Addenda (Division 1) through the 2008 Addenda (Division 1) of the ASME B&PV Code, Section XI, clarify the wording, and remove or revise some of the conditions as explained in this document.

Introductory Text of 10 CFR 50.55a(b)(2)

The proposed amendment to the introductory text of § 50.55a(b)(2) would revise the language to clarify that references to Section XI refer to Section XI of the ASME Boiler and Pressure Vessel Code.

10 CFR 50.55a(b)(2)(i) Limitations on Specific Editions and Addenda (Current)

The NRC proposes to remove § 50.55a(b)(2)(i) from the current regulations. This paragraph currently specifies which addenda may be used when applying the 1974 and 1977 Editions of Section XI of the ASME B&PV Code. Section 50.55a(g)(4)(ii) requires that licensees' successive 120-month inspection intervals comply with the requirements of the latest edition and addenda of the code incorporated by reference in § 50.55a(b)(2). Subsequently, licensees are no longer using these older editions (1974 and 1977 Editions) and addenda of the ASME B&PV Code, and therefore the NRC proposes to remove this paragraph.

This paragraph will be replaced by the current § 50.55a(b)(2)(ii) which describes a method for determining the extent of examination of Code Class 1 piping welds for facilities where the application for a construction permit was docketed prior to July 1, 1978.

10 CFR 50.55a(b)(2)(iii) Steam Generator Tubing (Current)

The NRC proposes to remove § 50.55a(b)(2)(iii) from the current regulations. The current regulations in § 50.55a(b)(2)(iii) state that if the technical specifications of a nuclear power plant include surveillance requirements for steam generators different than those in Section XI, Article IWB–2000, the ISI program of steam generator tubing is governed by the requirements in the technical specifications. The 1989 Edition through the 2008 Addenda of Section XI IWB–2413, "Inspection Program for Steam Generator Tubing," state that "The examinations shall be governed by the plant Technical Specification." Since the condition in § 50.55a(b)(2)(iii) is redundant to the 1989 Edition through the 2008 Addenda of Section XI, the NRC proposes to remove this condition.

This paragraph will be replaced by the current § 50.55a(b)(2)(vii) which describes Section XI references to OM Part 4, OM Part 6 and OM Part 10 of the ASME OM Code.

10 CFR 50.55a(b)(2)(iv) Pressure-Retaining Welds in ASME Code Class 2 Piping (Current)

The NRC proposes to remove § 50.55a(b)(2)(iv) from the current regulations. This paragraph states how to select appropriate Code Class 2 pipe welds in residual heat removal systems, emergency core cooling systems, and containment heat removal systems when applying editions and addenda up to the 1983 Edition through the Summer 1983 Addenda of Section XI of the ASME B&PV Code. Section 50.55a(g)(4)(ii) requires that licensee's successive 120-month inspection intervals comply with the requirements of the latest edition and addenda of the code incorporated by reference in § 50.55a(b)(2). Subsequently, licensees

are no longer using these older editions and addenda of the code (editions and addenda up to the 1983 Edition through the Summer 1983 Addenda of Section XI), and therefore, the NRC proposes to remove the requirements of current § 50.55a(b)(2)(iv).

This paragraph will be replaced by the current § 50.55a(b)(2)(viii) which describes examinations of concrete containments.

10 CFR 50.55a(b)(2)(v) Evaluation Procedure and Acceptance Criteria for Austenitic Piping (Current)

The NRC proposes to remove § 50.55a(b)(2)(v) from the current regulations. This paragraph deals with evaluation procedures and acceptance criteria for austenitic piping when applying the Winter 1983 Addenda and the Winter 1984 Addenda of Section XI. Section 50.55a(g)(4)(ii) requires that licensees' successive 120-month inspection intervals comply with the requirements of the latest edition and addenda of the code incorporated by reference in § 50.55a(b)(2). Subsequently, licensees are no longer using these older editions and addenda of the code (editions and addenda up to the 1983 Edition through the Summer 1983 Addenda of Section XI), and therefore, the NRC proposes to remove the requirements of current § 50.55a(b)(2)(iv). This paragraph will be replaced by the current § 50.55a(b)(2)(ix) which describes examination of metal containments and the liners of concrete containments.

10 CFR 50.55a(b)(2)(vi) Effective Edition and Addenda of Subsection IWE and Subsection IWL, Section XI (Current); 10 CFR 50.55a(b)(2)(ii) (Redesignated)

The NRC proposes to redesignate § 50.55a(b)(2)(vi) in the current rule to § 50.55a(b)(2)(ii) in the proposed rule. This paragraph stipulates the editions and addenda of Subsection IWE and Subsection IWL of Section XI of the ASME B&PV Code which are approved for use when licensees are implementing the initial 120-month inspection interval for containment inservice inspection requirements found in Section XI of the Code. The current paragraph also indicates that the use of these applicable editions and addenda is subject to the conditions found in § 50.55a(b)(2)(viii) and (b)(2)(ix) for Subsection IWL and Subsection IWE, respectively. The proposed rule would redesignate § 50.55a(b)(2)(viii) and (b)(2)(ix) as § 50.55a(b)(2)(iv) and (b)(2)(v), respectively, and conforming changes would be made to the references contained in redesignated § 50.55a(b)(2)(ii). Additionally, the proposed rule would change the words "modified and supplemented" to "conditioned" for clarification purposes.

10 CFR 50.55a(b)(2)(viii) Examination of Concrete Containments (Current); 10 CFR 50.55a(b)(2)(iv) (Redesignated)

The NRC proposes to redesignate § 50.55a(b)(2)(viii) in the current rule to § 50.55a(b)(2)(iv) in the proposed rule. This paragraph stipulates the conditions that apply to the inservice examination of concrete containments using Subsection IWL of various editions and addenda of the ASME B&PV Code, Section XI, incorporated by reference in § 50.55a(b)(2). The current regulations, in part, require that licensees applying Subsection IWL, 2001 Edition through the 2004 Edition shall apply the conditions in § 50.55a(b)(2)(viii)(E) through (b)(2)(viii)(G). The NRC proposes to remove the conditions in redesignated § 50.55a(b)(2)(iv)(F) and (b)(2)(iv)(G) of the proposed rule when applying Subsection IWL of the 2007 Edition with 2008 addenda of the ASME B&PV Code, Section XI because the intent of these conditions has been incorporated into the 2007 Edition with the 2008 addenda of the ASME B&PV Code, as explained in this document. Accordingly, the proposed rule would require that licensees applying Subsection IWL, 2007 Edition with the 2008 Addenda shall apply only the condition in redesignated § 50.55a(b)(2)(iv)(E). Further, in the proposed rule, the conditions in redesignated § 50.55a(b)(2)(iv)(E) through (b)(2)(iv)(G) remain applicable to licensees applying Subsection IWL, 2004 Edition through the 2006 Addenda.

The condition in the redesignated § 50.55a(b)(2)(iv)(F) relates to qualification of personnel that examine containment concrete surfaces and tendon hardware, wires, or strands. This condition in the current regulations states that personnel that examine containment concrete surfaces and tendon hardware, wires, or strands must meet the qualification provisions in IWA–2300, and that the "owner-defined" personnel qualification provisions in IWL–2310(d) are not approved for use. IWA–2300 stipulates qualification provisions for personnel performing nondestructive examination, including VT–1, VT–2, and VT–3 visual examinations. Paragraph IWA–2312(c) requires training, qualification, and certification of visual examination personnel to comply with the requirements of Appendix VI of the Code, which makes reference to ANSI/ASNT CP–189, and allows for limited certification (for personnel who are restricted to performing examinations of limited or specific scope, *i.e.,* limited operations or limited techniques) per IWA–2350.

In Subsection IWL of the 2007 Edition, the ASME revised paragraph IWL–2100 to state, in part, that except as noted in IWL–2320, the requirements of IWA–2300 do not apply. Also, the 2007 Edition deleted subparagraphs IWL–2310(d) and IWL–2310(e), which allowed certain requirements (*i.e.,* requirements for personnel qualification and requirements for visual examination of concrete and tendon anchorage hardware, wires, or strands) to be owner-defined. Further, the 2007 Edition with 2008 Addenda added a new paragraph IWL–2320 "Personnel Qualifications" and re-designated the former IWL–2320 "Responsible Engineer" as IWL–2330 "Responsible Engineer."

The new paragraph IWL–2320 stipulates specific plant experience, training, written and practical examination and frequency of administration to demonstrate training proficiency, and vision test requirements for qualification of personnel approved by the Responsible Engineer for performing general or detailed visual examinations of structural concrete, reinforcing steel and post-tensioning system components (*i.e.,* wires, strands, anchorage hardware, corrosion protection medium and free water) of Class CC containments. The provision requires documentation of qualification requirements in the Employer's written practice. The Responsible Engineer is responsible for approval, instruction and training of personnel performing general and detailed visual examinations. The new provision also provided the requisite detailed requirements for the instruction material to be used to qualify personnel performing IWL inspections. Specifically, the addition included requirements for preservice and inservice inspections for concrete (references American Concrete Institute 201.1R), reinforcing steel, and post-tensioning items such as wires, strands, anchorage hardware, corrosion protection medium, and free water. Thus, the qualification requirements adequately include the areas and extent of required plant experience, instructional topics for classroom training in IWL requirements and plant-specific IWL visual examination procedures, and require the vision test requirements of IWA–2321. The new paragraph IWL–2320, "Personnel Qualifications," details specific

guidance for personnel qualification for containment concrete and reinforcing steel and post-tensioning system visual inspections that provide an acceptable level of quality and safety similar to the requirements in IWA–2300 and therefore, addressed the intent of the conditions in § 50.55a(b)(2)(viii)(F) of the current regulations. Therefore, the condition in redesignated § 50.55a(b)(2)(iv)(F) is not required to be applied for licensees using Subsection IWL, 2007 Edition with the 2008 Addenda. It is noted that the NRC's acceptance of the new code provision IWL–2320, "Personnel Qualifications," is based on paragraph IWL–2320 of the 2007 Edition as supplemented by the addition by errata in the 2008 addenda.

The condition in redesignated § 50.55a(b)(2)(iv)(G) of the proposed rule requires that corrosion protection material be restored following concrete containment post-tensioning system repair and replacement activities in accordance with the quality assurance program requirements specified in IWA–1400." In the 2007 Edition of Subsection IWL, the following revisions were made related to corrosion protection medium for post-tensioning systems:

1. The revised paragraph IWL 4110 added footnote 1 which states that the corrosion protection medium is exempt from the requirements of IWL–4000. However, corrosion protection medium must be restored in accordance with IWL–2526 following concrete containment post-tensioning system repair/replacement activities.

2. The revised Line Item L2.40 "Corrosion Protection Medium" of Table IWL–2500–1 added reference to paragraph IWL–2526 in the columns for Test or Examination Requirement, Test or Examination Method, and Extent of Examination.

3. In the revised paragraph IWL–2526, subparagraph (b) requires that following the completion of tests and examinations required by Examination Category L–B, Items L2.10, L.2.20, and L2.30, the corrosion protection medium must be replaced to ensure sufficient coverage of anchorage hardware, wires, and strands. The total amount replaced in each tendon sheath must be recorded and differences between amount removed and amount replaced must be documented.

4. In the revised paragraph IWL–2526, subparagraph (d) requires that the Responsible Engineer specify the method for corrosion protection medium.

With the understanding that the Responsible Engineer (who per IWL–2320 is a Registered Professional Engineer) will ensure that the corrosion protection medium is restored in accordance with the applicable Quality Assurance Program, the revised paragraphs IWL–4110(b)(3) [with footnote 1] and IWL–2526, and revised line item L2.40 in Table IWL–2500–1 of Subsection IWL, 2007 Edition through the 2008 Addenda adequately incorporated the intent of the condition in § 50.55a(b)(2)(viii)(G) of the current regulations and is acceptable to the NRC. Therefore, the condition in redesignated § 50.55a(b)(2)(iv)(G) is not required to be applied for licensees using Subsection IWL, 2007 Edition through the 2008 Addenda.

10 CFR 50.55a(b)(2)(ix) Examination of Metal Containments and the Liners of Concrete Containments (Current); 10 CFR 50.55a(b)(2)(v) (Redesignated)

The NRC proposes to redesignate § 50.55a(b)(2)(ix) as § 50.55a(b)(2)(v). This paragraph stipulates the conditions that apply to the inservice examination of metal containments and liners of concrete containments using Subsection IWE of various editions and addenda of the ASME B&PV Code, Section XI, incorporated by reference in § 50.55a(b)(2). The NRC proposes to remove the conditions in newly redesignated § 50.55a(b)(2)(v)(F), (b)(2)(v)(G), (b)(2)(v)(H) and (b)(2)(v)(I) when applying the 2004 Edition with 2006 Addenda through the 2007 Edition with 2008 Addenda of the ASME Code, Section XI because these conditions have now been incorporated into the Code. The NRC further proposes to remove the condition in redesignated § 50.55a(b)(2)(v)(I) when applying the 2004 Edition, up to and including, the 2005 Addenda. The NRC also proposes to add a new condition as § 50.55a(b)(2)(v)(J) on the use of Article IWE–5000 of Subsection IWE when applying the 2007 Edition, up to and including the 2008 Addenda of the ASME Code, Section XI. These proposed changes are further explained in this document.

The current regulations, in part, require that licensees applying Subsection IWE, 1998 Edition through the 2004 Edition apply the conditions in § 50.55a(b)(2)(ix)(A), (b)(2)(ix)(B), and (b)(2)(ix)(F) through (b)(2)(ix)(I). In the proposed rule, the conditions in newly redesignated § 50.55a(b)(2)(v)(F) through (b)(2)(v)(I) would remain applicable to licensees applying Subsection IWL, 1998 Edition through the 2001 Edition with the 2003 Addenda. As a minor correction to the current regulations, the proposed rule would require that licensees applying Subsection IWE of the 2004 Edition through the 2005 Addenda of the ASME B&PV Code, satisfy the requirements of newly redesignated § 50.55a(b)(2)(v)(A), (b)(2)(v)(B), and (b)(2)(v)(F) through (b)(2)(v)(H). This correction is being made since paragraph IWE–3511.3 of the 2004 Edition of the ASME B&PV Code incorporated the condition in newly redesignated § 50.55a(b)(2)(v)(I), which requires that the ultrasonic examination acceptance standard specified in IWE–3511.3 for Class MC pressure-retaining components must also be applied to metallic liners of Class CC pressure-retaining components. Further, the proposed rule would require that licensees applying Subsection IWE, 2004 Edition with the 2006 Addenda through the latest edition and addenda incorporated by reference in § 50.55a(b)(2) satisfy the requirements of newly redesignated § 50.55a(b)(2)(v)(A) and (b)(2)(v)(B). This is because the intent of the conditions in newly redesignated § 50.55a(b)(2)(v)(F) through (b)(2)(v)(H) were incorporated into Subsection IWE, 2004 Edition with the 2006 addenda, and the condition in newly redesignated § 50.55a(b)(2)(v)(I) was incorporated into Subsection IWE, 2004 Edition, as explained in this document.

The condition in redesignated § 50.55a(b)(2)(ix)(F) of the proposed rule requires that VT–1 and VT–3 examinations be conducted in accordance with IWA–2200. Personnel conducting examinations in accordance with the VT–1 or VT–3 examination method must be qualified in accordance with IWA–2300, and the "owner-defined" personnel qualification provisions in IWE–2330(a) for personnel that conduct VT–1 and VT–3 examinations are not approved for use. This condition defines the code provision (IWA–2200) and personnel qualification (IWA–2300) requirements for personnel performing visual examinations by the VT–1 or VT–3 method, as specified in the conditions in redesignated § 50.55a(b)(2)(v)(G) and (b)(2)(v)(H) of the proposed rule. The condition does not allow use of the "owner-defined" personnel qualification provisions in IWA–2330(a) for personnel that conduct VT–1 and VT–3 examinations. The revised code provision in IWE–2330(a) of the 2006 Addenda requires that personnel performing VT–1 and VT–3 visual examinations shall meet the qualification requirements of IWA–2300. The revised code provision in IWL–2100 of the 2006 Addenda states that IWA–2000 applies with the exception that IWA–2210 and IWA–

2300 do not apply to general visual examination only (except as required by 2330(b) for vision test requirements). Therefore, the code provisions in IWA–2200 and IWA–2300 will apply to VT–1 and VT–3 examinations. Thus, the revised code provisions in IWE–2330(a) and IWE–2100 of the 2006 through 2008 Addenda fully incorporates the condition in newly redesignated § 50.55a(b)(2)(v)(F). Therefore, the condition in newly redesignated § 50.55a(b)(2)(v)(F) is not required to be applied for licensees using Subsection IWE, 2004 Edition with the 2006 Addenda and the 2007 Edition through the 2008 Addenda.

The condition in redesignated § 50.55a(b)(2)(v)(G) of the proposed rule requires that the VT–3 examination method be used to conduct the examinations in Items E1.12 and E1.20 of Table IWE 2500–1, and the VT–1 examination method be used to conduct the examination in Item E4.11 of Table IWE–2500–1. An examination of the pressure-retaining bolted connections in Item E1.11 of Table IWE–2500–1 using the VT–3 examination method must be conducted once each interval. The "owner-defined" visual examination provisions in IWE–2310(a) are not approved for use for VT–1 and VT–3 examinations. This condition, applicable in the current regulations to the 1998 Edition through the 2004 Edition, requires that the VT–3 and VT–1 examination methods be used in lieu of the "General Visual" and "Detailed Visual" methods, respectively, as specified in Table IWE–2500–1 for the Item Numbers listed in the condition, and that the owner-defined visual examination provisions in IWE–2310(a) cannot be used for VT–1 and VT–3 examinations. In the 2006 Addenda through the 2008 Addenda, Table IWE–2500–1 was revised to change the examination method for Item Numbers E1.12 and E1.20 to the VT–3 method and for Item E4.11 to the VT–1 method. Also, a new Examination Category E–G was added for pressure-retaining bolting with Item No. E8.10 which requires 100 percent of each bolted connection to be examined, using the VT–1 method and the acceptance standard in the newly added paragraph IWE–3530, once during each Inspection Interval with the connection assembled and bolting in-place, provided the connection is not disassembled during the interval, or in the disassembled configuration if the connection is disassembled for any reason during the interval. This VT–1 examination, which is more stringent than the VT–3 method specified in the condition, is in addition to the general visual examination of 100 percent of the pressure-retaining bolted connections during each inspection period required to be performed under Item No. E1.11 of Table IWE–2500–1. Further, the revised IWL–2310 does not have any owner-defined provisions for performing visual examinations including VT–1 and VT–3 examinations. Thus, the provisions in the revised Table IWE–2500–1 and the revised paragraph IWE–2310 addressed the intent of the condition in newly redesignated § 50.55a(b)(2)(v)(G). Therefore, the condition in newly redesignated § 50.55a(b)(2)(v)(G) is not required to be applied for licensees using Subsection IWE, 2004 Edition with the 2006 Addenda and the 2007 Edition through the 2008 Addenda.

The condition in redesignated § 50.55a(b)(2)(v)(H) of the proposed rule requires that containment bolted connections that are disassembled during the scheduled performance of the examinations in Item E1.11 of Table IWE–2500–1 be examined using the VT–3 examination method. Flaws or degradation identified during the performance of a VT–3 examination must be examined in accordance with the VT–1 examination method, and the criteria in the material specification or IWB 3517.1 must be used to evaluate containment bolting flaws or degradation. As an alternative to performing VT–3 examinations of containment bolted connections that are disassembled during the scheduled performance of Item E1.11, VT–3 examinations of containment bolted connections may be conducted whenever containment bolted connections are disassembled for any reason. The condition in newly redesignated § 50.55a(b)(2)(v)(H) is similar to the condition for bolted connections in newly redesignated § 50.55a(b)(2)(v)(G), but applies only to examination of pressure-retaining bolted connections that are disassembled. The condition requires flaws or degradation identified during the VT–3 examination to be examined using the VT–1 method. The NRC notes that the VT–1 (and not VT–3) examination method is the method specified in the new Item E8.10 for pressure-retaining bolted connections in the revised Table IWE–2500–1 in the 2006 Addenda through 2008 Addenda of the ASME B&PV Code. Further, the acceptance standard for the VT–1 examination of pressure-retaining bolting in the new paragraph IWE–3530 requires that the relevant conditions, as defined in IWA–9000, and listed in IWB–3517.1, shall be corrected or evaluated to meet the requirements of IWE–3122, prior to continued service. Therefore, the new provision for pressure-retaining bolting in Table IWE 2500–1, as discussed in this document, and the new acceptance standard specified in IWE–3530, as discussed in this document, fully addressed the intent of the condition in newly redesignated § 50.55a(b)(2)(v)(H). Therefore, the condition in newly redesignated § 50.55a(b)(2)(v)(H) is not required to be applied for licensees using Subsection IWE, 2004 Edition with the 2006 Addenda and the 2007 Edition through the 2008 Addenda.

The condition in redesignated § 50.55a(b)(2)(ix)(I) of the proposed rule requires that the ultrasonic examination acceptance standard specified in IWE–3511.3 for Class MC pressure-retaining components also be applied to metallic liners of Class CC pressure-retaining components. This condition requires that the acceptance standard in IWE–3511.3 also apply to the metallic shell and penetration liners of Class CC pressure-retaining components in the re-designated paragraph IWE–3522, "Ultrasonic Examination," in the 2004 Edition through the 2007 Edition and 2008 Addenda. Therefore, the condition in newly redesignated § 50.55a(b)(2)(v)(I) is not required to be applied for licensees using Subsection IWE, 2004 Edition through the 2007 Edition and the 2008 Addenda.

Although the revised paragraph IWE–2310 (IWE–2313 to be specific) and new subparagraphs IWE–2420(c) and IWE–2500(d), in the 2006 Addenda through the 2008 Addenda, address the condition in newly redesignated § 50.55a(b)(2)(v)(A) of the proposed rule with regard to requiring evaluation of acceptability of inaccessible areas when conditions exists in accessible areas that could indicate the presence or result in degradation to such inaccessible areas, the NRC has retained the condition in the proposed rule, since the information specified in the condition to be provided in the ISI Summary Report are not explicitly addressed in the ASME B&PV Code.

10 CFR 50.55a(b)(2)(v)(J) (New)

The NRC proposes to add a new § 50.55a(b)(2)(v)(J) to place a condition on the use of Article IWE–5000, "System Pressure Tests," of Subsection IWE when applying the 2007 Edition up to and including the 2008 Addenda of the ASME Code, Section XI. The revised Article IWE–5000 does not make a distinction between "major" and "minor" modification (or repair/replacement) with regard to the type of pneumatic leakage tests specified following repair/replacement activities. It requires a pneumatic leakage test to be performed

following welding or brazing associated with repair or replacement activities, prior to returning the component to service. However, it allows a licensee the option of only performing a local bubble test even for a "major" containment modification or repair/replacement. Following "major" containment repair/replacement activities, it makes the performance of the appropriate pneumatic leakage test (which is a Type A test) in accordance with 10 CFR part 50, appendix J, optional, and hence the NRC proposes to add a new condition in this rule. It is the NRC's position that a 10 CFR part 50, appendix J, Type A test or alternatively, a short duration structural test, must be performed following a "major" containment modification or repair/replacement, prior to returning the containment to operation. This is because a "major" containment modification such as the replacement of a large penetration or the creation of large construction opening(s) for equipment replacement results in the breach of the containment pressure boundary that invalidates the periodic verification of structural and leak tight integrity provided by the previous Type A test as required by the Containment Leakage Rate Testing Program in 10 CFR part 50, appendix J. Further, the breach of pressure boundary of the magnitude resulting from a "major" containment modification has a global effect on containment structural integrity and not a localized effect. Therefore, performing a Type A test or an alternate short duration structural test, prior to returning to operation, is necessary to provide a reasonable assurance and verification of containment structural and leakage integrity following restoration of a breach in the containment pressure boundary due to a "major" repair/replacement activity. Thus, the new condition in § 50.55a(b)(2)(v)(J) of the proposed rule will require the performance of Type A test, or short duration structural test, following a "major" containment modification.

The proposed new condition would provide a general, qualitative definition of what constitutes a "major" modification or repair/replacement activity for containments. The proposed condition would also define the combination of actions that would constitute an acceptable, alternate short-duration structural test that may be performed in lieu of a Type A test following a major containment modification. These proposed requirements to perform a Type A test, or alternate short-duration structural test, following a "major" containment modification are consistent with the NRC's position and condition in Section 4.1.4 and Section 3.1.4 of the Final Safety Evaluation by the Office Of Nuclear Reactor Regulation dated June 25, 2008 (ADAMS No. ML081140105), on Topical Report NEI 94–01, Revision 2, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J." The new condition would also require that, when applying IWE–5000, if a Type A, B or C test is performed in accordance with 10 CFR part 50, appendix J, the acceptance standard for the test shall also be in accordance with 10 CFR part 50, appendix J. This is because the acceptance standard for leakage in IWE–5223.5 is based only on Section V, Article 10, for any pneumatic leakage test performed when applying IWE–5000 of the 2007 Edition up to and including the 2008 Addenda of Section XI of the ASME Code. The requirement in the new condition for performing a Type A test or an alternate short duration structural test, prior to returning to operation following a major containment modification, is necessary to provide a reasonable assurance and verification of containment structural and leakage integrity following restoration of a breach in the containment pressure boundary due to the "major" repair/replacement activity.

10 CFR 50.55a(b)(2)(xv) Appendix VIII Specimen Set and Qualification Requirements (Current); 10 CFR 50.55a(b)(2)(xi) (Redesignated)

The NRC proposes to redesignate § 50.55a(b)(2)(xv) as § 50.55a(b)(2)(xi) and revise the current regulations so the current conditions in that paragraph would not apply to the 2007 Edition through the 2008 Addenda of Section XI of the ASME B&PV Code. The current regulation has conditions that may be used to modify Appendix VIII of Section XI, 1995 Edition through the 2001 Edition. The ASME Boiler and Pressure Vessel Code Committees took action to address these conditions in the 2007 Edition of the Code and revised Appendix VIII to address the NRC's concerns with specimen sets and qualification requirements. Therefore, the conditions are not required when using the 2007 Edition through the 2008 Addenda of the ASME B&PV Code, and the NRC is proposing that the current § 50.55a(b)(2)(xv) should be revised not to apply these conditions when using the 2007 Edition through the 2008 Addenda of the ASME B&PV Code.

10 CFR 50.55a(b)(2)(xviii) Certification of NDE Personnel (Current); 10 CFR 50.55a(b)(2)(xiv) (Redesignated)

The NRC proposes to redesignate § 50.55a(b)(2)(xviii)(B) as § 50.55a(b)(2)(xiv)(B) and revise the current regulations so the current condition in that paragraph would not apply to the 2007 Edition through the 2008 Addenda of Section XI of the ASME B&PV Code. Section 50.55a(b)(2)(xviii)(B) in the current regulations limits the activities that can be performed by NDE personnel certified in accordance with IWA–2316 of the 1998 Edition through the 2004 Addenda of the ASME B&PV Code. These personnel are limited to observing for leakage during system leakage and hydrostatic tests conducted in accordance with IWA–5211(a) and (b). The ASME Boiler and Pressure Vessel Code Committees took action to address this, and modified IWA 2316 in the 2005 Addenda and the 2007 Edition to limit the activities performed by personnel qualified in accordance with IWA–2316. Therefore, the condition is not required when using the 2007 Edition through the 2008 Addenda. Accordingly, the NRC is proposing that the current § 50.55a(b)(2)(xviii)(B) be revised for this condition not to apply when using the 2007 Edition through the 2008 Addenda of the ASME B&PV Code.

The NRC proposes to redesignate § 50.55a(b)(2)(xviii)(C) as § 50.55a(b)(2)(xiv)(C) and revise the current requirement so the current condition in that paragraph would not apply to the 2005 Addenda through the 2008 Addenda of Section XI of the ASME B&PV Code. This paragraph in the current regulations places conditions on the qualification of VT–3 examination personnel certified under paragraph IWA–2317 of the 1998 Edition through the 2004 Addenda. The regulation requires the administering of an initial qualification examination to demonstrate proficiency of this training, and administering subsequent examinations on a 3-year interval. The ASME Boiler and Pressure Vessel Code Committees took action to address this condition and modified IWA–2317 in the 2005 Addenda of the ASME B&PV Code to require a written examination for initial qualification and at least every 3 years thereafter for VT–3 qualification. Therefore, the condition is not required when using the 2005 Addenda through the 2008 Addenda.

10 CFR 50.55a(b)(2)(xix) Substitution of Alternative Methods (Current); 10 CFR 50.55a(b)(2)(xv) (Redesignated)

The NRC proposes to redesignate § 50.55a(b)(2)(xix) as § 50.55a(b)(2)(xv) and revise the current regulations so the current conditions for the substitution of alternative examination methods in that paragraph would not apply when using the 2005 Addenda through the 2008 Addenda. The conditions in current § 50.55a(b)(2)(xix) do not allow the use of Section XI, IWA 2240 of the 1998 Edition through the 2004 Edition of the ASME B&PV Code. These conditions also do not allow the use of IWA–4520(c) of the 1997 Addenda through the 2004 Edition of Section XI of the ASME B&PV Code. In 2005, the ASME Boiler and Pressure Vessel Code Committees took action to address these conditions and modified IWA–2240 and deleted IWA–4520(c) in the 2005 Addenda, such that, alternative examination methods or newly developed techniques are not allowed to be substituted for the methods specified in the construction code. Therefore, these conditions are not required when using the 2005 Addenda through the 2008 Addenda.

In newly redesignated § 50.55a(b)(2)(xv), the NRC is also proposing to impose the condition that paragraphs IWA–4520(b)(2) and IWA–4521 of the 2007 Edition of Section XI, Division 1, of the ASME B&PV Code, with the 2008 Addenda are not approved for use. In the 2008 Addenda of Section XI of the ASME B&PV Code, the ASME added new provisions in IWA 4520(b)(2) and IWA–4521 that allow the substitution of ultrasonic examination (UT) for radiographic examination (RT) specified in the Construction Code. Substitution of UT for RT as addressed in paragraph IWA–4520(b)(2) of the ASME B&PV Code, Section XI, for the repair/replacement welds in 2008 Addenda is of a concern to the NRC because, depending on flaw type (*i.e.,* volumetric or planar) and orientation, UT and RT are not equally effective for flaw detection and characterization. The NRC had originally identified concerns relative to the calibration blocks to be used, and developed two conditions that appear in Regulatory Guide 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III, Proposed Revision 34."

RT is effective in detecting volumetric-type flaws (*e.g.,* slag, porosity, root concavity, and misalignment), planar type flaws with large openings (*e.g.,* lack of fusion and large cracks in high stressed areas), and those flaws that are oriented in a plane parallel to the X-ray beam. RT is effective in all materials common to the nuclear industry for detecting the type of flaws generated during construction, due to workmanship issues and, therefore, ensures an acceptable level of weld quality and safety at the time of construction. In contrast, UT is most effective in detecting and sizing planar-type flaws associated with inservice degradation due to, for example, fatigue or stress corrosion cracking. Significant advances have recently been made regarding the use of UT to detect flaws in cast stainless steel. However, the ASME Code provisions addressing the inspection of cast stainless steels are still under development and are, therefore, not yet published for use. Finally, UT requires more surface scanning area than RT to perform examinations.

To ensure that a UT technique would be capable of detecting typical construction flaws, the NRC would require a licensee to demonstrate, through performance-based ASME B&PV Code, Section XI, Appendix VIII-like requirements, its capability of identifying the construction flaws which are easily detected by RT. Performance-based qualifications require demonstrations on mockups having flaws with realistic UT responses and with a statistically sufficient number of representative flaws and non-flawed volumes to establish procedure effectiveness and personnel skill. The statistical approach to qualification has been shown to improve the reliability of inspections, to improve the probability of flaw detection, and to reduce the number of false calls. The addition of only two or three construction flaws to a demonstration is not sufficient to capture the variety of flaws common to construction or to statistically evaluate procedure effectiveness and personnel skills.

The NRC is concerned that using the second leg of the ultrasound metal path (V-path) to achieve two direction scanning from only one side of the weld may not be adequate in detecting construction flaws. Single side examinations have not been demonstrated for construction flaws for any material. Single side examinations of welds have been successfully qualified for planar flaws in ferritic carbon and low alloy steels but have not been reliably demonstrated for austenitic stainless steel and nickel alloys.

Based on this information, the NRC concludes that the substitution of UT for RT may not be adequate for detecting some construction flaws, specifically in single-V full penetration groove welds. Therefore, substitution of UT for RT is not generically acceptable. This position is consistent with the NRC's previous position with respect to the review of ASME Code Case N–659–1, which is published in Regulatory Guide 1.193, Revision 2, "ASME Code Cases not Approved for Use." Accordingly, the NRC proposes to impose the condition that paragraphs IWA–4520(b)(2), and IWA–4521 of the 2007 Edition of Section XI, Division 1, with 2008 Addenda are not approved for use.

10 CFR 50.55a(b)(2)(xxiv) Incorporation of the Performance Demonstration Initiative and Addition of Ultrasonic Examination Criteria (Current); 10 CFR 50.55a(b)(2)(xx) (Redesignated)

The NRC proposes to redesignate § 50.55a(b)(2)(xxiv) as § 50.55a(b)(2)(xx) and revise the current regulations not to apply the current condition when using the 2007 Edition through the 2008 Addenda. Current § 50.55a(b)(2)(xxiv) prohibits the use of Appendix VIII, the supplements of Appendix VIII and Article I–3000 of ASME B&PV Code, 2002 Addenda through the 2004 Edition. In 2007, the ASME Boiler and Pressure Vessel Code Committees took action to address this condition and modified Appendix VIII and its Supplements in the 2007 Edition. Therefore, the condition is not required when using the 2007 Edition through the 2008 Addenda, and the NRC proposes to eliminate this condition when using the 2007 Edition through the 2008 Addenda.

10 CFR 50.55a(b)(2)(xxvii) Removal of Insulation (Current); 10 CFR 50.55a(b)(2)(xxii) (Redesignated)

The NRC proposes to redesignate § 50.55a(b)(2)(xxvii) as § 50.55a(b)(2)(xxiii) and revise the paragraph to refer to IWA–5242 of the 2003 Addenda through the 2006 Addenda or IWA–5241 of the 2007 Edition through the 2008 Addenda of Section XI of the ASME B&PV Code for performing VT–2 visual examination of insulated components in systems borated for the purpose of controlling reactivity. The current regulations at § 50.55a(b)(2)(xxvii) place specific requirements on when insulation must be removed to visually examine insulated components in accordance with IWA–5242. In the 2007 Edition of the ASME B&PV Code, Section XI, paragraph IWA–5242 was deleted and these requirements were included in paragraph IWA–5241.

10 CFR 50.55a(b)(2)(xxiv) Analysis of Flaws (New)

The NRC proposes to add a new § 50.55a(b)(2)(xxiv) to place conditions on the use of Section XI, Nonmandatory Appendix A, "Analysis of Flaws." The proposed regulation would place a condition on the use of Appendix A related to the fatigue crack growth rate calculation for subsurface flaws defined in paragraph A–4300(b)(1) when the ratio of the minimum cyclic stress to the maximum cyclic stress (R) is less than zero. The fatigue crack growth rate, da/dN, is defined as follows when using Equation (1) in paragraph A–4300(a) and Equation (2) in paragraph A–4300(b)(1):

$da/dN = 1.99 \times 10^{-10}$ S $(\Delta K_I)^{3.07}$, where S is a scaling parameter and ΔK_I is the range of applied stress intensity factor

S and ΔK_I are defined in A–4300(b)(1) of the ASME B&PV Code, Section XI, Appendix A as follows:

For $-2 \le R \le 0$ and $K_{max} - K_{min} \le 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = K_{max}$

For $R < -2$ and $K_{max} - K_{min} \le 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = (1–R)\ K_{max}/3$

For $R < 0$ and $K_{max} - K_{min} > 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = K_{max}—K_{min}$

The above guidelines permit reduction of ΔK_I from the value of $(K_{max} - K_{min})$ when $K_{max} - K_{min} \le 1.12\ \sigma_f \sqrt{(\pi a)}$. This is adequate if the material property σ_f is from test-based data of the component material and if the geometry of the cracked component can be modeled as an edge crack in a half plane, so that the formula $K = 1.12\ \sigma \sqrt{(\pi a)}$ applies. In most ASME B&PV Code, Section XI, Appendix A applications, test-based σ_f is not available, and the generic value from the ASME B&PV Code tabulations is used. Further, the geometry of a subsurface flaw in a plate differs significantly from the model of an edge crack in a half plane. Consequently, for the case where full ΔK_I should be used, the calculation in accordance with ASME B&PV Code, Section XI, Appendix A may show that $K_{max} - K_{min} \le 1.12\ \sigma_f \sqrt{(\pi a)}$ and prompt a wrongful reduction of ΔK_I.

To address the use of the generic σ_f value instead of the test-based value for the cracked component and the significant difference between the cracked component geometry and the cracked test-specimen geometry on which the criterion of $1.12\ \sigma_f \sqrt{(\pi a)}$ is derived, the NRC proposes to revise the criterion of $1.12\ \sigma_f \sqrt{(\pi a)}$ to 0.8 times $1.12\ \sigma_f \sqrt{(\pi a)}$. By doing so, reduction of ΔK_I will not take place during the range of $K_{max} - K_{min}$ from $0.8 \times 1.12\ \sigma_f \sqrt{(\pi a)}$ to $1.12\ \sigma_f \sqrt{(\pi a)}$, erasing the non-conservatism from the two sources mentioned above. Selection of a multiplying factor of 0.8 is based on the following:

- The 10 percent error that could be introduced for the subsurface flaw configurations having membrane stress correction factors less than 1.12 as indicated in Appendix A, Figure A–3310–1, and
- Another 10-percent error that accounts for the uncertainty in the σ_f value.

Applying the revised criterion of $0.8 \times 1.12\ \sigma_f \sqrt{(\pi a)}$, results in the proposed following condition on the use of the fatigue crack growth rate calculation for subsurface flaws defined in paragraph A–4300(b)(1) of Section XI, Nonmandatory Appendix A when R is less than zero:

$da/dN = 1.99 \times 10^{-10}$ S $(\Delta K_I)^{3.07}$

For $R < 0$, ΔK_I depends on the crack depth, a, and the flow stress, σ_f. The flow stress is defined by $\sigma_f = ½(\sigma_{ys} + \sigma_{ult})$, where σ_{ys} is the yield strength and σ_{ult} is the ultimate tensile strength in units ksi (MPa) and a is in units in. (mm).

For $-2 \le R \le 0$ and $K_{max} - K_{min} \le 0.8 \times 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = K_{max.}$

For $R < -2$ and $K_{max} - K_{min} \le 0.8 \times 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = (1–R)\ K_{max}/3$.

For $R < 0$ and $K_{max} - K_{min} > 0.8 \times 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = K_{max} - K_{min.}$

10 CFR 50.55a(b)(2)(xxv) Evaluation of Unanticipated Operating Events (New)

The NRC proposes to add a new § 50.55a(b)(2)(xxv) to condition the use of ASME B&PV Code, Section XI, Nonmandatory Appendix E, "Evaluation of Unanticipated Operating Events." Appendix E provides acceptance criteria and guidance evaluating the effects of out-of-limit conditions on structural integrity of the reactor vessel beltline region. The NRC proposes to specify that Section E–1200 is not acceptable, and to set forth two conditions on the use of Section E–1300. One proposed condition would require that a 1/4T flaw be used in the linear elastic fracture mechanics (LEFM) evaluation with a margin of 1.4 applying to K_{Im} in the two LEFM criteria. The other proposed condition would also use K_{Ic} instead of K_{IR} in the Appendix E analysis.

Appendix E of the ASME B&PV Code, Section XI, addresses the evaluation of the structural integrity of the reactor pressure vessel (RPV) after an out-of-limit condition occurs using LEFM based on a postulated surface flaw. The underlying Appendix E methodology is based on the following two LEFM criteria:

$1.6(K_{Im}) + K_{Ir} = K_{Ic}$ for the low temperature overpressure (LTOP) condition

$1.6(K_{Im} + K_{It}) + K_{Ir} = K_{Ic}$, for the pressurized thermal transient (PTT) condition

Where K_{Im}, K_{Ir}, and K_{It} are the applied primary, residual, and thermal stresses, respectively, and K_{Ic} is plane-strain fracture toughness. Both are based on a postulated flaw of 1-inch in depth. The details regarding these criteria are documented in the Electric Power Research Institute's (EPRI) report NP–5151, "Evaluation of Reactor Vessel Beltline Integrity Following Unanticipated Operating Events," dated April 1987. The justification for selecting the 1-inch deep flaw is given in the EPRI report as follows:

The crack size range has an upper limit of one inch. Experience shows that the fabrication practice and inspection requirements for nuclear pressure vessels generally preclude the undetected presence of larger flaws.

The above qualitative justification for selecting the 1-inch depth for the postulated flaw is not sufficient. The ASME B&PV Code, Section XI, Appendix G, "Fracture Toughness Criteria for Protection Against Failure," analysis, which can be considered as the first "screening" criterion for safe operation of an RPV, is based on a postulated flaw of one-quarter of the RPV wall thickness (1/4T). The Section XI, Appendix E analysis is employed when the ASME B&PV Code, Appendix G requirements are exceeded due to an out-of-limit condition. Hence, it is considered as the second "screening" criterion, *i.e.,* once satisfied, a refined analysis or a special RPV inspection is not needed. As the second screening tool, the Section XI, Appendix E analysis has to be conservative. In addition, the following three concerns prompt the NRC to propose the use of a 1/4T flaw in the Appendix E, Section E–1300 analysis:

- In the probabilistic fracture mechanics (PFM) analyses supporting the proposed PTS rule, the truncated flaw depth for a repair weld flaw is 2 inches. For a deterministic analysis, the possibility of having a repair weld flaw line up with a clad flaw to become a surface flaw cannot be ruled out.
- The Pressure Vessel Research User's Facility (PVRUF) and Shoreham RPV flaw data, used to develop generic flaw distributions for the proposed PTS rule, identified flaws that were consistently smaller than the proposed bounding flaw. However, the PVRUF and Shoreham data represent only a limited sampling of all RPV welds and may not directly provide an adequate bounding flaw size for a deterministic analysis like that of ASME B&PV Code, Section XI, Appendix E.
- The use of a 1/4T flaw assumption also provides additional assurance that

any service-induced growth of current fabrication flaws will be bounded for any RPVs having experienced severe transients over the course of their operating lifetimes.

Requiring that a 1/4T flaw be used in the LEFM evaluation with a margin of 1.4 applying to K_{Im} in the two LEFM criteria establishes a consistent approach regarding the postulated flaw size in the two deterministic LEFM analyses in ASME B&PV Code, Section XI, Appendices E and G. Applying the margin of 1.4 only to K_{Im} is consistent with the ASME B&PV Code, Section XI, Appendix G approach, making the decreased margin between the two appendices traceable. The proposed use of a smaller margin of 1.4 in the ASME B&PV Code, Section XI, Appendix E analysis is justified because all significant stress intensity factors resulting from an actual transient are considered. Further, using a 1/4T flaw is also consistent with prior NRC approaches for evaluation of RPV structural integrity after out-of-limit events. The EPRI NP–5151 report mentioned that reference toughness K_{IR} has been used in the LEFM evaluation in the prior NRC evaluation of RPV structural integrity after out-of-limit events. Consistent with the evolution of the ASME B&PV Code, Section XI, Appendix G analysis, the NRC now proposes to use K_{Ic} instead of K_{IR} in the ASME B&PV Code, Section XI, Appendix E analysis.

10 CFR 50.55a(b)(2)(xxvi) Risk-Informed Inservice Inspection (New)

The NRC proposes to add a new condition in § 50.55a(b)(2)(xxvi) to condition the use of ASME B&PV Code, Section XI, Non-Mandatory Appendix R, "Risk-Informed Inspection Requirements of Piping." The proposed condition would require licensees to submit an alternative in accordance with § 50.55a(a)(3) and obtain NRC authorization of the proposed alternative prior to implementing Appendix R, RI–ISI programs. The 2004 Edition of the ASME B&PV Code, Section XI currently incorporated by reference in the regulations did not contain provisions for Risk-Informed Inservice Inspection (RI–ISI). The 2005 Addenda introduced Non-Mandatory Appendix R into Section XI to provide risk-informed requirements for the ISI of ASME B&PV Code Class 1, 2 and 3 piping. The addition of Appendix R to Section XI was essentially the incorporation of ASME Code Cases N–577 and N–578 into the ASME B&PV Code. The NRC determined that ASME Code Cases N–577 and N–578 were unacceptable for use and are currently listed in Regulatory Guide 1.193,"ASME Code Cases Not Approved for Use," Revision 2. Licensees have been implementing RI–ISI requirements for piping as an alternative to the ASME B&PV Code, Section XI requirements of Tables IWB–2500–1, IWC–2500–1 and IWD–2500–1 submitted in accordance with § 50.55a(a)(3). Adding a condition as § 50.55a(b)(2)(xxvi) that would require licensees to submit an alternative in accordance with § 50.55a(a)(3) and obtain NRC authorization of the proposed alternative prior to implementing Appendix R, RI–ISI programs would ensure that future RI–ISI programs continue to comply with RG 1.178, "An Approach for Plant-Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping," RG1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," and NRC Standard Review Plan 3.9.8, "Risk-Informed Inservice Inspection of Piping."

ASME OM Code

The proposed amendment would revise the introductory text in § 50.55a(b)(3) to incorporate by reference the 2005 and 2006 Addenda of the ASME OM Code into 10 CFR 50.55a. The proposed amendment to § 50.55a(b)(3) would also clarify that Subsections ISTA, ISTB, ISTC, and ISTD, Mandatory Appendices I and II, and Nonmandatory Appendices A through H and J of the ASME OM Code would be incorporated by reference.

The conditions in § 50.55a(b)(3)(i), (b)(3)(ii), and (b)(3)(iv) would continue to apply to the 2005 and 2006 Addenda because the earlier ASME B&PV Code provisions that these regulations are based on were not revised in the 2005 and 2006 Addenda of the ASME B&PV Code to address the underlying issues which led the NRC to impose the conditions on the ASME B&PV Code.

The NRC proposes to revise the current requirements in § 50.55a(b)(3)(v) to be consistent with the revised snubber ISI provisions in the 2006 Addenda of the ASME B&PV Code, Section XI. To accomplish this § 50.55a(b)(3)(v) will be divided into § 50.55a(b)(3)(v)(A) and § 50.55a(b)(3)(v)(B). Where § 50.55a(b)(3)(v)(A) allows licensees using editions and addenda up to the 2005 Addenda of ASME Section XI to optionally use Subsection ISTD, ASME OM Code in place of the requirements for snubbers in Section XI. Section 50.55a(b)(3)(v)(B) would require licensees using the 2006 Addenda and later editions and addenda of Section XI to follow the requirements of Subsection ISTD of the ASME OM Code for snubbers. Provisions for the ISI of snubbers have been in Subsection ISTD since the ASME OM Code was first issued in 1990.

10 CFR 50.55a(b)(3)(v) Subsection ISTD

The current requirement in § 50.55a(b)(3)(v) allows licensees using editions and addenda up to the 2004 Edition of the ASME B&PV Code, Section XI to optionally use Subsection ISTD, ASME OM Code in place of the requirements for snubbers in Section XI, and states that snubber preservice and inservice examinations must be performed using the VT–3 visual examination method when using Subsection ISTD of the ASME OM Code. The NRC previously imposed this requirement to ensure that an appropriate visual examination method was used for the inspection of integral and non-integral snubber attachments, such as lugs, bolting, and clamps when using Subsection ISTD of the ASME OM Code. The proposed § 50.55a(b)(3)(v)(A) allows licensees using editions and addenda up to the 2005 Addenda of ASME B&PV Code, Section XI to optionally use Subsection ISTD, ASME OM Code in place of the requirements for snubbers in Section XI and continues to invoke the VT–3 requirement. This option does not apply when using the 2006 Addenda and later editions and addenda of Section XI of the ASME B&PV Code. Figure IWF–1300–1 was revised in the 2006 Addenda of Section XI to clarify that integral and non-integral snubber attachments are in the scope of Section XI. Therefore, the visual examination method specified in the 2006 Addenda and later editions and addenda of Section XI applies to the examination of integral and non-integral snubber attachments. The proposed § 50.55a(b)(3)(v)(B) would require licensees using the 2006 Addenda and later editions and addenda of Section XI to follow the requirements of Subsection ISTD of the ASME OM Code for snubbers.

10 CFR 50.55a(b)(3)(vi) Exercise Interval for Manual Valves

The NRC proposes to revise the current requirement for exercising manual valves in § 50.55a(b)(3)(vi) to limit its application to the 1999 through 2005 Addenda of the ASME OM Code. The current requirement would not apply to the 2006 Addenda of the ASME OM Code because the earlier ASME OM Code provision that this regulation was based on was revised in the 2006

Addenda of the ASME OM Code to address the underlying issue which led to the NRC to impose the condition. The exercise interval in Subarticle ISTC–3540 for manually operated valves was revised in the 2006 Addenda of the ASME OM Code to be the same as the current requirement in § 50.55a(b)(3)(vi).

Reactor Coolant Pressure Boundary, Quality Group B Components, and Quality Group C Components

The NRC proposes to revise § 50.55a(c)(3), (d)(2), and (e)(2) to replace "but—" with "subject to the following conditions" at the end of the introductory text to each paragraph for clarity.

Inservice Testing Requirements

10 CFR 50.55a(f)(5)(iv) Requests for Relief

The NRC proposes to modify the wording of § 50.55a(f)(5)(iv) to clarify that licensees are required to submit requests for relief based on impracticality within 12 months after the expiration of the IST interval for which relief is being sought. Section 50.55a(f)(5)(iv) in the current regulations describes the licensee's responsibility to demonstrate to the satisfaction of the NRC those items determined to be impractical and discusses the timeframe for this determination. The NRC proposes to clarify § 50.55a(f)(5)(iv) to more clearly articulate the requirements for licensee action when compliance with certain code requirements is determined to be impractical. Licensees have interpreted the current language in § 50.55a(f)(5)(iv) in a number of ways, especially regarding NRC approval of their submittal within the specified timeframe. Since the licensee has little or no control over the timeliness of NRC action on their submittal, this interpretation is problematic.

Inservice Inspection Requirements

Snubber Examination and Testing

The current requirements at § 50.55a(g)(2), (g)(3)(i), (g)(3)(ii), the introductory text of (g)(4), and (g)(4)(i) and (g)(4)(ii) reference Section XI of the ASME B&PV Code for component support ISI (including snubber examination and testing) provisions. The current requirement at § 50.55a(b)(3)(v) allows licensees the option of using Subsection ISTD of the ASME OM Code in lieu of the ISI provisions for snubbers in Article IWF–5000 of Section XI. When using the 2005 Addenda to Section XI, Article IWF–5000 is required to be used with the option to use OM Code Subsection ISTD noted. In the 2006 Addenda and later editions and addenda of Section XI, the snubber requirements in Article IWF–5000 no longer exist because Article IWF–5000 was deleted in the 2006 Addenda of Section XI. Therefore, the proposed amendment would revise § 50.55a(b)(3)(v) to require that licensees use the provisions for examination and testing snubbers in Subsection ISTD of the ASME OM Code when using the 2006 Addenda and later editions and addenda of Section XI.

The NRC proposes to revise the current regulations in § 50.55a(g)(2), (g)(3)(i), (g)(3)(ii), (g)(4)(i) and (g)(4)(ii) to require that licensees use the provisions for preservice and inservice examination and testing of snubbers in Subsection ISTD of the ASME OM Code when using the 2006 Addenda and later edition of Section XI. Licensees may also use optional code cases in RG 1.192 as approved by the NRC. The NRC proposes to clarify that preservice examination may meet preservice examination requirements in Section III as an alternative to preservice examination of Section XI. The NRC also proposes to revise the current regulation in the introductory text of § 50.55a(g)(4) to require that licensees using the ASME OM Code follow the provision in Subsection ISTD for examination and testing of snubbers. Provisions for examinations and tests of snubbers have been in Article IWF–5000 since Subsection IWF was first issued in the Winter 1978 Addenda of Section XI. Article IWF–5000 was deleted in the 2006 Addenda of Section XI. Subarticle IWF–1220 in the 2006 Addenda of Section XI states that the examination and testing requirements for snubbers are now outside the scope of Section XI, and that the examination and test requirements for snubbers can be found in Subsection ISTD of the ASME OM Code. Provisions for the examination and testing of snubbers have been in Subsection ISTD since the ASME OM Code was first issued in 1990.

10 CFR 50.55a(g)(4)(iii) Surface Examinations of High-Pressure Safety Injection Systems

The current regulations at § 50.55a(g)(4)(iii) give licensees the option of not performing surface examinations of high-pressure safety injection systems as specified in Section XI, Table IWB–2500–1, "Examination Category B–J," Item Numbers B9.20, B9.21 and B9.22. Later editions and addenda of Section XI have been modified and the surface examination requirement no longer exists in Table IWB–2500–1, and some of the Item Numbers have either changed or been deleted. The surface examination requirement was remove from Table IWB–2500–1 in the 2003 Addenda. Therefore, the paragraph needs to be revised for this condition to apply to those licensees using Code editions and addenda prior to the 2003 Addenda.

10 CFR 50.55a(g)(5)(iii) and (g)(5)(iv) Inservice Inspection Requests for Relief

Section 50.55a(g)(5)(iii) currently requires the licensee to notify the NRC if compliance with certain code requirements are found to be impractical. The NRC proposes to add a sentence to § 50.55a(g)(5)(iii) to clarify that a request for relief must be submitted to the NRC no later than 12 months after the examination has been attempted during a given ISI interval and the ASME B&PV Code requirement determined to be impractical. In the past, licensees have submitted requests under § 50.55a(g)(5)(iii) prior to performing the ASME B&PV Code examination in a given interval based on limited examination coverage from previous ISI 10-year intervals. The NRC has concluded that this is an inappropriate basis for a determination of impracticality as new examination techniques are often developed from one interval to the next, which could result in a reasonable expectation of improved results. As a result, the NRC has concluded that a licensee usually cannot make the determination that an examination is indeed impractical without first attempting the examination in the current ISI interval.

In addition, if the NRC were to grant relief prior to the component having been examined and the results of the examination are less than stated in the request for relief, the licensee would be required to resubmit the request for relief to address the actual examination. This places an unnecessary burden on the licensee and the NRC to review the same issue twice. The proposed amendment to the regulations attempts to clarify that the determination of impracticality should be based on actual attempts to perform a requirement and only submitted after the attempt to perform a requirement has been unsuccessful.

The NRC proposes to modify the wording of § 50.55a(g)(5)(iv) to clarify that licensees are required to submit requests for relief based on impracticality within 12 months after the expiration of the ISI interval for which relief is being sought. Section 50.55a(g)(5)(iv) in the current regulations describe the licensee's responsibility to demonstrate to the satisfaction of the NRC those items

determined to be impractical and discusses the timeframe for this determination. The NRC proposes to clarify § 50.55a(g)(5)(iv) to more clearly articulate the requirements for licensee action when compliance with certain code requirements is determined to be impractical. It is the NRC's experience that licensees have interpreted the current language in § 50.55a(g)(5)(iv) in a number of ways, especially regarding NRC approval of their submittal within the specified timeframe. Since the licensee has little or no control over the timeliness of NRC action on their submittal, this interpretation is problematic.

10 CFR 50.55a(g)(6)(ii)(E) Reactor Coolant Pressure Boundary Visual Inspections

The NRC proposes to update § 50.55a(g)(6)(ii)(E)(*1*) through (g)(6)(ii)(E)(*3*) to the requirements of Code Case N–722–1, and to revise footnote 1 to clarify requirements in that paragraph that pertain to reactor coolant pressure boundary visual inspections. In the most recent update to 10 CFR 50.55a, the NRC added new requirements in § 50.55a(g)(6)(ii)(E). The new requirements were for all licensees of PWRs to augment their ISI program by implementing ASME Code Case N–722, subject to the conditions specified in § 50.55a(g)(6)(ii)(E)(*2*) through (g)(6)(ii)(E)(*4*). ASME Code Case N–722–1, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials Section XI, Division 1," was published in Supplement 8 of the 2007 Edition of the ASME Boiler and Pressure Vessel Code Nuclear Code Case book. This revision of the code case contains one additional note which indicates that visual examination of Alloy 600/82/182 materials in flange seal leak-off lines is not required. This change will eliminate the need for licensees to submit relief requests for flange seal leak-off lines which are not normally exposed to a corrosive environment and are inaccessible for visual examination.

The wording in the second sentence of footnote 1 to § 50.55a(g)(6)(ii)(E) has generated some confusion, and has the unintended consequence of some licensees believing that they need to submit additional relief requests related to the percentage of inspections to be completed during the current interval. The second sentence in the footnote is intended to specify what portion of welds has to be inspected during a plant interval that remains after January 1, 2009. The intent was to require licensees to distribute the population such that the portion of welds to be inspected in the remaining portion of the interval be based on the portion of the interval remaining as of January 1, 2009. Instead, the wording is being incorrectly interpreted by some licensees as requiring all the welds to be distributed over, and inspected during, the remaining periods and outages in the interval. The NRC proposes to revise footnote 1 to § 50.55a(g)(6)(ii)(E) to clarify this issue.

10 CFR 50.55a(g)(6)(ii)(F) Examination Requirements for Class 1 Piping and Nozzle Dissimilar-Metal Butt Welds (New)

The NRC proposes to add a new § 50.55a(g)(6)(ii)(F) to require licensees to implement ASME Code Case N–770, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without the Application of Listed Mitigation Activities, Section XI, Division 1," with 15 conditions. Code Case N–770 contains baseline and ISI requirements for unmitigated butt welds fabricated with Alloy 82/182 material and preservice and ISI requirements for mitigated butt welds.

The application of ASME Code Case N–770 is necessary because the inspections currently required by the ASME Code, Section XI, were not written to address degradation of Alloy 82/182 butt welds by primary water stress corrosion cracking (PWSCC), and the safety consequences of inadequate inspections can be significant. NRC's determination that current inspections of certain Class 1 butt welds are inadequate is based upon operating experience and analysis. The absence of an effective inspection regime could, over time, result in unacceptable circumferential cracking or the degradation of reactor coolant system components by corrosion from leaks in these welds. These degradation mechanisms increase the probability of a loss of coolant accident. The current ASME Code requirements for inspection of Alloy 82/182 butt welds are not frequent enough to ensure that ASME Code-allowable limits will continue to be met in the event that PWSCC initiates. The growth rate of PWSCC in these welds is rapid enough that PWSCC could lead to leakage or rupture before the degradation would be detected by the inspections in the ASME Code, Section XI, currently required by 10 CFR 50.55a or by the 2005 Addenda through the 2008 Addenda of Section XI.

In late 2005, the NRC sent a letter to ASME requesting it to address the inspection requirements for Class 1 PWR piping butt welds fabricated with Alloy 82/182 weld materials. ASME approved the development of an ASME code case on appropriate inspection frequency requirements for Class 1 butt welds containing Alloy 82/182 to address primary water stress-corrosion cracking (PWSCC). The code case format was chosen by ASME to address this safety-significant issue because a code case is a stand-alone set of provisions that can be approved more quickly than revisions to the ASME B&PV Code. Code cases are voluntary, however, so these provisions were developed with the expectation that the NRC would incorporate the code case by reference into the regulations. ASME Code Case N–770, was approved by ASME on January 30, 2009, and was published in Supplement 8 of the 2007 Edition of the ASME Boiler and Pressure Vessel Code Nuclear Code Cases book. ASME Code Case N–770 provides inspection frequencies and methods for Alloy 82/182 butt welds that are unmitigated as well as butt welds that have been mitigated for PWSCC by any of several mitigation methods. ASME Code Case N–770, with proposed conditions, resolves the deficiencies in the ASME B&PV Code, Section XI, inspection requirements for Alloy 82/182 butt welds by providing inspection requirements that ensure that ASME Code-allowable limits will not be exceeded and PWSCC will not lead to leaks or ruptures of piping welds. Therefore, the NRC proposes to require the implementation of Code Case N–770, with conditions.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*2*)) to require that welds mitigated by inlays, cladding, or stress improvement by welding, be categorized as unmitigated welds pending plant-specific NRC review of the mitigation techniques and NRC authorization of an alternative ASME Code Case N–770 Inspection Item for the mitigated weld. ASME Code Case N–770 provides inspection methods and frequencies for welds mitigated by certain specified techniques. Inspections of mitigated welds are performed much less frequently than unmitigated welds. Requirements for most of the mitigation methods are contained in other ASME code cases under development. The NRC has typically approved the application of pressure boundary weld mitigation techniques on a case-by-case basis. This condition is necessary to ensure that appropriate mitigation techniques are

applied to welds before they are categorized as mitigated under Code Case N–770.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*3*)) to require that the baseline examination of welds in Inspection Items A–1, A–2, and B (unmitigated welds) be completed at the next refueling outage after the effective date of the final rule. Paragraph –2200 of Code Case N–770 permits welds in Inspection Items A–1, A–2, and B (unmitigated welds) that have not received a baseline examination to be examined within the next two refueling outages from adoption of the Code Case. Welds in Inspection Items A–1, A–2, and B are the welds most likely to experience PWSCC and some of these welds may not have received a baseline examination, even under the industry initiative, MRP–139. This condition is necessary to ensure the integrity of these welds by requiring that all welds in Inspection Items A–1, A–2 and B be inspected at the first opportunity to perform the inspections.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*4*)) to require essentially 100 percent coverage for axial flaws. Paragraph –2500(c) of Code Case N–770 permits examination of axial flaws with inspection coverage limitations provided essentially 100 percent coverage for circumferential flaws is achieved and the maximum coverage practical is achieved for axial flaws. This requirement on inspection limitations is inconsistent with comparable inspection requirements of the ASME B&PV Code, Section XI. Axial flaws can lead to through wall cracks and leakage of reactor coolant, which is a safety concern. This condition is necessary for the NRC to ensure that, through NRC review of an authorization of alternative inspection coverage, appropriate actions are being taken to address potential inspection limitations for axial flaws.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*5*)) to reword Paragraph –3132.3(b) on determining flaw growth using wording consistent with that used in the ASME B&PV Code, Section XI. Paragraph –3132.3(b) contains the statement that a "flaw is not considered to have grown if the size difference (from a previous examination) is within the measurement accuracy of the nondestructive examination (NDE) technique employed." The "measurement accuracy of the NDE technique employed" is not defined in the code case or in the ASME B&PV Code. Use of this terminology may result in a departure from the past practice when applying ASME B&PV Code, Section XI. Under the requirements of Section XI, one concludes that flaw growth has not occurred when a "previously evaluated flaw has remained essentially unchanged." The proposed condition uses this wording. This condition is necessary to clarify the requirements for determining whether flaw growth has occurred and make the requirements consistent with ASME B&PV Code requirements endorsed by the NRC in 10 CFR 50.55a.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*6*)) on welds that are determined through a volumetric examination to have cracking that penetrates beyond the thickness of the inlay or cladding. The condition would require such welds to be reclassified as Inspection Item A–1, A–2, or B, as appropriate, until corrected by repair/replacement activity in accordance with IWA–4000 or by corrective measures beyond the scope of Code Case N–770. Code Case N–770 would permit welds mitigated by inlay or cladding (i.e., onlay) in Inspection Items G, H, J, and K, to remain in those Inspection Items if cracking that penetrates through the thickness of the inlay or cladding occurs. The purpose of an inlay or cladding is to provide a corrosion resistant barrier between reactor coolant and the underlying Alloy 82/182 weld material that is susceptible to PWSCC. If cracking penetrates through the thickness of an inlay or cladding, the inspection frequencies of Inspection Items G, H, J, and K would no longer be appropriate even after satisfying the successive examination requirements of paragraph –2420. This condition is necessary because welds with cracking that penetrates beyond the thickness of the protective barrier of the inlay or cladding would no longer be mitigated and would need to be inspected under one of the Inspection Items for unmitigated welds.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*7*)) on welds in Inspection Items G, H, J, and K, (welds mitigated by inlay or cladding) that the ISI surface examination requirements of Table 1 should apply whether the inservice volumetric examinations are performed from the weld outside diameter or the weld inside diameter. Code Case N–770 only requires a surface examination for welds in Inspection Items G, H, J, and K if a volumetric examination is performed from the weld inside diameter surface. A volumetric examination performed from the weld outside diameter surface would not be capable of detecting flaws in an inlay or cladding. This condition is necessary to ensure that weld inlays or cladding are still performing their intended function of providing a protective barrier between the reactor coolant and the underlying Alloy 82/182 weld that is susceptible to PWSCC.

The NRC also proposes, as part of a new condition as § 50.55a(g)(6)(ii)(F)(*7*), to require that all hot-leg operating temperature welds in Inspection Items G, H, J, and K (welds mitigated by inlay or cladding) be inspected each interval and that a 25 percent sample of cold leg operating temperature welds in Inspection Items G, H, J, and K be inspected whenever the core barrel is removed (unless it has already been inspected within the past 10 years) or 20 years, whichever is less. Code Case N–770 permits welds in Inspection Items G, H, J, and K to be placed in a 25 percent sample inspection program under certain conditions after the required initial inspection. The NRC has performed analyses of crack growth in welds mitigated by Alloy 52/152 inlay or cladding using experimentally derived crack growth data for this weld material. The results of those analyses show that welds in Inspection Items G, H, J, and K at hot leg temperature have to be examined once per interval and welds at cold leg temperature have to be inspected under a sample inspection program to detect potentially significant crack growth. This condition is being proposed to ensure that ASME Code-allowable limits would not be exceeded and PWSCC would not lead to leaks or ruptures.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*8*)) to prohibit the first examination following weld inlay, cladding, or stress improvement for Inspection Items D, G, and H from being deferred to the end of the interval. Code Case N–770 provides requirements on the timing of the first examination following weld inlay, cladding, or stress improvement. Inspection Items D, G, and H pertain to mitigation of cracked welds and the timing of the initial examinations in the code case has been specified in the code case so that the welds are not in service for an extended time period prior to the initial examination. However, the code case does not explicitly preclude deferral of these examinations to the end of the interval. Therefore, this NRC condition is needed to ensure that the initial examinations of welds in Inspection Items D, G, and H take place on an appropriate schedule to verify the effectiveness of the mitigation process.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*9*)) on Measurement or Quantification Criterion I–1.1 of Appendix I to require the assumption in the weld residual stress (WRS) analysis of a construction weld repair from the

inside diameter to a depth of 50 percent of the weld thickness extending 360° around the weld. Measurement or Quantification Criterion I–1.1 does not specify the circumferential extent of the repair that must be assumed. This condition is necessary to clarify the size of the repair to be assumed in the weld residual stress analysis which would ensure that appropriate criteria for the WRS analysis are used for mitigation by stress improvement.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*10*)) on Measurement or Quantification Criterion I–2.1 of Appendix I to require that the last sentence be replaced. This criterion was inappropriately worded since this criterion pertains to the permanence of a mitigation process by stress improvement and plastic "shakedown" rather than "ratcheting" is the phenomenon that could lead to stress relaxation. This condition is necessary to clarify the type of analysis necessary to ensure that the mitigation process is permanent and that the inspection frequencies associated with the process continue to be correct.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*11*)) to require that in applying Measurement or Quantification Criterion I–7.1 of Appendix I, an analysis be performed using IWB–3600 evaluation methods and acceptance criteria to verify that the mitigation process will not cause any existing flaws to grow. Measurement or Quantification Criterion I–7.1 permits the growth of existing flaws in welds mitigated by stress improvement. This is an inappropriate provision since the process of mitigating by stress improvement is intended to prevent growth of existing flaws which could lead to leakage or rupture of the weld. This condition is necessary to ensure that stress improvement of welds with existing flaws is an effective mitigation technique consistent with the inspection frequency in the code case.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*12*)) to require that the NRC be provided with a report if the volumetric examination of any mitigated weld detects new flaws or growth of existing flaws that exceed the acceptance standards of IWB–3514 and are found to be acceptable for continued service through an analytical evaluation or a repair or the alternative requirements of an ASME code case. The report would summarize the evaluation, along with inputs, methodologies, assumptions, and cause of the new flaw or flaw growth and would be provided to the NRC prior to the weld being placed in service. Welds that are mitigated have been modified by a technique, such as weld inlays, cladding, or stress improvement. Mitigation techniques are designed to prevent new flaws from occurring and prevent the growth of any existing flaws. If volumetric examination detects new flaws or growth of existing flaws in the required examination volume, the mitigation will not be performing as designed and the NRC will need to evaluate the licensee's actions to address the problem. Therefore, this condition is needed to verify the acceptability of the weld prior to being placed back in service.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*13*)) to require that the last sentence of the Extent and Frequency of Examination for Inspection Items C and F be revised. Inspection Items C and F apply to butt welds mitigated by full structural weld overlays of Alloy 52/152 material. Note 10 of the Code Case requires that welds in Inspection Items C and F that are not included in the 25 percent sample be examined prior to the end of the mitigation evaluation period if the plant is to be operated beyond that time. This condition would ensure that welds in the 25 percent sample are also examined prior to the end of the mitigation evaluation period; that is, prior to the end of life of the overlay predicted by the mitigation evaluation. Inspection prior to the end of the mitigation evaluation period is necessary to ensure that appropriate information has been obtained to verify the condition of the weld overlay and update the analysis for the predicted life of the weld overlay.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*14*)) on the ½-inch (13 mm) dimension shown in Figures 2(b) and 5(b) of Code Case N–770. The condition would require that a dimension "b" be used instead of ½ inch, where "b" is equivalent to the nominal thickness of the nozzle or pipe being overlaid, as appropriate. The code case contains information on component thicknesses to be used in application of the acceptance standards of ASME B&PV Code, Section XI, IWB–3514, to evaluate flaws detected during preservice inspection of weld overlays. The ½-inch (13 mm) dimension shown in Figures 2(b) and 5(b) is non-conservative. The appropriate dimension is a function of the nominal thickness of the nozzle or pipe being overlaid and not a single specified value for all pipes and nozzles. This condition is necessary to ensure that acceptance standards used for evaluation of any flaws detected during preservice inspection of weld overlays assure an appropriate level of safety.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*15*)) on the use of the acceptance standards of ASME B&PV Code, Section XI, IWB–3514, for evaluating indications in inlays or onlays. The proposed condition specifies that the thickness "t" in IWB–3514 is the thickness of the inlay or onlay. The code case requires that the preservice examination for inlays or onlays consist of a surface examination, which does not allow planar flaws, and a volumetric examination. The volumetric examination allows the use of the acceptance standards of IWB–3514 provided the surface examination acceptance standards are satisfied. That is, it would allow the acceptance of some subsurface indications, but IWB–3514 acceptance standards would only allow very small flaws. However, the code case does not specify the value "t" to be used in the application of IWB–3514. The appropriate value "t" when applying IWB–3514 to inlays or onlays is the thickness of the inlay or onlay, since the acceptance standards in this case only apply to accepting flaws within the inlay or onlay. This condition is necessary to preclude the misapplication of the acceptance standards of IWB–3514 and potential acceptance of flaws that could compromise the integrity and function of the inlay or onlay as a protective barrier.

The NRC proposes to add a condition (§ 50.55a(g)(6)(ii)(F)(*16*)) on welds mitigated by stress improvement by welding in Inspection Items D and E to not permit them to be placed into a population to be examined on a sample basis after the initial examination. Stress improvement by welding is also called an optimized weld overlay. Code Case N–770 permits welds mitigated by this technique to be placed in a 25 percent inspection sample after the initial examination. Sample inspections could result in three-quarters of the welds never being examined after the initial examination. Although full structural weld overlays have been used extensively in the nuclear industry for many years, the industry does not have experience with optimized weld overlays. Optimized weld overlays are designed to rely on the outer 25 percent of the original Alloy 82/182 material to satisfy the design margins and would not satisfy design margins if significant cracking were to occur. If significant cracking were to occur in the Alloy 82/182 material, the optimized weld overlay material would prevent the weld from leaking and could potentially rupture without prior evidence of leakage under design basis conditions.

The proposed condition is necessary to ensure that all optimized weld overlays are periodically inspected for potential degradation.

After ASME Code Case N–770 was approved by ASME in early 2009, the NRC brought concerns on the code case to the attention of members of the ASME B&PV Code, Section XI, task group that developed it. These concerns are the subject of these proposed conditions. The ASME B&PV Code, Section XI, has been working on a revision to Code Case N–770 to address many of these concerns. The NRC will consider endorsing an ASME-approved revision to Code Case N–770 in the final rule to update 10 CFR 50.55a, depending upon when such a revision is issued and the contents of the revision, and may remove some or all conditions depending upon whether the revised Code Case addresses the concerns previously discussed.

Substitution of the Term "Condition" in 10 CFR 50.55a

The NRC proposes to substitute the word "condition(s)" for the words "limitation(s)" "modification(s)" and "provision(s)," throughout 10 CFR 50.55a as shown in Table 1 of this document for consistency. The NRC does not believe it necessary to distinguish among different types of "caveats" that it imposes on the use of the ASME Codes, and therefore proposes to use a single term for clarity and consistency.

IV. Paragraph-by-Paragraph Discussion

Quality Standards, ASME Codes and IEEE Standards, and Alternatives

10 CFR 50.55a(a)

The NRC proposes to add the title "Quality standards, ASME Codes and IEEE standards, and alternatives" to paragraph (a).

Applicant/Licensee Proposed Alternatives to the Requirements of 10 CFR 50.55a

10 CFR 50.55a(a)(3)

The NRC proposes to add a sentence to paragraph (a)(3) to clarify that an alternative is to be submitted to, and approved by, the NRC prior to an applicant or licensee implementing the alternative. For applicants, approval of an alternative must be obtained before construction begins (rather than during the design process).

Standards Approved for Incorporation by Reference

10 CFR 50.55a(b)

The NRC proposes to add the title "Standards approved for incorporation by reference" to paragraph (b).

The NRC proposes to modify the language in paragraph (b) to clarify that non-mandatory appendices are excluded from the ASME B&PV Code, Section III requirements that are incorporated by reference into 10 CFR 50.55a, and to clarify that only Division 1 requirements of Section III and Section XI are incorporated by reference (not Division 2 and Division 3 requirements).

ASME B&PV Code, Section III

10 CFR 50.55a(b)(1)

The NRC proposes to amend paragraph (b)(1) to incorporate by reference the 2005 Addenda (Division 1) through 2008 Addenda (Division 1) of Section III of the ASME B&PV Code into 10 CFR 50.55a, subject to the conditions outlined in modified paragraphs (b)(1)(i) through 50.55a(b)(1)(vi) and proposed paragraph (b)(vii). The paragraph modification would also include an editorial change to the references to Section III ASME B&PV Code for clarification purposes. As a result, applicants and licensees may use the 1974 Edition (Division 1) through the 2008 Addenda (Division 1) of Section III of the ASME B&PV Code subject to the conditions contained within modified paragraphs (b)(1)(i) through (b)(1)(vi) and new paragraph (b)(1)(vii).

10 CFR 50.55a(b)(1)(ii)

The NRC proposes to apply the existing condition in paragraph (b)(1)(ii) regarding stress indices used for weld stresses in piping design to the comparable provisions in the ASME Code editions and addenda incorporated by reference in this proposed rule. The paragraph modification also includes the addition of a condition on the use of paragraph NB–3683.4(c)(2) for applicants and licensees applying the 1989 Addenda through the latest edition and addenda of Section III of the ASME B&PV Code. As a result, this modification prohibits the use of Footnote 13 from the 2004 Edition through the 2008 Addenda of Section III of the ASME B&PV Code to Figures NC–3673.2(b)–1 and ND–3673.2(b)–1 for welds with leg size less than 1.09 times the nominal pipe wall thickness (t_n) for applicants and licensees applying the 1989 Addenda through the latest edition and addenda of Section III of the ASME B&PV Code. Also as a result, the use of paragraph NB–3683.4(c)(2), is not allowed for applicants and licensees applying the 1989 Addenda through the latest edition and addenda of Section III of the ASME B&PV Code.

10 CFR 50.55a(b)(1)(iii)

The NRC proposes to modify paragraph (b)(1)(iii) to impose conditions on the seismic design of piping when licensees use the latest editions and addenda of the ASME B&PV Code, Section III, incorporated by reference in modified paragraph (b). The paragraph would also be modified with an editorial change to replace "limitations and modifications" with "conditions" and "limitation" with "condition." The modified paragraph would allow the use of Subarticles NB–3200, NB–3600, NC–3600, and ND–3600 for the seismic design of piping when applying editions and addenda, up to and including the 1993 Addenda of the ASME B&PV Code, Section III, subject to the condition in modified paragraph (b)(1)(ii). The modified paragraph would not allow the use of Subarticles NB–3200, NB–3600, NC–3600, and ND–3600 for the seismic design of piping when applying the 1994 Addenda through the 2006 Addenda of Section III of the ASME B&PV Code except that Subarticle NB–3200 in the 2004 Edition through the 2008 Addenda of Section III of the ASME B&PV Code may be used by applicants and licensees subject to the condition in new paragraph (b)(1)(iii)(B). The modified paragraph would allow the use of Subarticles NB–3200, NB–3600, NC–3600, and ND–3600 for the seismic design of piping when applying the 2006 Addenda through the 2008 Addenda of Section III of the ASME B&PV Code, subject to the three new conditions in new paragraphs (b)(1)(iii)(A), (b)(1)(iii)(B), and (b)(1)(iii)(C).

10 CFR 50.55a(b)(1)(iii)(A)

NRC proposes to add a new paragraph (b)(1)(iii)(A) to impose a condition on the minimum value of the B_2 indices when applicants and licensees use Subarticle NB–3600 of the 2006 Addenda up to and including the 2008 Addenda of the ASME Code, Section III, for the seismic design of piping. As a result, licensees and applicants using Subarticle NB–3600 of the 2006 Addenda up to and including the 2008 Addenda of the ASME B&PV Code, Section III, for the seismic design of piping must use a value for the B_2 index, defined in Subparagraph NB–3656(b)(3), equal to or greater than $0.75B_2$, from Table NB–3681(A)–1, for Class 1 elbows and tees of ferritic steel

materials operating at temperatures above 300°F.

10 CFR 50.55a(b)(1)(iii)(B)

The NRC proposes to add a new paragraph (b)(1)(iii)(B) requiring licensees and applicants using Note (1) of Figure NB–3222–1 in Section III of the 2004 Edition up to and including the 2008 Addenda of the ASME B&PV Code to include reversing dynamic loads in calculating primary bending stresses, if consideration of these loads is warranted.

10 CFR 50.55a(b)(1)(iii)(C)

The NRC proposes to add a new paragraph(b)(1)(iii)(C) to impose a condition on the use of Subarticles NB–3600, NC–3600, and ND–3600 of the ASME B&PV Code, Section III when applying the 2006 Addenda through the 2008 Addenda of Section III of the ASME B&PV Code by requiring the outer diameter-over-thickness ratio (D_o/t) to be less than or equal to 40. As a result, licensees and applicants may not apply Subparagraph NB–3683.2(C), Note (1) to Table NB–3681(a)–1, and Note (3) to Figures NC–3673.2(b)–1 and ND–3673.2(b)–1.

10 CFR 50.55a(b)(1)(iv)

The NRC proposes to modify paragraph (b)(1)(iv) to allow the use the 1994 Edition of NQA–1 when applying the 2006 Addenda and later Editions and Addenda of the ASME B&PV Code, Section III.

10 CFR 50.55a(b)(1)(vii)

The NRC proposes to add a new paragraph (b)(1)(vii) to prohibit the use of paragraph NB–7742 when applying the 2006 Addenda up to and including the 2007 Edition and 2008 Addenda of the ASME B&PV Code, Section III. As a result, new Class 1 incompressible-fluid, pressure-relief valve designs must be tested at the highest values of set-pressure ranges as required by prior editions and addenda of the ASME B&PV Code, Section III.

ASME B&PV Code, Section XI

10 CFR 50.55a(b)(2)

The NRC proposes to revise the introductory text to paragraph (b)(2) to incorporate by reference only Subsections IWA, IWB, IWC, IWD, IWE, IWF, IWL, Mandatory and Non-Mandatory Appendices, of the 2005 Addenda through 2008 Addenda of Section XI of the ASME B&PV Code, with conditions, into 10 CFR 50.55a. It would also be revised to make an editorial change to the reference to Section XI of the ASME B&PV Code.

10 CFR 50.55a(b)(2)(i)

The NRC proposes to delete the requirements of current paragraph (b)(2)(i) which address limitations on specific editions and addenda. Licensees are no longer using these older editions (1974 and 1977 Editions) and addenda of the ASME B&PV Code. The requirements of current paragraph (b)(2)(ii) which address pressure-retaining welds in ASME Code Class 1 piping would be redesignated as paragraph (b)(2)(i), with no change to redesignated language.

10 CFR 50.55a(b)(2)(ii)

The NRC proposes to redesignate the requirements of current paragraph (b)(2)(vi), which address containment inservice inspection requirements, as paragraph (b)(2)(ii). This paragraph is also modified to clarify the conditions applicable to this paragraph.

10 CFR 50.55a(b)(2)(iii)

The NRC proposes to delete the requirements of current paragraph (b)(2)(iii) which address steam generator tubing. The NRC proposes removal of this condition because the condition is redundant to the 1989 Edition through the 2008 Addenda of Section XI. The requirements of current paragraph (b)(2)(vii) which address Section XI references to OM Part 4, OM Part 6, and OM Part 10 would be redesignated as paragraph (b)(2)(iii), with no change to redesignated language.

10 CFR 50.55a(b)(2)(iv)

The NRC proposes to redesignate the requirements of current paragraph (b)(2)(viii), which address the inservice examination of concrete containments in accordance with Subsection IWL of the ASME B&PV Code, Section XI, as paragraph (b)(2)(iv). This paragraph is also modified so that the conditions in redesignated paragraphs (b)(2)(iv)(F) and (b)(2)(iv)(G) do not apply when using the 2007 Edition with 2008 Addenda of the ASME B&PV Code, Section XI.

10 CFR 50.55a(b)(2)(v)

The NRC proposes to redesignate the requirements of current paragraph (b)(2)(ix), which address the examination of metal containments and the liners of concrete containments in accordance with Subsection IWE of the ASME B&PV Code, Section XI, as paragraph (b)(2)(v). This paragraph is also modified so that the conditions in redesignated paragraphs (b)(2)(v)(F), (b)(2)(v)(G), (b)(2)(v)(H) and (b)(2)(v)(I) do not apply when using the 2004 Edition with 2006 Addenda through the 2007 Edition with 2008 Addenda of Subsection IWE of the ASME B&PV Code, Section XI. Also, this paragraph is modified so that the condition in redesignated paragraph (b)(2)(v)(I) would not apply when using the 2004 Edition, up to and including, the 2005 Addenda of Subsection IWE of the ASME B&PV Code, Section XI.

10 CFR 50.55a(b)(2)(v)(J)

The NRC proposes to add a new paragraph (b)(2)(v)(J) to address major containment modifications as they apply to Class MC and Class CC containment structures and the use of Article IWE–5000, of Subsection IWE when applying the 2007 Edition up to and including the 2008 Addenda of the ASME B&PV Code, Section XI.

10 CFR 50.55a(b)(2)(vi)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(x), which address Quality Assurance, as paragraph (b)(2)(vi), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(vii)

The NRC proposes to redesignate the current paragraph (b)(2)(xi), which is "Reserved," as paragraph (b)(2)(vii), and that it remain reserved for possible future use.

10 CFR 50.55a(b)(2)(viii)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xii), which address underwater welding, as paragraph (b)(2)(viii), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(ix)

The NRC proposes to redesignate the current paragraph (b)(2)(xiii), which is "Reserved," as paragraph (b)(2)(ix), and that it remain reserved for possible future use.

10 CFR 50.55a(b)(2)(x)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xiv), which address Appendix VIII personnel qualifications, as paragraph (b)(2)(x), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xi)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xv), which address Appendix VIII specimen set and qualification requirements, as paragraph (b)(2)(xi). The paragraph would be modified by limiting the use of the provisions described in redesignated paragraphs (b)(2)(xi)(A) through (b)(2)(xi)(M) to licensees using editions and addenda of the B&PV Code after the 2001 Edition through the 2006 Addenda.

10 CFR 50.55a(b)(2)(xii)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xvi), which address Appendix VIII single-sided ferritic-vessel and piping and stainless steel piping examination, as paragraph (b)(2)(xii), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xiii)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xvii), which address reconciliation of quality requirements, as paragraph (b)(2)(xiii), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xiv)(A)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xviii)(A), which address certification of NDE personnel, as paragraph (b)(2)(xiv)(A), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xiv)(B)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xviii)(B), which address Certification of NDE personnel, as paragraph (b)(2)(xiv)(B). In addition, the requirements would be revised such that the condition would not apply to the 2007 Edition through the 2008 Addenda of Section XI.

10 CFR 50.55a(b)(2)(xiv)(C)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xviii)(C), which address certification of NDE personnel, as paragraph (b)(2)(xiv)(C). In addition, the requirements would be revised such that the current conditions on the qualification of VT–3 examination personnel would not apply to the 2005 Addenda through the 2008 Addenda of Section XI.

10 CFR 50.55a(b)(2)(xv)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xix), which address substitution of alternative methods, as paragraph (b)(2)(xv). In addition, the requirements would be revised so the current conditions for the substitution of alternative examination methods in that paragraph would not apply when using the 2005 Addenda through the 2008 Addenda. The paragraph would also be revised to impose the condition that paragraphs IWA–4520(b)(2) and IWA–4521 of the 2007 Edition of Section XI, Division 1, with 2008 Addenda, are not approved for use.

10 CFR 50.55a(b)(2)(xvi)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xx), which address system leakage tests, as paragraph (b)(2)(xvi), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xvii)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xxi), which address Table IWB–2500–1 examination requirements, as paragraph (b)(2)(xvii), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xviii)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xxii), which address surface examination, as paragraph (b)(2)(xviii), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xix)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xxiii), which address evaluation of thermally cut surfaces, as paragraph (b)(2)(xix), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xx)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xxiv), which address incorporation of the performance demonstration initiative and addition of ultrasonic examination criteria, as paragraph (b)(2)(xx). In addition, the requirements would be revised so that the current condition would not apply when using the 2007 Edition through the 2008 Addenda of Section XI of the ASME B&PV Code.

10 CFR 50.55a(b)(2)(xxi)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xxv), which address mitigation of defects by modification, as paragraph (b)(2)(xxi), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xxii)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xxvi), which address pressure testing of Class 1, 2, and 3 mechanical joints, as paragraph (b)(2)(xxii), with no change to the redesignated language.

10 CFR 50.55a(b)(2)(xxiii)

The NRC proposes to redesignate the requirements in current paragraph (b)(2)(xxvii), which address removal of insulation, as paragraph (b)(2)(xxiii). In addition, the requirements would be revised to add a condition to refer to paragraph IWA–5241 instead of IWA–5242 for the 2007 Edition and later addenda of Section XI of the ASME B&PV Code.

10 CFR 50.55a(b)(2)(xxiv)

The NRC proposes to add a new paragraph (b)(2)(xxiv) which would condition the use of the fatigue crack growth rate calculation for subsurface flaws defined in paragraph A–4300(b)(1) of Section XI, Nonmandatory Appendix A when the ratio of the minimum cyclic stress to the maximum cyclic stress (R) is less than zero.

10 CFR 50.55a(b)(2)(xxv)

The NRC proposes to add a new paragraph (b)(2)(xxv) which would condition the use of ASME B&PV Code, Section XI, Non-Mandatory Appendix E, by establishing that Section E–1200 is not acceptable for use.

10 CFR 50.55a(b)(2)(xxvi)

The NRC proposes to add a new paragraph (b)(2)(xxvi) which would condition the use of ASME B&PV Code, Section XI, Non-Mandatory Appendix R to require licensees to submit an alternative in accordance with paragraph (a)(3) and obtain NRC authorization of the proposed alternative prior to implementing Appendix R, RI–ISI programs.

ASME OM Code

10 CFR 50.55a(b)(3)

The NRC proposes to revise the introductory text of paragraph (b)(3) to require that the 2004 Edition with the 2005 and 2006 Addenda of the ASME OM Code be used during the initial 120-month IST interval under paragraph (f)(4)(i) and during mandatory 120-month IST program updates under paragraph (f)(4)(ii). The proposed revision would also allow users to voluntarily update their IST programs to the 2004 Edition with the 2005 and 2006 Addenda of the ASME OM Code under paragraph (f)(4)(iv).

10 CFR 50.55a(b)(3)(v)

The NRC proposes to revise paragraph (b)(3)(v) to require that the provisions in Subsection ISTD of the ASME OM Code be used for the inservice examination and testing of snubbers when using the 2006 Addenda and later editions and addenda of Section XI.

10 CFR 50.55a(b)(3)(vi)

The NRC proposes to revise paragraph (b)(3)(vi) to require that the current condition for exercising manual valves continue to apply when using the 1999 through 2005 Addenda of the ASME OM Code. This condition would not apply to the 2006 Addenda and later

editions and addenda of the ASME OM Code.

Reactor Coolant Pressure Boundary, Quality Group B Components and Quality Group C Components

The NRC proposes to revise paragraphs (c)(3), (d)(2), and (e)(2) to replace "but—" with "subject to the following conditions" at the end of the introductory text to the paragraphs for clarity.

Inservice Testing Requirements

10 CFR 50.55a(f)(5)(iv)

The NRC proposes to revise paragraph (f)(5)(iv) to clarify that licensees are required to submit requests for relief based on impracticality within 12 months after the expiration of the IST interval for which relief is being sought.

Inservice Inspection Requirements

10 CFR 50.55a(g)(2), (g)(3)(i), (g)(3)(ii), the Introductory Text of (g)(4), (g)(4)(i), and (g)(4)(ii)

The NRC proposes to revise paragraphs (g)(2), (g)(3)(i), (g)(3)(ii), (g)(4)(i) and (g)(4)(ii) to require that the provisions in Subsection ISTD of the ASME OM Code, and the optional ASME code cases listed in Regulatory Guide 1.192, be used for the ISI of snubbers. The introductory text of paragraph (g)(4) would be revised to require that licensees use the provisions for examination and testing snubbers in Subsection ISTD of the ASME OM Code.

10 CFR 50.55a(g)(4)(iii)

The NRC proposes to revise paragraph (g)(4)(iii) to provide the proper references to Section XI, Table IWB–2500–1, "Examination Category B–J," Item Numbers B9.20, B9.21 and B9.22.

10 CFR 50.55a(g)(5)(iii)

The NRC proposes to revise paragraph (g)(5)(iii) by adding a sentence to clarify that a request for relief must be submitted to the NRC no later than 12 months after the examination has been attempted during a given ISI interval and the ASME Code requirement determined to be impractical.

10 CFR 55a(g)(5)(iv)

The NRC proposes to revise paragraph (g)(5)(iv) to clarify that licensees are required to submit requests for relief based on impracticality within 12 months after the end of the ISI interval for which relief is being sought.

10 CFR 50.55a(g)(6)(ii)(E)(1) through (g)(6)(ii)(E)(3)

The NRC proposes to revise paragraphs (g)(6)(ii)(E)(1) through (g)(6)(ii)(E)(3) to update the requirement to implement Code Case N–722–1.

10 CFR 50.55a(g)(6)(ii)(F)

The NRC proposes to add a new paragraph (g)(6)(ii)(F), "Inspection Requirements for Class 1 Pressurized Water Reactor Piping and Vessel Nozzle Butt Welds," to require licensees to implement ASME Code Case N–770, with conditions.

Footnote 1 to 10 CFR 50.55a(g)(6)(ii)(E)

The NRC proposes to revise footnote 1 to paragraph (g)(6)(ii)(E) to clarify that for inspections conducted once per interval, the portion of welds to be inspected in the remaining portion of the interval be based on rules already established by the ASME B&PV Code.

Substitution of the Term "Condition" in 10 CFR 50.55a

The NRC proposes to substitute the words "limitation(s)," "modification(s)," and "provision(s)" with the word "condition(s)" throughout 10 CFR 50.55a, as shown in Table 1 of this document, for consistency.

V. Generic Aging Lessons Learned Report

In September 2005, the NRC issued "Generic Aging Lessons Learned (GALL) Report," NUREG–1801, Volumes 1 and 2, Revision 1, for applicants to use in preparing their license renewal applications. The GALL Report evaluates existing programs and documents the bases for determining when existing programs, without change or augmentation, are adequate for aging management compliance in the license renewal rule, as given in 10 CFR 54.21(a)(3). In Revision 1 of the GALL Report, editions of the ASME B&PV Code, Section XI, Subsections IWB, IWC, IWD, IWE, IWF, and IWL from the 1995 Edition through the 2001 Edition, inclusive of the 2003 Addenda, were evaluated and were found to be acceptable editions and addenda for complying with the requirements of 10 CFR 54.21(a)(3), unless specifically noted in specific sections of the GALL Report.

In the GALL Report, Section XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD;" Section XI.S1, "ASME Section XI, Subsection IWE;" Section XI.S2,"ASME Section XI, Subsection IWL;" and Section XI.S3, "ASME Section XI, Subsection IWF" describe the evaluation and technical bases for determining the adequacy of these ASME Code subsections. In addition, many other aging management programs (AMPs) in the GALL report rely in part, but to a lesser degree, on the requirements in the ASME B&PV Code, Section XI.

The NRC has evaluated Subsections IWB, IWC, IWD, IWE, IWF, and IWL of Section XI of the ASME B&PV Code, 2004 Edition with the 2005 Addenda through the 2007 Edition with the 2008 Addenda as part of the § 50.55a amendment process to determine if the conclusions of the GALL Report also apply to AMPs that rely upon the ASME B&PV Code editions and addenda that are proposed to be incorporated by reference into § 50.55a by this rule. The NRC finds that the 2004 Edition, inclusive of the 2005 and 2006 Addenda, and the 2007 Edition, inclusive of the 2008 Addenda of Sections XI of the ASME B&PV Code, Subsections IWB, IWC, IWD, IWE, IWF, and IWL, as subject to the conditions of this rule, are acceptable to be adopted as AMPs for license renewal and the conclusions of the GALL Report remain valid, except where specifically noted and augmented in the GALL Report. Accordingly, an applicant for license renewal may use Subsections IWB, IWC, IWD, IWE, IWF, and IWL of Section XI of the 2004 Edition with the 2005 and 2006 Addenda through the 2007 Edition with the 2008 Addenda of the ASME B&PV Code, subject to conditions proposed in this rule, as acceptable alternatives to the requirements of the 1995 Edition through the 2001 Edition up to and including the 2003 Addenda of the ASME B&PV Code, Section XI, referenced in Revision 1 of the GALL Report in its plant-specific license renewal application. Similarly, a licensee approved for license renewal that relied on the GALL AMPs may use Subsections IWB, IWC, IWD, IWE, IWF, and IWL of Section XI of the 2004 Edition with the 2005 Addenda and the 2006 Addenda through the 2007 Edition with the 2008 Addenda of the ASME B&PV Code as acceptable alternatives to the AMPs described in the Revision 1 of the GALL report. However, a licensee must assess and follow applicable NRC requirements with regard to changes to its licensing basis.

The NRC, however, notes that the GALL Report includes Subsection IWE and IWL AMPs that are evaluated based on the requirements in the 1992 Edition and 2001 Edition through the 2003 Addenda of Section XI of the ASME B&PV Code. Also, some of the terminology used and some details in these AMPs are based on the 1992 Edition. Since these AMPs in Revision 1 of the GALL report have a specific ASME B&PV Code year in the description of the AMP or in one or more of the ten elements, the details in the AMP based on a specific ASME

B&PV Code edition may not be accurate for other editions.

Revision 1 of the GALL report includes AMPs that are based on the requirements in the 1995 Edition through the 2003 Addenda of Section XI of the ASME B&PV Code but in which the AMPs may recommend additional augmentation of the Code requirements in order to achieve aging management for license renewal. The technical or regulatory aspects of the AMPs, for which augmentation is recommended, also apply if using the 2004 Edition inclusive of the 2005 Addenda, or the 2007 Edition, inclusive of the 2008 Addenda, of Section XI of the ASME B&PV Code to meet the requirements of 10 CFR 54.21(a)(3). A license renewal applicant may either augment its AMPs in these areas, as described in the GALL report, or propose alternatives (exceptions) for the NRC to review as part of a plant-specific program element justification for its AMP.

For PWRs, the NRC currently provides license renewal guidance for augmented inspections of PWR upper reactor vessel heads and their penetration nozzles in GALL AMP XI.M11, "Nickel-Alloy Nozzles and Penetrations" and Alloy 600 Line items. As part of this AMP, PWR upper reactor vessel heads and their penetrations are discussed in GALL AMP XI.M11A, "Nickel-Alloy Penetration Nozzles Welded to the Upper Reactor Vessel Closure Heads of Pressurized Water Reactors (PWR Only)." The current program elements and aging management recommendations in GALL AMP XI.M11A are based on the augmented inspection requirements in the First Revised Order EA–03–009, "Issuance of First Revised Order (EA–03–009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors." For licensees that have been granted a renewed operating license and have committed to an AMP that is based on both conformance with GALL AMP XI.M11A and compliance with First Revised Order EA–03–009, the licensees may update the program elements of their AMP to reflect compliance with the proposed requirements in 10 CFR 50.55a(g)(6)(ii)(D) and (g)(6)(ii)(E) without having to identify an exception to GALL AMP XI.M11A. For new or current license renewal applicants, they may reference conformance with GALL AMP XI.M11 and compliance with the proposed augmented inspection requirements in paragraphs 10 CFR 50.55a(g)(6)(ii)(D), (g)(6)(ii)(E) and (g)(6)(ii)(F) without the need for taking an exception to the program elements in GALL AMP XI.M11 or GALL AMP XI.M11A.

VI. Specific Request for Comments

The NRC requests public comment on the changes to Code editions and addenda, and Code Cases N–722–1 and N–770, as part of this proposed rulemaking. The NRC also requests comments on specific NRC questions associated with its implementing 10 CFR 50.55a rulemaking process improvements to make incorporating by reference ASME B&PV Code editions and addenda into 10 CFR 50.55a more predictable and consistent. The primary process improvement is to have a 2-year rulemaking cycle consisting of 1-year to develop an adequate Regulatory Basis and send a proposed rule to NRC management for approval, and an additional 1-year from publishing the proposed rulemaking in the **Federal Register** to publishing the final rule (this includes the public comment period). This 2-year rulemaking cycle is to remain consistent, regardless of the number of code editions or addenda incorporated into 10 CFR 50.55a in the rulemaking. This should make publishing these rulemakings more consistent. However, this does not help users of the ASME B&PV Code predict when the NRC will incorporate new editions and addenda of the ASME Code into 10 CFR 50.55a as that would depend on when the NRC begins each 2-year rulemaking cycle.

As previously mentioned, the ASME issues new editions of the ASME B&PV Code every 3 years, issues addenda to the editions yearly except in years when a new edition is issued, and periodically publishes new editions and addenda of the ASME OM Code. However, the NRC understands that ASME is re-evaluating this process. The NRC could begin its rulemaking cycle any time (subject to availability of resources and other constraints) after the ASME publishes its code editions and addenda. However, the NRC is trying to determine how often it should publish its ASME B&PV Code rulemakings to suit the largest number of users. Some users have told the NRC that they prefer to have code rulemakings published every 2 years, while others have indicated that they prefer a 3-year interval. Accordingly, the NRC is requesting comments on the following questions:

1. What should the scope of the ASME B&PV Code edition and addenda rulemaking be (*i.e.,* how many editions and addenda should be compiled into a single rulemaking)?

2. What should the frequency of ASME B&PV Code edition and addenda rulemaking be (*i.e.,* how often should the NRC incorporate by reference Code editions and addenda into 10 CFR 50.55a)?

3. In what ways should the NRC communicate the scope, schedule for publishing the rulemakings in the **Federal Register**, and status of 10 CFR 50.55a rulemakings to external users?

The NRC will review the responses to these questions to help determine agency positions on the scope, frequency, and methods to communicate 10 CFR 50.55a rulemakings.

VII. Voluntary Consensus Standards

The National Technology Transfer and Advancement Act of 1995, Public Law 104–113, requires agencies to use technical standards that are developed or adopted by voluntary consensus standards bodies instead of government-unique standards, unless the use of such a standard is inconsistent with applicable law or is otherwise impractical. Public Law.104–113 requires Federal agencies to use industry consensus standards to the extent practical; it does not require Federal agencies to endorse a standard in its entirety. The law does not prohibit an agency from generally adopting a voluntary consensus standard while taking exception to specific portions of the standard if those provisions are deemed to be "inconsistent with applicable law or otherwise impractical." Furthermore, taking specific exceptions furthers the Congressional intent of Federal reliance on voluntary consensus standards because it allows the adoption of substantial portions of consensus standards without the need to reject the standards in their entirety because of limited provisions which are not acceptable to the agency.

The NRC is proposing to amend its regulations to incorporate by reference more recent editions and addenda of Sections III and XI of the ASME B&PV Code and ASME OM Code, for construction, in-service inspection, and in-service testing of nuclear power plant components. ASME B&PV and OM Codes are national consensus standards developed by participants with broad and varied interests, in which all interested parties (including the NRC and licensees of nuclear power plants) participate. In an SRM dated September 10, 1999, the Commission indicated its intent that a rulemaking identify all parts of an adopted voluntary consensus standard that are not adopted and to justify not adopting such parts. The parts of the ASME B&PV Code and OM Code that the NRC proposes not to adopt, or to partially adopt, are

previously identified in Section II and in the draft regulatory and backfit analysis. The parts of the ASME B&PV Code, OM Code, and Code Cases N–722–1 and N–770 that the NRC proposes to be conditionally acceptable, along with the conditions under which they may be applied, are also identified in Section II and in the draft regulatory and backfit analysis. If the NRC did not conditionally accept ASME editions, addenda, and code cases, it would disapprove these entirely. The effect would be that licensees would need to submit a larger number of relief requests, which would be an unnecessary additional burden for both the licensee and the NRC. For these reasons, the treatment of ASME Code editions and addenda, and code cases and any conditions proposed to be placed on them in this proposed rule does not conflict with any policy on agency use of consensus standards specified in OMB Circular A–119.

The justification for not adopting parts of, or conditioning, the ASME B&PV Code, OM Code, and Code Cases N–722–1 and N–770 as set forth in these statements of consideration and the draft regulatory and backfit analysis for this proposed rule, satisfy the requirements of Section 12(d)(3) of Public Law 104–113, Office of Management and Budget (OMB) Circular A–119, and the Commission's direction in the SRM dated September 10, 1999. In accordance with the National Technology Transfer and Advancement Act of 1995 and OMB Circular A–119, the NRC is requesting public comment regarding whether other national or international consensus standards could be endorsed as an alternative to the ASME B&PV Code and the ASME OM Code.

VIII. Finding of No Significant Environmental Impact: Environmental Assessment

This proposed action is in accordance with the NRC's policy to incorporate by reference in 10 CFR 50.55a new editions and addenda of the ASME B&PV and OM Codes to provide updated rules for constructing and inspecting components and testing pumps, valves, and dynamic restraints (snubbers) in light-water nuclear power plants. ASME Codes are national voluntary consensus standards and are required by the National Technology Transfer and Advancement Act of 1995, Public Law 104–113, to be used by government agencies unless the use of such a standard is inconsistent with applicable law or otherwise impractical. The National Environmental Policy Act (NEPA) requires Federal government agencies to study the impacts of their "major Federal actions significantly affecting the quality of the human environment," and prepare detailed statements on the environmental impacts of the proposed action and alternatives to the proposed action (42 U.S.C. 4332(C)); NEPA Sec. 102(C)).

The NRC has determined under NEPA, as amended, and the NRC's regulations in Subpart A of 10 CFR Part 51, that this proposed rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and, therefore, an environmental impact statement is not required. The proposed rulemaking will not significantly increase the probability or consequences of accidents; no changes are being made in the types of effluents that may be released off-site; and there is no significant increase in public radiation exposure. The NRC estimates the radiological dose to plant personnel performing the inspections required by Code Case N–770 would be about 3 rems per plant over a 10-year interval, and a one-time exposure for mitigating welds of about 30 rems per plant. As required by 10 CFR part 20, and in accordance with current plant procedures and radiation protection programs, plant radiation protection staff will continue monitoring dose rates and would make adjustments in shielding, access requirements, decontamination methods, and procedures as necessary to minimize the dose to workers. The increased occupational dose to individual workers stemming from the Code Case N–770 inspections must be maintained within the limits of 10 CFR part 20 and as low as reasonably achievable. Therefore, the NRC concludes that the increase in occupational exposure would not be significant. The proposed rulemaking does not involve non-radiological plant effluents and has no other environmental impact. Therefore, no significant non-radiological impacts are associated with the proposed action. The determination of this draft environmental assessment is that there will be no significant off-site impact to the public from this action. However, the NRC is seeking public comment of the draft environmental assessment. Comments on any aspect of the environmental assessment may be submitted to the NRC as indicated under the **ADDRESSES** heading of this document.

IX. Paperwork Reduction Act Statement

The public burden for this information collection is estimated to be a reduction of 120 hours, which is insignificant. Because the burden for this information collection is insignificant, Office of Management and Budget (OMB) clearance is not required. Existing requirements were approved by the Office of Management and Budget, control number 3150–0011.

This proposed rule would impose ASME Code Cases N–722–1 and N–770 which results in licensees having to revise their ISI programs and procedures. The NRC estimates that the burden of preparing new ISI program content and procedures is 40 person-hours per plant over the next 3 years. This one-time burden affects 69 PWR plants, so the total burden on an annual basis would be 920 hours. However, there are a number of changes in the ASME Code edition and addenda associated with this proposed rulemaking related to qualification of inspections in Section XI, Appendix VIII. These changes would result in a one-time reduction of about 5 relief requests per plant (104 PWR and BWR plants) per 10-year ISI interval that would have otherwise been necessary. Assuming 20 hours of licensee time to prepare each relief request results in a one-time paperwork reduction of about 1,040 hours on an annual basis. Overall, the burden on licensees for information collection for this proposed rulemaking is reduced by 120 hours.

The NRC is seeking public comment on the potential impact of the information collections contained in this proposed rule and on the following issues:

1. Is the proposed information collection necessary for the proper performance of the functions of the NRC, including whether the information will have practical utility?

2. Is the estimate of burden accurate?

3. Is there a way to enhance the quality, utility, and clarity of the information to be collected?

4. How can the burden of the information collection be minimized, including the use of automated collection techniques?

A copy of the NRC Form 670, "Information Required for Making an Insignificant Burden Determination To Support a Decision That OMB Clearance Is Not Required," may be viewed free of charge at the NRC Public Document Room, One White Flint North, 11555 Rockville Pike, Room O–1 F21, Rockville, MD 20852. The NRC Form 670 and rule are available at the NRC worldwide Web site: *http://www.nrc.gov/public-involve/doccomment/omb/index.html* for 60 days after the signature date of this notice.

Send comments on any aspect of these proposed information collections, including suggestions for reducing the burden and on the above issues, by June 3, 2010 to the Records and FOIA/Privacy Services Branch (T–5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, or by Internet electronic mail to *INFOCOLLECTS.RESOURCE@NRC.GOV* and to Christine J. Kymn, the Desk Officer, Office of Information and Regulatory Affairs, NEOB–10202 (3150–0011), Office of Management and Budget, Washington, DC 20503. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given to comments received after this date. You may also e-mail comments to *ckym@omb.eop.gov* or comment by telephone at 202–395–4638.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection unless the requesting document displays a currently valid OMB control number.

X. Regulatory and Backfit Analysis

The NRC has prepared a Regulatory and Backfit Analysis on this proposed rule. The analysis is available for review as indicated in Section I, "Submitting Comments and Accessing Information," of this document.

XI. Regulatory Flexibility Certification

Under the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the NRC certifies that this proposed rule would not impose a significant economical impact on a substantial number of small entities. This proposed rule would affect only the licensing and operation of commercial nuclear power plants. A licensee who is a subsidiary of a large entity does not qualify as a small entity. The companies that own these plants are not "small entities" as defined in the Regulatory Flexibility Act or the size standards established by the NRC (10 CFR 2.810), as the companies:

- Provide services that are not engaged in manufacturing, and have average gross receipts of more than $6.5 million over their last 3 completed fiscal years, and have more than 500 employees;
- Are not governments of a city, county, town, township or village;
- Are not school districts or special districts with populations of less than 50; and
- Are not small educational institutions.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Criminal penalties, Fire protection, Intergovernmental relations, Nuclear power plants and reactors, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For the reasons set forth in the preamble, and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 553, the NRC proposes to adopt the following amendments to 10 CFR part 50.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for part 50 continues to read as follows:

Authority: Secs. 102, 103, 104, 105, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 938, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2132, 2133, 2134, 2135, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846); sec. 1704, 112 Stat. 2750 (44 U.S.C. 3504 note); Energy Policy Act of 2005, Pub. L. 109–58, 119 Stat. 194 (2005).

Section 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 as amended by Pub. L. 102–486, sec. 2902, 106 Stat. 3123 (42 U.S.C. 5841), Section 50.10 also issued under secs. 101, 185, 68 Stat. 955, as amended (42 U.S.C. 2131, 2235); sec. 102, Pub. L. 91–190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.13, 50.54(dd), and 50.103 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

Sections 50.23, 50.35, 50.55, and 50.56 also issued under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.33a, 50.55a and Appendix Q also issued under sec. 102, Pub. L. 91–190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 also issued under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Appendix F also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

2. In § 50.55a:

a. Revise paragraph (a), the introductory text of paragraphs (b) and (b)(1), paragraphs (b)(1)(ii), (b)(1)(iii), and (b)(1)(iv); and add paragraph (b)(1)(vii);

b. Revise paragraph (b)(2);

c. Revise the introductory text of paragraph (b)(3), paragraphs (b)(3)(v), (b)(3)(vi), (c)(3), (d)(2), (e)(2), (f)(2), (f)(3)(v), (f)(4), (f)(5)(iv), (g)(2), (g)(3), (g)(4), (g)(5)(iii), (g)(5)(iv), (g)(6)(ii)(B), (g)(6)(ii)(E)(*1*), (g)(6)(ii)(E)(*2*), and (g)(6)(ii)(E)(*3*);

d. Add paragraph (g)(6)(ii)(F); and

e. Revise footnote 1 to this section that appears after paragraph (h)(3) to read as follows:

§ 50.55a Codes and standards.

* * * * *

(a) *Quality standards, ASME Codes and IEEE standards, and alternatives.*

(1) Structures, systems, and components must be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed.

(2) Systems and components of boiling and pressurized water-cooled nuclear power reactors must meet the requirements of the ASME Boiler and Pressure Vessel Code specified in paragraphs (b), (c), (d), (e), (f), and (g) of this section. Protection systems of nuclear power reactors of all types must meet the requirements specified in paragraph (h) of this section.

(3) Proposed alternatives to the requirements of paragraphs (c), (d), (e), (f), (g), and (h) of this section, or portions thereof, may be used when authorized by the Director, Office of Nuclear Reactor Regulation, or Director, Office of New Reactors, as appropriate. Any proposed alternatives must be submitted and authorized prior to implementation. The applicant or licensee shall demonstrate that:

(i) The proposed alternatives would provide an acceptable level of quality and safety; or

(ii) Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

(b) *Standards approved for incorporation by reference.* The following standards have been approved for incorporation by reference by the Director of the Federal Register pursuant to 5 U.S.C. 552(a) and 1 CFR Part 51: Section III, Division 1 (excluding Non-mandatory Appendices) and Section XI, Division 1, of the ASME Boiler and Pressure Vessel Code, and the ASME Code for Operation and Maintenance of Nuclear Power Plants, which are referenced in paragraphs (b)(1), (b)(2), and (b)(3) of this section; NRC Regulatory Guide 1.84, Revision 34, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III" (October 2007), NRC Regulatory Guide 1.147, Revision 15, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1" (October 2007), and Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code" (June 2003), which list ASME Code cases that

the NRC has approved in accordance with the requirements in paragraphs (b)(4), (b)(5), and (b)(6) of this section; ASME Code Case N–722–1, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials, Section XI, Division 1" (ASME Approval Date: January 26, 2009), which has been approved by the NRC with conditions in accordance with the requirements in paragraph (g)(6)(ii)(E) of this section; ASME Code Case N–729–1, "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds, Section XI, Division 1" (ASME Approval Date: March 28, 2006), which has been approved by the NRC with conditions in accordance with the requirements in paragraph (g)(6)(ii)(D) of this section; and ASME Code Case N–770, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities, Section XI, Division 1," (ASME Approval Date: January 26, 2009), which has been approved by the NRC with conditions in accordance with the requirements in paragraph (g)(6)(ii)(F) of this section. Copies of the ASME Boiler and Pressure Vessel Code, the ASME Code for Operation and Maintenance of Nuclear Power Plants, ASME Code Case N–722–1, ASME Code Case N–729–1, and ASME Code Case N–770 may be purchased from the American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016 or through the Web *http://www.asme.org/Codes/.* Single copies of NRC Regulatory Guides 1.84, Revision 34; 1.147, Revision 15; and 1.192 may be obtained free of charge by writing the Reproduction and Distribution Services Section, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; or by fax to 301–415–2289; or by e-mail to *DISTRIBUTION.RESOURCE@nrc.gov.* Copies of the ASME Codes and NRC Regulatory Guides incorporated by reference in this section may be inspected at the NRC Technical Library, Two White Flint North, 11545 Rockville Pike, Rockville, MD 20852–2738 or call 301–415–5610, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal-register/cfr/ibr-locations.html.*

(1) As used in this section, references to Section III refer to Section III of the ASME Boiler and Pressure Vessel Code, and include the 1963 Edition through 1973 Winter Addenda, and the 1974 Edition (Division 1) through the 2008 Addenda (Division 1), subject to the following conditions:

* * * * *

(ii) *Weld leg dimensions.* When applying the 1989 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(1) of this section, applicants or licensees may not apply subparagraphs NB–3683.4(c)(1) and NB–3683.4(c)(2) or Footnote 11 from the 1989 Addenda through the 2003 Addenda, or Footnote 13 from the 2004 Edition through the 2008 Addenda to Figures NC–3673.2(b)–1 and ND–3673.2(b)–1 for welds with leg size less than 1.09 t_n.

(iii) *Seismic design of piping.* Applicants or licensees may use Subarticles NB–3200, NB–3600, NC–3600, and ND–3600 for seismic design of piping, up to and including the 1993 Addenda, subject to the condition specified in paragraph (b)(1)(ii) of this section. Applicants or licensees may not use these subarticles for seismic design of piping in the 1994 Addenda through the 2006 Addenda incorporated by reference in paragraph (b)(1) of this section except that Subarticle NB–3200 in the 2004 Edition through the 2008 Addenda may be used by applicants and licensees subject to the condition in paragraph (b)(1)(iii)(B) of this section. Applicants or licensees may use Subarticles NB–3600, NC–3600 and ND–3600 for the seismic design of piping in the 2006 Addenda through the 2008 Addenda subject to the conditions of this paragraph corresponding to these subarticles.

(A) For Class 1 elbows and tees of ferritic steel materials operating at temperatures above 300 °F, the allowable B_2' index defined in Subparagraph NB–3656(b)(3) shall be no less than $0.75B_2$ from Table NB–3681(A)–1.

(B) When applying Note (1) of Figure NB–3222–1 for Level B service limits, the calculation of P_b stresses must include reversing dynamic loads (including inertia earthquake effects) if evaluation of these loads is required.

(C) D_o/t must not be greater than 40, where D_o is the outer diameter of pipe, and t is the nominal pipe thickness. Subparagraph NB–3683.2(C), Note (1) to Table NB–3681(a)–1, Note (3) to Figures NC–3673.2(b)–1 and ND–3673.2(b)–1 may not be applied.

(iv) *Quality assurance.* When applying editions and addenda later than the 1989 Edition of Section III, the requirements of NQA–1, "Quality Assurance Requirements for Nuclear Facilities," 1986 Edition through the 1994 Edition, are acceptable for use, provided that the edition and addenda of NQA–1 specified in NCA–4000 is used in conjunction with the administrative, quality, and technical provisions contained in the edition and addenda of Section III being used.

* * * * *

(vii) *Capacity certification and demonstration of function of incompressible-fluid pressure-relief valves.* When applying the 2006 Addenda through the 2008 Addenda, applicants or licensees may not apply paragraph NB–7742 of the ASME B&PV Code, Section III. New Class 1 incompressible-fluid, pressure-relief valve designs must be tested at the highest values of set-pressure ranges as required by prior editions and addenda of the ASME B&PV Code, Section III.

(2) As used in this section, references to Section XI refer to Section XI, Division 1, of the ASME Boiler and Pressure Vessel Code, and include the 1970 Edition though the 1976 Winter Addenda, and the 1977 Edition through the 2007 Edition with the 2008 Addenda, subject to the following conditions:

(i) *Pressure-retaining welds in ASME Code Class 1 piping (applies to Table IWB–2500 and IWB–2500–1 and Category B–J).* If the facility's application for a construction permit was docketed prior to July 1, 1978, the extent of examination for Code Class 1 pipe welds may be determined by the requirements of Table IWB–2500 and Table IWB–2600 Category B–J of Section XI of the ASME B&PV Code in the 1974 Edition and addenda through the Summer 1975 Addenda or other requirements the NRC may adopt.

(ii) *Effective edition and addenda of Subsection IWE and Subsection IWL, Section XI.* Applicants or licensees may use either the 1992 Edition with the 1992 Addenda or the 1995 Edition with the 1996 Addenda of Subsection IWE and Subsection IWL as conditioned by the requirements in paragraphs (b)(2)(iv) and (b)(2)(v) of this section when implementing the initial 120-month inspection interval for the containment inservice inspection requirements of this section. Successive 120-month interval updates must be implemented in accordance with paragraph (g)(4)(ii) of this section.

(iii) *Section XI References to OM Part 4, OM Part 6 and OM Part 10 (Table*

IWA–1600–1). When using Table IWA–1600–1, "Referenced Standards and Specifications," in the Section XI, Division 1, 1987 Addenda, 1988 Addenda, or 1989 Edition, the specified "Revision Date or Indicator" for ASME/ANSI OM Part 4, ASME/ANSI Part 6, and ASME/ANSI Part 10 must be the OMa–1988 Addenda to the OM–1987 Edition. These requirements have been incorporated into the OM Code which is incorporated by reference in paragraph (b)(3) of this section.

(iv) *Examination of concrete containments.* Applicants or licensees applying Subsection IWL, 1992 Edition with the 1992 Addenda, shall apply paragraphs (b)(2)(iv)(A) of this section. Applicants or licensees applying Subsection IWL, 1995 Edition with the 1996 Addenda, shall apply paragraphs (b)(2)(iv)(A), (b)(2)(iv)(D)(*3*), and (b)(2)(iv)(E) of this section. Applicants or licensees applying Subsection IWL, 1998 Edition through the 2000 Addenda shall apply paragraphs (b)(2)(iv)(E) and (b)(2)(iv)(F) of this section. Applicants or licensees applying Subsection IWL, 2001 Edition through the 2004 Edition, up to and including the 2006 Addenda, shall apply paragraphs (b)(2)(iv)(E) through (b)(2)(iv)(G) of this section. Applicants or licensees applying Subsection IWL, 2007 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, shall apply paragraph (b)(2)(iv)(E) of this section.

(A) Grease caps that are accessible must be visually examined to detect grease leakage or grease cap deformations. Grease caps must be removed for this examination when there is evidence of grease cap deformation that indicates deterioration of anchorage hardware.

(B) When evaluation of consecutive surveillances of prestressing forces for the same tendon or tendons in a group indicates a trend of prestress loss such that the tendon force(s) would be less than the minimum design prestress requirements before the next inspection interval, an evaluation must be performed and reported in the Engineering Evaluation Report as prescribed in IWL–3300.

(C) When the elongation corresponding to a specific load (adjusted for effective wires or strands) during retensioning of tendons differs by more than 10 percent from that recorded during the last measurement, an evaluation must be performed to determine whether the difference is related to wire failures or slip of wires in anchorage. A difference of more than 10 percent must be identified in the ISI Summary Report required by IWA–6000.

(D) The applicant or licensee shall report the following conditions, if they occur, in the ISI Summary Report required by IWA–6000:

(*1*) The sampled sheathing filler grease contains chemically combined water exceeding 10 percent by weight or the presence of free water;

(*2*) The absolute difference between the amount removed and the amount replaced exceeds 10 percent of the tendon net duct volume;

(*3*) Grease leakage is detected during general visual examination of the containment surface.

(E) For Class CC applications, the applicant or licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the applicant or licensee shall provide the following in the ISI Summary Report required by IWA–6000:

(*1*) A description of the type and estimated extent of degradation, and the conditions that led to the degradation;

(*2*) An evaluation of each area, and the result of the evaluation, and;

(*3*) A description of necessary corrective actions.

(F) Personnel that examine containment concrete surfaces and tendon hardware, wires, or strands must meet the qualification provisions in IWA–2300. The "owner-defined" personnel qualification provisions in IWL–2310(d) are not approved for use.

(G) Corrosion protection material must be restored following concrete containment post-tensioning system repair and replacement activities in accordance with the quality assurance program requirements specified in IWA–1400.

(v) *Examination of metal containments and the liners of concrete containments.* Applicants or licensees applying Subsection IWE, 1992 Edition with the 1992 Addenda, or the 1995 Edition with the 1996 Addenda, shall satisfy the requirements of paragraphs (b)(2)(v)(A) through (b)(2)(v)(E) of this section. Applicants or licensees applying Subsection IWE, 1998 Edition through the 2001 Edition with the 2003 Addenda, shall satisfy the requirements of paragraphs (b)(2)(v)(A), (b)(2)(v)(B), and (b)(2)(v)(F) through (b)(2)(v)(I) of this section. Applicants or licensees applying Subsection IWE, 2004 Edition, up to and including, the 2005 Addenda, shall satisfy the requirements of paragraphs (b)(2)(v)(A), (b)(2)(v)(B), and (b)(2)(v)(F) through (b)(2)(v)(H) of this section. Applicants or licensees Licensees applying Subsection IWE, 2004 Edition with the 2006 Addenda, shall satisfy the requirements of paragraphs (b)(2)(v)(A) and (b)(2)(v)(B) of this section. Applicants or licensees applying Subsection IWE, 2007 Edition through the latest addenda incorporated by reference in paragraph (b)(2) of this section, shall satisfy the requirements of paragraphs (b)(2)(v)(A), (b)(2)(v)(B) and (b)(2)(v)(J) of this section.

(A) For Class MC applications, the applicant or licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the applicant or licensee shall provide the following in the ISI Summary Report as required by IWA–6000:

(*1*) A description of the type and estimated extent of degradation, and the conditions that led to the degradation;

(*2*) An evaluation of each area, and the result of the evaluation, and;

(*3*) A description of necessary corrective actions.

(B) When performing remotely the visual examinations required by Subsection IWE, the maximum direct examination distance specified in Table IWA–2210–1 may be extended and the minimum illumination requirements specified in Table IWA–2210–1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination.

(C) The examinations specified in Examination Category E–B, Pressure Retaining Welds, and Examination Category E–F, Pressure Retaining Dissimilar Metal Welds, are optional.

(D) Paragraph (b)(2)(v)(D) of this section may be used as an alternative to the requirements of IWE–2430.

(*1*) If the examinations reveal flaws or areas of degradation exceeding the acceptance standards of Table IWE–3410–1, an evaluation must be performed to determine whether additional component examinations are required. For each flaw or area of degradation identified which exceeds acceptance standards, the applicant or licensee shall provide the following in the ISI Summary Report required by IWA–6000:

(*i*) A description of each flaw or area, including the extent of degradation, and the conditions that led to the degradation;

(*ii*) The acceptability of each flaw or area, and the need for additional examinations to verify that similar

degradation does not exist in similar components, and;

(*iii*) A description of necessary corrective actions.

(*2*) The number and type of additional examinations to ensure detection of similar degradation in similar components.

(E) A general visual examination as required by Subsection IWE must be performed once each period.

(F) VT–1 and VT–3 examinations must be conducted in accordance with IWA–2200. Personnel conducting examinations in accordance with the VT–1 or VT–3 examination method shall be qualified in accordance with IWA–2300. The "owner-defined" personnel qualification provisions in IWE–2330(a) for personnel that conduct VT–1 and VT–3 examinations are not approved for use.

(G) The VT–3 examination method must be used to conduct the examinations in Items E1.12 and E1.20 of Table IWE–2500–1, and the VT–1 examination method must be used to conduct the examination in Item E4.11 of Table IWE–2500–1. An examination of the pressure-retaining bolted connections in Item E1.11 of Table IWE–2500–1 using the VT–3 examination method must be conducted once each interval. The "owner-defined" visual examination provisions in IWE–2310(a) are not approved for use for VT–1 and VT–3 examinations.

(H) Containment bolted connections that are disassembled during the scheduled performance of the examinations in Item E1.11 of Table IWE–2500–1 must be examined using the VT–3 examination method. Flaws or degradation identified during the performance of a VT–3 examination must be examined in accordance with the VT–1 examination method. The criteria in the material specification or IWB–3517.1 must be used to evaluate containment bolting flaws or degradation. As an alternative to performing VT–3 examinations of containment bolted connections that are disassembled during the scheduled performance of Item E1.11, VT–3 examinations of containment bolted connections may be conducted whenever containment bolted connections are disassembled for any reason.

(I) The ultrasonic examination acceptance standard specified in IWE–3511.3 for Class MC pressure-retaining components must also be applied to metallic liners of Class CC pressure-retaining components.

(J) In general, the cutting of a large hole in the containment pressure boundary for replacement of steam generators, reactor vessel heads, pressurizers, or other similar modification is considered a "major" modification or repair/replacement for Class MC and Class CC containment structures. When applying IWE–5000, any repair/replacement that is a "major" containment modification, as defined in this section, must be followed by a Type A test to provide assurance of containment structural and leaktight integrity prior to returning to service, in accordance with 10 CFR part 50, appendix J, Option A or Option B on which the applicant's or licensee's Containment Leak-Rate Testing Program is based. When applying IWE–5000, if a Type A, B, or C Test is performed, the acceptance standard for the test must be in accordance with 10 CFR part 50, appendix J. In lieu of performing the Type A test, the applicant or licensee may conduct a short-duration structural test of the containment, which is a combination of actions to ensure that:

(*1*) The modified containment meets the pre-service non-destructive examination (NDE) test requirements as required by the construction code;

(*2*) The locally welded areas are examined for essentially zero leakage using a soap bubble test, or an equivalent test;

(*3*) The entire containment is subjected to the peak calculated containment design basis accident pressure, P_a, for a minimum of 10 minutes (Class MC steel containment) and 1 hour (Class CC concrete containment); and

(*4*) The outside surfaces of concrete containments are visually examined as required by Subsection IWL, during the peak pressure, and that the outside and inside surfaces of the steel containment surfaces are examined as required by Subsection IWE, during or immediately after the test.

(vi) *Quality assurance.* When applying Section XI editions and addenda later than the 1989 Edition, the requirements of NQA–1, "Quality Assurance Requirements for Nuclear Facilities," 1979 Addenda through the 1989 Edition, are acceptable as permitted by IWA–1400 of Section XI, if the licensee uses its 10 CFR part 50, appendix B, quality assurance program, in conjunction with Section XI requirements. Commitments contained in the licensee's quality assurance program description that are more stringent than those contained in NQA–1 must govern Section XI activities. Further, where NQA–1 and Section XI do not address the commitments contained in the licensee's Appendix B quality assurance program description, the commitments must be applied to Section XI activities.

(vii) [Reserved]

(viii) *Underwater welding.* The provisions in IWA–4660, "Underwater Welding," of Section XI, 1997 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, are not approved for use on irradiated material.

(ix) [Reserved]

(x) *Appendix VIII personnel qualification.* All personnel qualified for performing ultrasonic examinations in accordance with Appendix VIII shall receive 8 hours of annual hands-on training on specimens that contain cracks. Licensees applying the 1999 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section may use the annual practice requirements in VII–4240 of Appendix VII of Section XI in place of the 8 hours of annual hands-on training provided that the supplemental practice is performed on material or welds that contain cracks, or by analyzing prerecorded data from material or welds that contain cracks. In either case, training must be completed no earlier than 6 months prior to performing ultrasonic examinations at a licensee's facility.

(xi) *Appendix VIII specimen set and qualification requirements.* Licensees using Appendix VIII in the 1995 Edition through the 2001 Edition of the ASME Boiler and Pressure Vessel Code may elect to comply with all of the provisions in paragraphs (b)(2)(xi)(A) through (b)(2)(xi)(M) of this section, except for paragraph (b)(2)(xi)(F) of this section, which may be used at the licensee's option. Licensees using editions and addenda after 2001 Edition through the 2006 Addenda shall use the 2001 Edition of Appendix VIII, and may elect to comply with all of the provisions in paragraphs (b)(2)(xi)(A) through (b)(2)(xi)(M) of this section, except for paragraph (b)(2)(xi)(F) of this section, which may be used at the licensee's option.

(A) When applying Supplements 2, 3, and 10 to Appendix VIII, the following examination coverage criteria requirements must be used:

(*1*) Piping must be examined in two axial directions, and when examination in the circumferential direction is required, the circumferential examination must be performed in two directions, provided access is available. Dissimilar metal welds must be examined axially and circumferentially.

(*2*) Where examination from both sides is not possible, full coverage credit may be claimed from a single side for ferritic welds. Where examination from

both sides is not possible on austenitic welds or dissimilar metal welds, full coverage credit from a single side may be claimed only after completing a successful single-sided Appendix VIII demonstration using flaws on the opposite side of the weld. Dissimilar metal weld qualifications must be demonstrated from the austenitic side of the weld and may be used to perform examinations from either side of the weld.

(B) The following conditions must be used in addition to the requirements of Supplement 4 to Appendix VIII:

(*1*) Paragraph 3.1, Detection acceptance criteria—Personnel are qualified for detection if the results of the performance demonstration satisfy the detection requirements of ASME Section XI, Appendix VIII, Table VIII–S4–1 and no flaw greater than 0.25 inch through wall dimension is missed.

(*2*) Paragraph 1.1(c), Detection test matrix—Flaws smaller than the 50 percent of allowable flaw size, as defined in IWB–3500, need not be included as detection flaws. For procedures applied from the inside surface, use the minimum thickness specified in the scope of the procedure to calculate a/t. For procedures applied from the outside surface, the actual thickness of the test specimen is to be used to calculate a/t.

(C) When applying Supplement 4 to Appendix VIII, the following conditions must be used:

(*1*) A depth sizing requirement of 0.15 inch RMS must be used in lieu of the requirements in Subparagraphs 3.2(a) and 3.2(c), and a length sizing requirement of 0.75 inch RMS must be used in lieu of the requirement in Subparagraph 3.2(b).

(*2*) In lieu of the location acceptance criteria requirements of Subparagraph 2.1(b), a flaw will be considered detected when reported within 1.0 inch or 10 percent of the metal path to the flaw, whichever is greater, of its true location in the X and Y directions.

(*3*) In lieu of the flaw type requirements of Subparagraph 1.1(e)(1), a minimum of 70 percent of the flaws in the detection and sizing tests shall be cracks. Notches, if used, must be limited by the following:

(*i*) Notches must be limited to the case where examinations are performed from the clad surface.

(*ii*) Notches must be semielliptical with a tip width of less than or equal to 0.010 inches.

(*iii*) Notches must be perpendicular to the surface within ±2 degrees.

(*4*) In lieu of the detection test matrix requirements in paragraphs 1.1(e)(2) and 1.1(e)(3), personnel demonstration test sets must contain a representative distribution of flaw orientations, sizes, and locations.

(D) The following conditions must be used in addition to the requirements of Supplement 6 to Appendix VIII:

(*1*) Paragraph 3.1, Detection Acceptance Criteria—Personnel are qualified for detection if:

(*i*) No surface connected flaw greater than 0.25 inch through wall has been missed.

(*ii*) No embedded flaw greater than 0.50 inch through wall has been missed.

(*2*) Paragraph 3.1, Detection Acceptance Criteria—For procedure qualification, all flaws within the scope of the procedure are detected.

(*3*) Paragraph 1.1(b) for detection and sizing test flaws and locations—Flaws smaller than the 50 percent of allowable flaw size, as defined in IWB–3500, need not be included as detection flaws. Flaws which are less than the allowable flaw size, as defined in IWB–3500, may be used as detection and sizing flaws.

(*4*) Notches are not permitted.

(E) When applying Supplement 6 to Appendix VIII, the following conditions must be used:

(*1*) A depth sizing requirement of 0.25 inch RMS must be used in lieu of the requirements of subparagraphs 3.2(a), 3.2(c)(2), and 3.2(c)(3).

(*2*) In lieu of the location acceptance criteria requirements in Subparagraph 2.1(b), a flaw will be considered detected when reported within 1.0 inch or 10 percent of the metal path to the flaw, whichever is greater, of its true location in the X and Y directions.

(*3*) In lieu of the length sizing criteria requirements of Subparagraph 3.2(b), a length sizing acceptance criteria of 0.75 inch RMS must be used.

(*4*) In lieu of the detection specimen requirements in Subparagraph 1.1(e)(1), a minimum of 55 percent of the flaws must be cracks. The remaining flaws may be cracks or fabrication type flaws, such as slag and lack of fusion. The use of notches is not allowed.

(*5*) In lieu of paragraphs 1.1(e)(2) and 1.1(e)(3) detection test matrix, personnel demonstration test sets must contain a representative distribution of flaw orientations, sizes, and locations.

(F) The following conditions may be used for personnel qualification for combined Supplement 4 to Appendix VIII and Supplement 6 to Appendix VIII qualification. Licensees choosing to apply this combined qualification shall apply all of the provisions of Supplements 4 and 6 including the following conditions:

(*1*) For detection and sizing, the total number of flaws must be at least 10. A minimum of 5 flaws shall be from Supplement 4, and a minimum of 50 percent of the flaws must be from Supplement 6. At least 50 percent of the flaws in any sizing must be cracks. Notches are not acceptable for Supplement 6.

(*2*) Examination personnel are qualified for detection and length sizing when the results of any combined performance demonstration satisfy the acceptance criteria of Supplement 4 to Appendix VIII.

(*3*) Examination personnel are qualified for depth sizing when Supplement 4 to Appendix VIII and Supplement 6 to Appendix VIII flaws are sized within the respective acceptance criteria of those supplements.

(G) When applying Supplement 4 to Appendix VIII, Supplement 6 to Appendix VIII, or combined Supplement 4 and Supplement 6 qualification, the following additional conditions must be used, and examination coverage must include:

(*1*) The clad to base metal interface, including a minimum of 15 percent T (measured from the clad to base metal interface), must be examined from four orthogonal directions using procedures and personnel qualified in accordance with Supplement 4 to Appendix VIII.

(*2*) If the clad-to-base-metal-interface procedure demonstrates delectability of flaws with a tilt angle relative to the weld centerline of at least 45 degrees, the remainder of the examination volume is considered fully examined if coverage is obtained in one parallel and one perpendicular direction. This must be accomplished using a procedure and personnel qualified for single-side examination in accordance with Supplement 6. Subsequent examinations of this volume may be performed using examination techniques qualified for a tilt angle of at least 10 degrees.

(*3*) The examination volume not addressed by paragraph (b)(2)(xi)(G)(*1*) of this section is considered fully examined if coverage is obtained in one parallel and one perpendicular direction, using a procedure and personnel qualified for single sided examination when the conditions in paragraph (b)(2)(xi)(G)(*2*) are met.

(H) When applying Supplement 5 to Appendix VIII, at least 50 percent of the flaws in the demonstration test set must be cracks and the maximum mis-orientation must be demonstrated with cracks. Flaws in nozzles with bore diameters equal to or less than 4 inches may be notches.

(I) When applying Supplement 5, Paragraph (a), to Appendix VIII, the number of false calls allowed must be

D/10, with a maximum of 3, where D is the diameter of the nozzle.

(J) [Reserved]

(K) When performing nozzle-to-vessel weld examinations, the following conditions must be used when the requirements contained in Supplement 7 to Appendix VIII are applied for nozzle-to-vessel welds in conjunction with Supplement 4 to Appendix VIII, Supplement 6 to Appendix VIII, or combined Supplement 4 and Supplement 6 qualification.

(*1*) For examination of nozzle-to-vessel welds conducted from the bore, the following conditions are required to qualify the procedures, equipment, and personnel:

(*i*) For detection, a minimum of four flaws in one or more full-scale nozzle mock-ups must be added to the test set. The specimens must comply with Supplement 6, paragraph 1.1, to Appendix VIII, except for flaw locations specified in Table VIII S6–1. Flaws may be notches, fabrication flaws or cracks. Seventy-five (75) percent of the flaws must be cracks or fabrication flaws. Flaw locations and orientations must be selected from the choices shown in paragraph (b)(2)(xi)(K)(*4*) of this section, Table VIII–S7–1—Modified, with the exception that flaws in the outer eighty-five (85) percent of the weld need not be perpendicular to the weld. There may be no more than two flaws from each category, and at least one subsurface flaw must be included.

(*ii*) For length sizing, a minimum of four flaws as in paragraph (b)(2)(xi)(K)(*1*)(*i*) of this section must be included in the test set. The length sizing results must be added to the results of combined Supplement 4 to Appendix VIII and Supplement 6 to Appendix VIII. The combined results must meet the acceptance standards contained in paragraph (b)(2)(xi)(E)(*3*) of this section.

(*iii*) For depth sizing, a minimum of four flaws as in paragraph (b)(2)(xi)(K)(*1*)(*i*) of this section must be included in the test set. Their depths must be distributed over the ranges of Supplement 4, Paragraph 1.1, to Appendix VIII, for the inner 15 percent of the wall thickness and Supplement 6, Paragraph 1.1, to Appendix VIII, for the remainder of the wall thickness. The depth sizing results must be combined with the sizing results from Supplement 4 to Appendix VIII for the inner 15 percent and to Supplement 6 to Appendix VIII for the remainder of the wall thickness. The combined results must meet the depth sizing acceptance criteria contained in paragraphs (b)(2)(xi)(C)(*1*), (b)(2)(xi)(E)(*1*), and (b)(2)(xi)(F)(*3*) of this section.

(*2*) For examination of reactor pressure vessel nozzle-to-vessel welds conducted from the inside of the vessel,

(*i*) The clad to base metal interface and the adjacent examination volume to a minimum depth of 15 percent T (measured from the clad to base metal interface) must be examined from four orthogonal directions using a procedure and personnel qualified in accordance with Supplement 4 to Appendix VIII as conditioned by paragraphs (b)(2)(xi)(B) and (b)(2)(xi)(C) of this section.

(*ii*) When the examination volume defined in paragraph (b)(2)(xi)(K)(*2*)(*i*) of this section cannot be effectively examined in all four directions, the examination must be augmented by examination from the nozzle bore using a procedure and personnel qualified in accordance with paragraph (b)(2)(xi)(K)(*1*) of this section.

(*iii*) The remainder of the examination volume not covered by paragraph (b)(2)(xi)(K)(2)(*ii*) of this section or a combination of paragraphs (b)(2)(xi)(K)(*2*)(i) and (b)(2)(xi)(K)(*2*)(*ii*) of this section, must be examined from the nozzle bore using a procedure and personnel qualified in accordance with paragraph (b)(2)(xi)(K)(*1*) of this section, or from the vessel shell using a procedure and personnel qualified for single sided examination in accordance with Supplement 6 to Appendix VIII, as conditioned by paragraphs (b)(2)(xi)(D) through (b)(2)(xi)(G) of this section.

(*3*) For examination of reactor pressure vessel nozzle-to-shell welds conducted from the outside of the vessel,

(*i*) The clad to base metal interface and the adjacent metal to a depth of 15 percent T, (measured from the clad to base metal interface) must be examined from one radial and two opposing circumferential directions using a procedure and personnel qualified in accordance with Supplement 4 to Appendix VIII, as conditioned by paragraphs (b)(2)(xi)(B) and (b)(2)(xi)(C) of this section, for examinations performed in the radial direction, and Supplement 5 to Appendix VIII, as conditioned by paragraph (b)(2)(xi)(J) of this section, for examinations performed in the circumferential direction.

(*ii*) The examination volume not addressed by paragraph (b)(2)(xi)(K)(*3*)(*i*) of this section must be examined in a minimum of one radial direction using a procedure and personnel qualified for single sided examination in accordance with Supplement 6 to Appendix VIII, as conditioned by paragraphs (b)(2)(xi)(D) through (b)(2)(xi)(G) of this section.

(*4*) Table VIII–S7–1, "Flaw Locations and Orientations," Supplement 7 to Appendix VIII, is conditioned as follows:

TABLE VIII–S7–1—MODIFIED

Flaw Locations and Orientations		
	Parallel to weld	Perpendicular to weld
Inner 15 percent	X	X
OD Surface	X	.....
Subsurface	X	.....

(L) As a condition to the requirements of Supplement 8, Subparagraph 1.1(c), to Appendix VIII, notches may be located within one diameter of each end of the bolt or stud.

(M) When implementing Supplement 12 to Appendix VIII, only the provisions related to the coordinated implementation of Supplement 3 to Supplement 2 performance demonstrations are to be applied.

(xii) *Appendix VIII single side ferritic vessel and piping and stainless steel piping examination.*

(A) Examinations performed from one side of a ferritic vessel weld must be conducted with equipment, procedures, and personnel that have demonstrated proficiency with single side examinations. To demonstrate equivalency to two sided examinations, the demonstration must be performed to the requirements of Appendix VIII as conditioned by this paragraph and paragraphs (b)(2)(xi)(B) through (b)(2)(xi)(G) of this section, on specimens containing flaws with non-optimum sound energy reflecting

characteristics or flaws similar to those in the vessel being examined.

(B) Examinations performed from one side of a ferritic or stainless steel pipe weld must be conducted with equipment, procedures, and personnel that have demonstrated proficiency with single side examinations. To demonstrate equivalency to two sided examinations, the demonstration must be performed to the requirements of Appendix VIII as conditioned by this paragraph and paragraph (b)(2)(xi)(A) of this section.

(xiii) *Reconciliation of quality requirements.* When purchasing replacement items, in addition to the reconciliation provisions of IWA–4200, 1995 Addenda through 1998 Edition, the replacement items must be purchased, to the extent necessary, in accordance with the licensee's quality assurance program description required by 10 CFR 50.34(b)(6)(ii).

(xiv) *Certification of NDE personnel.* (A) Level I and II nondestructive examination personnel shall be recertified on a 3-year interval in lieu of the 5-year interval specified in the 1997 Addenda and 1998 Edition of IWA–2314, and IWA–2314(a) and IWA–2314(b) of the 1999 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section.

(B) When applying editions and addenda prior to the 2007 Edition of Section XI, paragraph IWA–2316 may only be used to qualify personnel that observe leakage during system leakage and hydrostatic tests conducted in accordance with IWA 5211(a) and (b).

(C) When applying editions and addenda prior to the 2004 Edition through the 2005 Addenda of Section XI, licensee's qualifying visual examination personnel for VT–3 visual examination under paragraph IWA–2317 of Section XI, must demonstrate the proficiency of the training by administering an initial qualification examination and administering subsequent examinations on a 3-year interval.

(xv) *Substitution of alternative methods.* The provisions for substituting alternative examination methods, a combination of methods, or newly developed techniques in the 1997 Addenda of IWA–2240 must be applied when using the 1998 Edition through the 2004 Edition of Section XI of the ASME B&PV Code. The provisions in IWA–4520(c), 1997 Addenda through the 2004 Edition, allowing the substitution of alternative methods, a combination of methods, or newly developed techniques for the methods specified in the Construction Code are not approved for use. The provisions in IWA–4520(b)(2) and IWA–4521 of the 2008 Addenda through the latest edition and addenda approved in paragraph (b)(2) of this section, allowing the substitution of ultrasonic examination for radiographic examination specified in the Construction Code are not approved for use.

(xvi) *System leakage tests.*

(A) When performing system leakage tests in accordance with IWA–5213(a), 1997 through 2002 Addenda, the licensee shall maintain a 10-minute hold time after test pressure has been reached for Class 2 and Class 3 components that are not in use during normal operating conditions. No hold time is required for the remaining Class 2 and Class 3 components provided that the system has been in operation for at least 4 hours for insulated components or 10 minutes for uninsulated components.

(B) The NDE provision in IWA–4540(a)(2) of the 2002 Addenda of Section XI must be applied when performing system leakage tests after repair and replacement activities performed by welding or brazing on a pressure retaining boundary using the 2003 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section.

(xvii) *Table IWB–2500–1 examination requirements.*

(A) The provisions of Table IWB–2500–1, Examination Category B–D, Full Penetration Welded Nozzles in Vessels, Items B3.40 and B3.60 (Inspection Program A) and Items B3.120-and B3.140 (Inspection Program B) of the 1998 Edition must be applied when using the 1999 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section. A visual examination with magnification that has a resolution sensitivity to detect a 1-mil width wire or crack, utilizing the allowable flaw length criteria in Table IWB–3512–1, 1997 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, with a limiting assumption on the flaw aspect ratio (*i.e.,* a/l=0.5), may be performed instead of an ultrasonic examination.

(B) The provisions of Table IWB–2500–1, Examination Category B–G–2, Item B7.80, that are in the 1995 Edition are applicable only to reused bolting when using the 1997 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section.

(xviii) *Surface examination.* The use of the provision in IWA–2220, "Surface Examination," of Section XI, 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, that allow use of an ultrasonic examination method is prohibited.

(xix) *Evaluation of thermally cut surfaces.* The use of the provisions for eliminating mechanical processing of thermally cut surfaces in IWA–4461.4.2 of Section XI, 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section are prohibited.

(xx) *Incorporation of the performance demonstration initiative and addition of ultrasonic examination criteria.* The use of Appendix VIII and the supplements to Appendix VIII and Article I–3000 of Section XI of the ASME B&PV Code, 2002 Addenda through the 2006 Addenda is prohibited.

(xxi) *Mitigation of defects by modification.* The use of the provisions in IWA–4340, "Mitigation of Defects by Modification," Section XI, 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section are prohibited.

(xxii) *Pressure testing Class 1, 2, and 3 mechanical joints.* The repair and replacement activity provisions in IWA–4540(c) of the 1998 Edition of Section XI for pressure testing Class 1, 2, and 3 mechanical joints must be applied when using the 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section.

(xxiii) *Removal of insulation.* When performing visual examination in accordance with IWA–5242 of Section XI of the ASME B&PV Code, 2003 Addenda through the 2006 Addenda, or IWA–5241 of the 2007 Edition through the latest edition and addenda incorporated in paragraph (b)(2) of the section, insulation must be removed from 17–4 PH or 410 stainless steel studs or bolts aged at a temperature below 1100°F or having a Rockwell Method C hardness value above 30, and from A–286 stainless steel studs or bolts preloaded to 100,000 pounds per square inch or higher.

(xxiv) *Analysis of flaws.* Licensees using ASME B&PV Code, Section XI, Appendix A shall use the following conditions when implementing Equation (2) in A–4300(b)(1):

For $R < 0$, ΔK_I depends on the crack depth (a), and the flow stress (σ_f). The flow stress is defined by $\sigma_f = \frac{1}{2}(\sigma_{ys} + \sigma_{ult})$, where σ_{ys} is the yield strength and σ_{ult} is the ultimate tensile strength in units ksi (MPa) and a is in units in. (mm). For $-2 \le R \le 0$ and $K_{max} - K_{min} \le 0.8 \times 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = K_{max}$. For $R < -2$ and $K_{max} - K_{min} \le 0.8 \times 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = (1–R)\ K_{max}/3$. For $R < 0$ and $K_{max} - K_{min} > 0.8 \times 1.12\ \sigma_f \sqrt{(\pi a)}$, S = 1 and $\Delta K_I = K_{max} - K_{min}$.

(xxv) *Evaluation of unanticipated operating events.* The provisions of ASME B&PV Code, Section XI, Appendix E, Section E–1200 are not approved for use. In addition, when using the provisions of Section E–1300, the analytical procedure must be based on a postulated semi-elliptical surface flaw of a one-quarter vessel thickness (*i.e.,* the "minimum initiation crack size" in Table E–2 shall be a 1/4T flaw) and the linear elastic fracture mechanics criteria be as follows:

$1.4K_{Im} + K_{Ir} = K_{Ic}$ for the LTOP condition, and $1.4K_{Im} + K_{It} + K_{Ir} = K_{Ic}$, for the PTT condition

(xxvi) *Nonmandatory Appendix R.* Nonmandatory Appendix R, "Risk-Informed Inspection Requirements for Piping," of Section XI, 2005 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, may not be implemented without prior NRC authorization of the proposed alternative in accordance with paragraph (a)(3)(i) of this section.

(3) As used in this section, references to the OM Code refer to the ASME *Code for Operation and Maintenance of Nuclear Power Plants,* Subsections ISTA, ISTB, ISTC, and ISTD, Mandatory Appendices I and II, and Nonmandatory Appendices A through H and J, and include the 1995 Edition through the 2006 Addenda subject to the following conditions:

* * * * *

(v) *Subsection ISTD.* Article IWF–5000, "Inservice Inspection Requirements for Snubbers," of the ASME B&PV Code, Section XI, must be used when performing inservice inspection examinations and tests of snubbers at nuclear power plants.

(A) Licensees may use Subsection ISTD, "Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Power Plants," ASME OM Code, 1995 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(3) of this section, in place of the requirements for snubbers in the editions and addenda up to the 2005 Addenda of the ASME B&PV Code, Section XI, IWF–5200(a) and (b) and IWF–5300(a) and (b), by making appropriate changes to their technical specifications or licensee-controlled documents. Preservice and inservice examinations must be performed using the VT–3 visual examination method described in IWA–2213.

(B) Licensees shall comply with the provisions for examining and testing snubbers in Subsection ISTD of the ASME OM Code and make appropriate changes to their technical specifications or licensee-controlled documents when using the 2006 Addenda and later editions and addenda of Section XI of the ASME B&PV Code.

(vi) *Exercise interval for manual valves.* Manual valves must be exercised on a 2-year interval rather that the 5-year interval specified in paragraph ISTC–3540 of the 1999 through the 2005 Addenda of the ASME OM Code, provided that adverse conditions do not require more frequent testing.

* * * * *

(c) * * *

(3) The Code edition, addenda, and optional ASME Code cases to be applied to components of the reactor coolant pressure boundary must be determined by the provisions of paragraph NCA–1140, Subsection NCA of Section III of the ASME Boiler and Pressure Vessel Code, subject to the following conditions:

(i) The edition and addenda applied to a component must be those which are incorporated by reference in paragraph (b)(1) of this section;

(ii) The ASME Code provisions applied to the pressure vessel may be dated no earlier than the Summer 1972 Addenda of the 1971 edition;

(iii) The ASME Code provisions applied to piping, pumps, and valves may be dated no earlier than the Winter 1972 Addenda of the 1971 edition; and

(iv) The optional Code cases applied to a component must be those listed in NRC Regulatory Guide 1.84 that is incorporated by reference in paragraph (b) of this section.

* * * * *

(d) * * *

(2) The Code edition, addenda, and optional ASME Code cases to be applied to the systems and components identified in paragraph (d)(1) of this section must be determined by the rules of paragraph NCA–1140, Subsection NCA of Section III of the ASME Boiler and Pressure Vessel Code, subject to the following conditions:

(i) The edition and addenda must be those which are incorporated by reference in paragraph (b)(1) of this section;

(ii) The ASME Code provisions applied to the systems and components may be dated no earlier than the 1980 Edition; and

(iii) The optional Code cases must be those listed in the NRC Regulatory Guide 1.84 that is incorporated by reference in paragraph (b) of this section.

(e) * * *

(2) The Code edition, addenda, and optional ASME Code cases to be applied to the systems and components identified in paragraph (e)(1) of this section must be determined by the rules of paragraph NCA–1140, subsection NCA of Section III of the ASME Boiler and Pressure Vessel Code, subject to the following conditions:

(i) The edition and addenda must be those which are incorporated by reference in paragraph (b)(1) of this section;

(ii) The ASME Code provisions applied to the systems and components may be dated no earlier than the 1980 Edition; and

(iii) The optional Code cases must be those listed in NRC Regulatory Guide 1.84 that is incorporated by reference in paragraph (b) of this section.

(f) * * *

(2) For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued on or after January 1, 1971, but before July 1, 1974, pumps and valves which are classified as ASME Code Class 1 and Class 2 must be designed and provided with access to enable the performance of inservice tests for operational readiness set forth in editions and addenda of Section XI of the ASME Boiler and Pressure Vessel Code incorporated by reference in paragraph (b) of this section (or the optional ASME Code cases listed in NRC Regulatory Guide 1.147, Revision 15, or 1.192 that are incorporated by reference in paragraph (b) of this section) in effect 6 months before the date of issuance of the construction permit. The pumps and valves may meet the inservice test requirements set forth in subsequent editions of this Code and addenda which are incorporated by reference in paragraph (b) of this section (or the optional ASME Code Cases listed in NRC Regulatory Guide 1.147, Revision 15, or 1.192 that are incorporated by reference in paragraph (b) of this section), subject to the applicable conditions listed therein.

(3) * * *

(v) All pumps and valves may meet the test requirements set forth in subsequent editions of codes and addenda or portions thereof which are incorporated by reference in paragraph (b) of this section, subject to the conditions listed in paragraph (b) of this section.

(4) Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the inservice test requirements, except design and access provisions, set forth in the ASME OM Code and addenda that become effective

subsequent to editions and addenda specified in paragraphs (f)(2) and (f)(3) of this section and that are incorporated by reference in paragraph (b) of this section, to the extent practical within the limitations of design, geometry and materials of construction of the components.

(i) Inservice tests to verify operational readiness of pumps and valves, whose function is required for safety, conducted during the initial 120-month interval must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section on the date 12 months before the date of issuance of the operating license under this part, or 12 months before the date scheduled for initial loading fuel under a combined license under part 52 of this chapter (or the optional ASME Code cases listed in NRC Regulatory Guide 1.192, that is incorporated by reference in paragraph (b) of this section), subject to the conditions listed in paragraph (b) of this section.

(ii) Inservice tests to verify operational readiness of pumps and valves, whose function is required for safety, conducted during successive 120-month intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months before the start of the 120-month interval (or the optional ASME Code cases listed in NRC Regulatory Guide 1.147, Revision 15, or Regulatory Guide 1.192 that are incorporated by reference in paragraph (b) of this section), subject to the conditions listed in paragraph (b) of this section.

(iii) [Reserved]

(iv) Inservice tests of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (b) of this section, subject to the conditions listed in paragraph (b) of this section, and subject to NRC approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met.

(5) * * *

(iv) Where a pump or valve test requirement by the code or addenda is determined to be impractical by the licensee and is not included in the revised inservice test program as permitted by paragraph (f)(4) of this section, the basis for this determination must be submitted for NRC review and approval not later than 12 months after the expiration of the initial 120-month interval of operation from start of facility commercial operation and each subsequent 120-month interval of operation during which the test is determined to be impractical.

* * * * *

(g) * * *

(2) For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued on or after January 1, 1971, but before July 1, 1974, components (including supports) which are classified as ASME Code Class 1 and Class 2 must be designed and be provided with access to enable the performance of inservice examination of such components (including supports) and must meet the preservice examination requirements set forth in editions and addenda of Section III or Section XI of the ASME B&PV Code (or ASME OM Code for snubber examination and testing) incorporated by reference in paragraph (b) of this section (or the optional ASME code cases listed in NRC Regulatory Guide 1.147, Revision 15, that are incorporated by reference in paragraph (b) of this section) in effect six months before the date of issuance of the construction permit. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of this Code which are incorporated by reference in paragraph (b) of this section (or the optional ASME code cases listed in NRC Regulatory Guide 1.147, Revision 15, when using Section XI, or Regulatory Guide 1.192 when using the OM Code, that are incorporated by reference in paragraph (b) of this section), subject to the applicable conditions.

(3) For a boiling or pressurized water-cooled nuclear power facility whose construction permit under this part, or design certification, design approval, combined license, or manufacturing license under part 52 of this chapter, was issued on or after July 1, 1974:

(i) Components (including supports) which are classified as ASME Code Class 1 must be designed and provided with access to enable the performance of inservice examination of these components and must meet the preservice examination requirements set forth in the editions and addenda of Section III or Section XI of the ASME B&PV Code (or ASME OM Code for snubber examination and testing) incorporated by reference in paragraph (b) of this section (or the optional ASME code cases listed in NRC Regulatory Guide 1.147, Revision 15, when using Section XI; or Regulatory Guide 1.192 when using the OM Code, that are incorporated by reference in paragraph (b) of this section) applied to the construction of the particular component.

(ii) Components which are classified as ASME Code Class 2 and Class 3 and supports for components which are classified as ASME Code Class 1, Class 2, and Class 3 must be designed and be provided with access to enable the performance of inservice examination of these components and must meet the preservice examination requirements set forth in the editions and addenda of Section III or Section XI of the ASME B&PV Code (or ASME OM Code for snubber examination and testing) incorporated by reference in paragraph (b) of this section (or the optional ASME code cases listed in NRC Regulatory Guide 1.147, Revision 15, when using Section XI; or Regulatory Guide 1.192 when using the OM Code, that are incorporated by reference in paragraph (b) of this section) applied to the construction of the particular component.

(iii)–(iv) [Reserved]

(v) All components (including supports) may meet the requirements set forth in subsequent editions of codes and addenda or portions thereof which are incorporated by reference in paragraph (b) of this section, subject to the conditions listed therein.

(4) Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of editions and addenda of the ASME B&PV Code (or ASME OM Code for snubber examination and testing) that become effective subsequent to editions specified in paragraphs (g)(2) and (g)(3) of this section and that are incorporated by reference in paragraph (b) of this section, to the extent practical within the limitations of design, geometry and materials of construction of the components. Components which are classified as Class MC pressure retaining components and their integral attachments, and components which are classified as Class CC pressure retaining components and their integral attachments must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of the ASME B&PV Code and addenda that are incorporated by reference in paragraph (b) of this section, subject to the condition listed in paragraph (b)(2)(ii) of this section and the conditions listed in paragraphs (b)(2)(iv) and (b)(2)(v) of this section, to the extent

practical within the limitation of design, geometry and materials of construction of the components.

(i) Inservice examination of components and system pressure tests conducted during the initial 120-month inspection interval must comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section on the date 12 months before the date of issuance of the operating license (or the optional ASME code cases listed in NRC Regulatory Guide 1.147, Revision 15, when using Section XI; or Regulatory Guide 1.192 when using the OM Code, that are incorporated by reference in paragraph (b) of this section), subject to the conditions listed in paragraph (b) of this section.

(ii) Inservice examination of components and system pressure tests conducted during successive 120-month inspection intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months before the start of the 120-month inspection interval (or the optional ASME code cases listed in NRC Regulatory Guide 1.147, Revision 15, when using Section XI; or Regulatory Guide 1.192 when using the OM Code, that are incorporated by reference in paragraph (b) of this section), subject to the conditions listed in paragraph (b) of this section.

(iii) When applying editions and addenda prior to the 2003 Addenda of Section XI of the ASME B&PV Code licensees may, but are not required to, perform the surface examinations of high-pressure safety injection systems specified in Table IWB–2500–1, Examination Category B–J, Item Numbers B9.20, B9.21 and B9.22.

(iv) Inservice examination of components and system pressure tests may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (b) of this section, subject to the conditions listed in paragraph (b) of this section, and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met.

(v) For a boiling or pressurized water-cooled nuclear power facility whose construction permit under this part or combined license under part 52 of this chapter was issued after January 1, 1956:

(A) Metal containment pressure retaining components and their integral attachments must meet the inservice inspection, repair, and replacement requirements applicable to components which are classified as ASME Code Class MC;

(B) Metallic shell and penetration liners which are pressure retaining components and their integral attachments in concrete containments must meet the inservice inspection, repair, and replacement requirements applicable to components which are classified as ASME Code Class MC;

(C) Concrete containment pressure retaining components and their integral attachments, and the post-tensioning systems of concrete containments must meet the inservice inspections, repair, and replacement requirements applicable to components which are classified as ASME Code Class CC.

(5) * * *

(iii) If the licensee has determined that conformance with a code requirement is impractical for its facility, the licensee shall notify the Commission and submit, as specified in § 50.4, information to support the determinations. Determinations of impracticality in accordance with this section must be based on the demonstrated limitations experienced when attempting to comply with the code requirements during the inservice inspection interval for which the request is being submitted. Requests for relief made in accordance with this section must be submitted to the NRC no later than 12 months after the examination has been attempted.

(iv) Where the licensee determines that an examination required by Code edition or addenda is impractical, and is not included in the revised inservice inspection program as permitted by paragraph (g)(4) of this section, the basis for this determination must be submitted for NRC review and approval not later than 12 months after the expiration of the initial or subsequent 120-month inspection interval for which relief is sought.

(6) * * *

(ii) * * *

(B) Licensees do not have to submit to the NRC for approval of their containment inservice inspection programs which were developed to satisfy the requirements of Subsection

IWE and Subsection IWL with specified conditions. The program elements and the required documentation must be maintained on site for audit.

* * * * *

(E) * * *

(*1*) All licensees of pressurized water reactors shall augment their inservice inspection program by implementing ASME Code Case N–722–1 subject to the conditions specified in paragraphs (g)(6)(ii)(E)(*2*) through (g)(6)(ii)(E)(*4*) of this section. The inspection requirements of ASME Code Case N–722–1 do not apply to components with pressure retaining welds fabricated with Alloy 600/82/182 materials that have been mitigated by weld overlay or stress improvement.

(*2*) If a visual examination determines that leakage is occurring from a specific item listed in Table 1 of ASME Code Case N–722–1 that is not exempted by the ASME Code, Section XI, IWB–1220(b)(1), additional actions must be performed to characterize the location, orientation, and length of crack(s) in Alloy 600 nozzle wrought material and location, orientation, and length of crack(s) in Alloy 82/182 butt welds. Alternatively, licensees may replace the Alloy 600/82/182 materials in all the components under the item number of the leaking component.

(*3*) If the actions in paragraph (g)(6)(ii)(E)(*2*) of this section determine that a flaw is circumferentially oriented and potentially a result of primary water stress corrosion cracking, licensees shall perform non-visual NDE inspections of components that fall under that ASME Code Case N–722–1 item number. The number of components inspected must equal or exceed the number of components found to be leaking under that item number. If circumferential cracking is identified in the sample, non-visual NDE must be performed in the remaining components under that item number.

* * * * *

(F) *Inspection requirements for class 1 pressurized-water reactor piping and vessel nozzle butt welds.*

(*1*) Licensees of existing operating pressurized-water reactors as of [publication date of the final rule] shall implement the requirements of ASME Code Case N–770, subject to the conditions specified in paragraphs (g)(6)(ii)(F)(*2*) through (g)(6)(ii)(F)(*16*) of this section, by the first refueling outage after [date that is 60 days after the date of publication of the final rule].

(*2*) Full structural weld overlays authorized by the NRC staff may be categorized as Inspection Items C or F, as appropriate; welds that have been mitigated by stress improvement without welding may be categorized as Inspection Items D or E, as appropriate, provided the criteria in Appendix I of the code case have been met; for ISI frequencies, all other butt welds that rely on Alloy 82/182 for structural integrity shall be categorized as Inspection Items A–1, A–2 or B until the NRC staff has reviewed the mitigation and authorized an alternative code case

Inspection Item for the mitigated weld, or until an alternative code case Inspection Item is used based on conformance with an ASME mitigation code case endorsed in Regulatory Guide 1.147 with conditions, if applicable, and incorporated in this section.

(*3*) Welds in Table 1, Inspection Items A–1, A–2, and B, that have not received a baseline examination using Section XI, Appendix VIII requirements, shall be examined at the next refueling outage after [the effective date of the final rule].

(*4*) The axial examination coverage requirements of –2500(c) may not be considered to be satisfied unless essentially 100 percent coverage is achieved.

(*5*) Replace paragraph—3132.3(b) with "Previously-evaluated flaws that were mitigated by the techniques identified in Table 1 need not be reevaluated nor have additional successive or additional examinations performed if new planar flaws have not been identified or previously evaluated flaws have remained essentially unchanged."

(*6*) If a weld mitigated by inlay or cladding is determined through a volumetric examination to have cracking that penetrates beyond the thickness of the inlay or cladding, the weld must be reclassified as and inspected using the frequencies of Inspection Item A–1, A–2, or B, as appropriate, until corrected by repair/replacement activity in accordance with IWA–4000 or by corrective measures beyond the scope of Code Case N–770.

(*7*) For Inspection Items G, H, J, and K, the surface examination requirements of Table 1 must apply whether the inservice volumetric examinations are performed from the weld outside diameter or the weld inside diameter. All hot leg operating temperature welds in inspection items G, H, J, and K must be inspected each interval. A 25 percent sample of cold leg operating temperature welds must be inspected whenever the core barrel is removed (unless it has already been inspected within the past 10 years) or 20 years, whichever is less.

(*8*) The first examination following weld inlay, cladding, weld overlay or stress improvement for Inspection Items D, G, and H may not be deferred to the end of the interval.

(*9*) In applying Measurement or Quantification Criterion I–1.1 of Appendix I, a construction weld repair from the inside diameter to a depth of 50 percent of the weld thickness extending 360° around the weld shall be assumed.

(*10*) The last sentence of Measurement or Quantification Criterion I–2.1 of Appendix I shall be replaced by, "The analysis or demonstration test shall account for (a) load combinations that could relieve plastic stress due to shakedown and (b) any material properties related to stress relaxation over time."

(*11*) Replace Measurement or Quantification Criterion I–7.1 of Appendix I, with "An analysis shall be performed using IWB–3600 evaluation methods and acceptance criteria to verify that the mitigation process will not cause any existing flaws to grow.

(*12*) For any mitigated weld whose volumetric examination detects new flaws or growth of existing flaws in the required examination volume that exceed the acceptance standards of IWB–3514 and are found to be acceptable for continued service through an analytical evaluation meeting the requirements of IWB–3600 or a repair meeting the requirements of IWA–4000 or the alternative requirements of an ASME code case, a report summarizing the evaluation, along with inputs, methodologies, assumptions, and cause of the new flaw or flaw growth is to be provided to the NRC prior to the weld being placed in service other than modes 5 or 6.

(*13*) Replace the last sentence of the Extent and Frequency of Examination for Inspection Items C and F with, "Twenty-five percent of this population shall be added to the ISI Program in accordance with –2410 and shall be examined the shorter of once each inspection interval or the life of the overlay."

(*14*) In Figures 2(b) and 5(b), the dimension "b" must be used in place of ½ inch (13 mm), where "b" is equivalent to the nominal thickness of the nozzle or pipe being overlaid, as appropriate.

(*15*) For Inspection Items G, H, J, and K, when applying the acceptance standards of ASME B&PV Code, Section XI, IWB–3514, the thickness "t" in IWB–3514 is the thickness of the inlay or onlay.

(*16*) Welds mitigated by optimized weld overlays in Inspection Items D and E are not permitted to be placed into a population to be examined on a sample basis and must be examined once each inspection interval.

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[1] For inspections to be conducted once per interval, the inspections shall be performed in accordance with the schedule in Section XI, paragraph IWB–2400, except for plants with inservice inspection programs based on a Section XI edition or addenda prior to the 1994 Addenda. For plants with inservice inspection programs based on a Section XI edition or addenda prior to the 1994 Addenda, the inspection shall be performed in accordance with the schedule in Section XI, paragraph IWB–2400, of the 1994 Addenda.

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Dated at Rockville, Maryland, this 19th day of April 2010.

For the Nuclear Regulatory Commission.

Eric J. Leeds,

Director, Office of Nuclear Reactor Regulation.

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