

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

RIN 3150-AH76

Industry Codes and Standards; Amended Requirements

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is proposing to amend its regulations to incorporate by reference the 2004 Edition of Section III, Division 1 and Section XI, Division 1 of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPV Code) and the 2004 Edition of the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code) to provide updated rules for constructing and inspecting components and testing pumps, valves, and dynamic restraints (snubbers) in light-water nuclear power plants. NRC also proposes to require the use of ASME Code Cases N-722 and N-729-1, both with conditions, and to remove certain obsolete requirements specified in § 50.55a. This action is in accordance with the NRC's policy to periodically update the regulations to incorporate new editions and addenda of the ASME Codes by reference and is intended to maintain the safety of nuclear reactors and make NRC activities more effective and efficient.

DATES: Comments regarding the proposed amendment must be submitted by (insert date 75 days after publication in the Federal Register). Comments received after this date will be considered if it is practical to do so, but the Commission is only able to ensure consideration of comments received on or before this date.

ADDRESSES: You may submit comments by any one of the following methods. Please include RIN 3150-AH76 in the subject line of your comments. Comments on rulemakings submitted in writing or in electronic form will be made available to the public in their entirety on the NRC rulemaking web site. Personal information will not be removed from your comments.

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

E-mail comments to: SECY@nrc.gov. If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at (301) 415-1966. You may also submit comments via the NRC's rulemaking Web site at <http://ruleforum.llnl.gov>. Address questions about our rulemaking website to Carol Gallagher (301) 415-5905; e-mail cag@nrc.gov.

Hand deliver comments to: 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 am and 4:15 pm Federal workdays. (Telephone (301) 415-1966).

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

Publicly available documents related to this rulemaking may be viewed electronically on the public computers located at the NRC's Public Document Room (PDR), O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The PDR reproduction contractor will copy documents for a fee. Selected documents, including comments, may be viewed and downloaded electronically via the NRC rulemaking web site at <http://ruleforum.llnl.gov>.

Publicly available documents created or received at the NRC after November 1, 1999, are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this site, the public can gain entry into the NRC's Agencywide Document Access and Management System (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 PDR Reference staff at 1-800-397-4209, 301-415-4737 or by e-mail to pdr@nrc.gov.

FOR FURTHER INFORMATION CONTACT: Lee Banic, Division of Policy and Rulemaking, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001, telephone (301) 415-2771, e-mail: mjb@nrc.gov.

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I. Background

The NRC is proposing to amend 10 CFR 50.55a to incorporate by reference the 2004 Edition of Section III, Division 1 and Section XI, Division 1 of the ASME BPV Code and the 2004 Edition of the ASME OM Code. Section 50.55a requires the use of Section III, Division 1 of the ASME BPV Code for the construction of nuclear power plant components; Section XI, Division 1 of the ASME BPV Code for the inservice inspection (ISI) of nuclear power plant components; and the ASME OM Code for the inservice testing (IST) of pumps and valves.

In a separate proposed rule, published on March 13, 2006 (71 FR 12781), the Commission proposed to add language to the introductory paragraph of § 50.55a to establish the applicability of the conditions therein to licenses and approvals issued under Part 52. Specifically, that proposed rule would add two new sentences: “Each combined license for a utilization facility is subject to the following conditions in addition to those specified in § 50.55, except that each combined license for a boiling or pressurized water-cooled nuclear power facility is subject to the conditions in paragraphs (f) and (g) of this section, but only after the Commission makes the finding under § 52.103(g)” and “Each manufacturing license, standard design approval, and standard design certification application under part 52 of this chapter is subject to the conditions in paragraphs (a), (b)(1), (b)(4), (c), (d), (e), (f)(3), and (g)(3) of this section.” The Commission expects that the March 13, 2006, proposed rule will become final before the proposed rule updating § 50.55a to the 2004 Edition. The net effect then is that combined licenses would be subject to the updated requirements when the rulemaking proposed in this notice becomes final.

The ASME BPV Code and OM Code are national voluntary consensus standards, and are required by the National Technology Transfer and Advancement Act of 1995, Pub. L. 104-113, to be used by government agencies 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 BPV and OM Codes and periodically update § 50.55a to incorporate newer editions and addenda by reference. New editions of the subject codes are issued every 3 years; addenda to the editions are issued yearly except in years when a new edition is issued. The editions and addenda of the ASME BPV and OM Codes were last incorporated by reference into the regulations in a final rule dated October 1, 2004, (69 FR 58804). In that rule, § 50.55a was revised to incorporate by reference the 2001 Edition and 2002 and 2003 Addenda of Sections III and XI, Division 1, of the ASME BPV Code and the 2001 Edition and 2002 and 2003 Addenda of the ASME OM Code.

The NRC is now proposing to incorporate by reference: Section III of the 2004 Edition of the ASME BPV Code; Section XI of the 2004 Edition of the ASME BPV Code subject to proposed modifications and limitations; and the 2004 Edition of the ASME OM Code. The NRC is proposing to amend its regulations as follows:

1. Remove 10 CFR 50.55a(b)(2)(xi), concerning components exempt from examination.
2. Remove 10 CFR 50.55a(b)(2)(xiii) concerning the provisions of Code Case N-523-1, "Mechanical Clamping Devices for Class 2 and 3 Piping."
3. Modify 10 CFR 50.55a(b)(2)(xv) to implement Appendix VIII of Section XI of the 2004 Edition of the ASME BPV Code.

4. Add 10 CFR 50.55a(b)(2)(xx) to require nondestructive examination (NDE) provision in IWA-4540(a)(2) of the 2002 Addenda of Section XI when performing system leakage tests after repair and replacement activities.
5. Revise 10 CFR 50.55a(b)(2)(xxi) to be consistent with the NRC's imposed condition for Code Case N-648-1 in Regulatory Guide (RG) 1.147, Revision 14.
6. Add 10 CFR 50.55a(b)(2)(xxviii) to correct a typographical error regarding an exponent in the evaluation of pressurized water reactor (PWR) reactor vessel head penetration nozzles.
7. Remove 10 CFR 50.55a(g)(6)(ii)(A) and associated paragraphs on the augmented examination of the reactor vessel.
8. Add a paragraph (D) *Reactor Vessel Head Inspections* to 10 CFR 50.55a(g)(6)(ii) to require an inservice inspection program augmented by the provisions of 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" subject to conditions and remove Footnote 10.
9. Add a paragraph (E) *Reactor Coolant Pressure Boundary Visual Inspections* to 10 CFR 50.55a(g)(6)(ii) - Augmented Inspection of Class 1 Components Fabricated with Alloy 600/82/182 Materials to require an inservice inspection program augmented by the

provisions of ASME Code Case N-722, "Additional Inspections for PWR Pressure Retaining Welds in Class 1 Pressure Boundary Components Fabricated with Alloy 60/82/182 Materials, Section XI, Division 1" subject to conditions.

II. Summary of Proposed Revisions to 10 CFR 50.55a

The changes to paragraphs (b) and (g) of 10 CFR 50.55a are discussed below. Paragraphs (a), (c), (d), (e), and (f) would remain unchanged because the requirements in these sections would not be changed by virtue of the incorporating by reference of the 2004 Edition of the ASME Code, Sections III and XI, and the OM Code.

Section III, ASME BPV Code

The proposed rule would revise § 50.55a(b)(1) to incorporate by reference the 2004 Edition of Section III of the ASME BPV Code. The NRC does not propose to adopt any limitations with respect to the 2004 Edition of Section III.

Section XI, ASME BPV Code

The proposed rule would revise § 50.55a(b)(2) to incorporate by reference the 2004 Edition of the ASME BPV Code, Section XI, Division 1, subject to the proposed modifications and limitations discussed below:

10 CFR 50.55a(b)(2)(xi) - *Class 1 piping*.

Paragraph 50.55a(b)(2)(xi) states that "licensees may not apply IWB-1220, "Components Exempt from Examination," of Section XI, 1989 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, and shall

apply IWB-1220, 1989 Edition.” Subarticle IWB-1220 of the 1989 Edition of the ASME Section XI, exempts certain components (such as small bore piping) from the volumetric and surface examinations. However, welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe were included in components for exemption from examination and incorporated in the edition and addenda of the ASME Section XI after the 1989 Edition. The NRC did not agree with the incorporation of these types of welds for exemption from examination because the NRC believed that these welds should be examined to monitor their structural integrity. Therefore, the NRC prohibited the use of 1989 addenda through the latest editions and addenda of the ASME Section XI regarding the application of IWB-1220 in Paragraph 10 CFR 50.55a(b)(2)(xi) (64 FR 51394).

The proposed revision would remove 10 CFR 50.55a(b)(2)(xi), thereby permitting the use of ASME Section XI IWB-1220 of any edition or addenda of ASME Section XI incorporated by reference in 10 CFR 50.55a. The condition placed upon Section XI, IWB-1220 in 10 CFR 50.55a(b)(2)(xi) is no longer necessary because (1) licensees can select an alternate weld for inspection that does not have limitations, (2) licensees have committed to perform augmented inspections of break exclusion zone (BEZ) welds, which are located in inaccessible areas such as containment penetrations or encapsulated by guard pipe, to the extent practical under the BEZ criteria, (3) Boiling water reactor (BWR) licensees have followed the provisions of Generic Letter 88-01, “NRC Position on IGSCC [intergranular stress corrosion cracking] in BWR Austenitic Stainless Steel Piping,” and the associated NRC report, NUREG-0313, “Technical Report on Material Selection and Process Guidelines for BWR Coolant Pressure Boundary Piping,” and the provisions of the BEZ criteria (Reference: Branch Technical Position MEB 3-1 attached to Standard Review Plan 3.6.2) apply to the examination of the welds such as those

that are located inside containment penetrations or encapsulated by guard pipe, and (4) licensees of plants whose construction permits were issued after January 1, 1971 are required to have ASME Class 1 and Class 2 components designed and provided with access to enable the performance of inservice inspections.

10 CFR 50.55a(b)(2)(xiii) - *Mechanical Clamping Devices*.

Paragraph 50.55a(b)(2)(xiii) permits licensees to use the provisions of Code Case N-523-1, "Mechanical Clamping Devices for Class 2 and 3 Piping." The proposed revision would remove 10 CFR 50.55a(b)(2)(xiii) because Code Case N-523-2, which provides updated requirements to those of Code Case N-523-1, has been accepted in RG 1.147, Revision 14, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," which is incorporated by reference into 10 CFR 50.55a(g)(4)(i) and 10 CFR 50.55a(g)(4)(ii).

10 CFR 50.55a(b)(2)(xv) - *Appendix VIII Specimen Set and Qualification Requirements*.

Paragraph 50.55a(b)(2)(xv) specifies implementation of Appendix VIII of Section XI, the 1995 Edition through the 2001 Edition of the ASME BPV Code with regard to ultrasonic examinations of piping systems. The proposed change would reference and allow the use of the 2004 Edition of the ASME Code.

10 CFR 50.55a(b)(2)(xx) - *System Leakage Tests*.

Paragraph 50.55a(b)(2)(xx) would be revised to require that after system leakage tests performed during repair and replacement activities by welding or brazing under the 2003 Addenda through the latest edition and addenda incorporated by reference in 10 CFR 50.55a(b)(2), NDE must be performed in accordance with IWA-4540(a)(2) of the 2002 Addenda of Section XI. This provision would require that (1) the NDE method and acceptance criteria of the 1992 edition or later of Section III be met prior to returning the system to service, and that (2) a system leakage test be performed in accordance with IWA-5000 prior to or as part of returning the system to service.

Subarticle IWA-4540(a) of the 1995 edition of ASME Section XI requires that after welding on a pressure retaining boundary or installing an item by welding or brazing, a system hydrostatic pressure test be performed. The industry asserted that the hydrostatic pressure test creates a significant hardship. Subsequently, the ASME Committee developed Code Case N-416-3, "Alternative Pressure Test Requirements for Welded Repairs or Installation of Replacement Items by Welding Class 1, 2, and 3, Section XI, Div. 1," which provides an alternative to the hydrostatic pressure test. (NRC has accepted Code Case N-416-3 in RG 1.147, Revision 14 which has been incorporated by reference and approved in 10 CFR 50.55a (70 FR 56809; Sept 29, 2005).

Code Case N-416-3 allows that instead of performing a hydrostatic pressure test for welding and brazing repair/replacement activities, performing a system leakage test if two requirements are met. The first requirement is that a NDE be performed on welded or brazed repairs and fabrication and installation joints in accordance with the methods and acceptance criteria of the applicable subsection of the 1992 Edition of Section III. Depending on the

category of the weld, the NDE must consist of, in most cases, radiography and examination by either the liquid penetrant or magnetic particle method. The second requirement is that prior to or immediately upon return to service, a visual examination (VT-2) of welded or brazed repairs, fabrication, and installation joints be performed in conjunction with a system leakage test at nominal operating pressure and temperature in accordance with paragraph IWA-5000 of the 1992 edition of Section XI. The technical provisions of ASME Code Case N-416-3 were incorporated into the 2001 Edition of ASME Section XI, IWA-4540(a) and maintained, with minor editorial changes, through the 2002 Addenda to ASME Section XI. The 2003 Addenda of the Code, IWA-4540(a) eliminated reference to the NDE requirements of the 1992 Edition of Section III. When the ASME developed the 2003 Addenda, the arguments in support of the Code action state that imposing the NDE requirement in accordance with Section III (i.e., radiography) on all repair and replacement activities is excessively burdensome. The industry argued that the purpose of the radiography requirements is to support the piping joint efficiency factors used in the design. As such, the requirements are appropriately imposed by the construction code or the design specification but radiography for repair and replacement activities would be excessive .

The industry also contended that a system leakage test compared to a hydrostatic pressure test revealed very few cases in which leakage occurred at the hydrostatic pressure but not at the lower pressure of the system leakage test. Those cases involved only a small amount of leakage and the source of the leakage would not have been detected by additional NDE and is therefore not warranted.

NRC observes that the arguments to eliminate the NDE are from an operational rather than a safety perspective. A safety assessment has not been provided to demonstrate that without volumetric examination, a system leakage pressure test alone provides a level of safety

equivalent to a hydrostatic pressure test, only that a volumetric examination is excessively burdensome. NRC therefore concludes that to provide reasonable assurance of adequate protection to public health and safety, when performing a system leakage test in lieu of a hydrostatic test after repair/replacement activities, a NDE must be performed. It must be performed in accordance with the NDE provision in IWA-4540(a)(2) of the 2002 Addenda of Section XI because the agency has already accepted this provision by virtue of approving Code Case N-416-3 in RG 1.147, Revision 14. That provision states that: (a) The NDE method and acceptance criteria of the 1992 edition or later of Section III shall be met prior to return to service; and (b) a system leakage test shall be performed in accordance with IWA-5000 prior to or as part of returning to service.

10 CFR 50.55a(b)(2)(xxi) - *Table IWB-2500-1 Examination Requirements.*

Paragraph 10 CFR 50.55a(b)(2)(xxi)(A) would be revised to be consistent with the condition for Code Case N-648-1, "Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles, Section XI, Division 1," in RG 1.147, Revision 14, which requires the assumption of a limiting flaw aspect ratio when using the allowable flaw length criteria in Table IWB-3512-1 during an enhanced visual examination. The proposed revision would state: "A visual examination with enhanced magnification that has a resolution sensitivity to detect a 1-mil (0.001 inch) width wire or crack, using 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., $a/l=0.5$, where a and l are the depth and length of the crack, respectively)*, may be performed instead of an ultrasonic examination...". This limitation is needed because visual

examination cannot determine the depth of cracks. A visual examination requirement may be applied only when a limiting flaw aspect ratio of 0.5 is assumed. A flaw aspect ratio of less than 0.5 would not be conservative. As shown in Table IWB-3512-1, there are no flaw aspect ratios higher than 0.5.

10 CFR 50.55a(b)(2)(xxviii) - Evaluation Procedure and Acceptance Criteria for PWR Reactor Vessel Head Penetration Nozzles.

In the 2004 Edition of ASME Section XI, IWA-3660 specifies evaluation procedure and acceptance criteria for flaws that are detected in upper and lower reactor vessel head penetration nozzles in PWRs. The procedure and acceptance criteria in IWB-3660 were adopted from Code Case N-694-1, "Evaluation Procedure and Acceptance Criteria for PWR Reactor Vessel Head Penetration Nozzles Section XI, Division 1." Under IWB-3660, IWB-3662 specifies that the flaw shall be evaluated using analytical procedures such as those described in non-mandatory Appendix O, "Evaluation of Flaws in PWR Reactor Vessel Upper Head Penetration Nozzles," to the ASME Code, Section XI. There is a typographical error in paragraph O-3220(b), equation $S_R = [1 - 0.82R]^{-22}$. The exponent should be -2.2, not -22. Paragraph 50.55a(b)(2)(xxviii) would be added to the regulation to ensure that the correct exponent is used. The exponent in Appendix O was shown to be erroneous by an NRC report, NUREG/CR-6721, "Effects of Alloy Chemistry, Cold Work, and Water Chemistry on Corrosion Fatigue and Stress Corrosion Cracking of Nickel Alloys and Welds," April 2001.

10 CFR 50.55a(g)(6)(ii)(A) - Augmented Examination of Reactor Vessel.

Paragraph 50.55a(g)(6)(ii) which requires a one-time augmented inservice inspection programs for those systems and components for which the Commission determines that added assurance of structural reliability is necessary would be removed. Paragraph 50.55a(g)(6)(ii)(A) was incorporated in the regulations in 1992 to require all current licensees to conduct a one-time expedited implementation of the reactor vessel shell weld examinations specified in the 1989 Edition of the ASME Code, Section XI, Division 1, in item B1.10, "Shell Welds," of Examination Category B-A, "Pressure Retaining Welds in Reactor Vessel," in Table IWB-2500-1 of the ASME Code, Section XI. Since all the licensees have completed the subject augmented examination of the reactor vessel shell welds, the requirements in 10 CFR 50.55a(g)(6)(ii)(A) and associated subparagraphs are no longer needed. Future licensees need not conduct this augmented examination, because new Code provisions should adequately address the degradation to which the augmented examination was directed.

10 CFR 50.55a(g)(6)(ii)(D) - Augmented Inspection of PWR Reactor Vessel Heads.

Paragraph 50.55a(g)(6)(ii)(D) of the proposed rule would be added to require licensees to comply with the reactor vessel head inspection requirements of ASME Code Case N-729-1, subject to conditions. Compliance to Code Case N-729-1 with conditions would be equivalent to complying with NRC Order EA-03-009, dated February 11, 2003, and First Revised Order EA-03-009, dated February 20, 2004. Footnote 10 to 10 CFR 50.55a would be removed because Code Case N-729-1, as conditioned, would replace the requirements of the NRC Order EA-03-009 cited in that footnote. That footnote states:

Supplemental inservice inspection requirements for reactor vessel pressure heads have been imposed by Order EA-03-09 issued to licensees of pressurized water reactors. The NRC expects to develop revised supplemental inspection requirements, based in part upon a review of the initial implementation of the order, and will determine the need for incorporating the revised inspection requirements into 10 CFR 50.55a by rulemaking.

Conditions are imposed on Code Case N-729-1 regarding inspection frequency, examination coverage, qualification of ultrasonic examination, and reinspection intervals. These conditions are being imposed to make the requirements in N-729-1 equivalent to those of the Order.

10 CFR 50.55a(g)(6)(ii)(E) - Augmented Inspection of Class 1 Components Fabricated with Alloy 600/82/182 Materials.

A new paragraph, 10 CFR 50.55a(g)(6)(ii)(E) *Reactor Coolant Pressure Boundary Visual Inspections* would be added to require all current and future licensees to apply ASME Code Case N-722, with conditions.

The application of ASME Code Case N-722 is necessary because current inspections are inadequate and the safety consequences can be significant. NRC's determination that existing inspections of the reactor coolant pressure boundary (RCPB) are inadequate are based upon the degradation of RPV head penetration nozzles at Davis-Besse and the discovery of leaks and cracking at other plants, such as Oconee and Arkansas Nuclear One Unit 1. 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 the RCPB. These degradation mechanisms increase the probability of a loss of coolant accident. The inspections required by the 2004 edition of the ASME Code, Section are inadequate because Table IWB-2500-1, "Examination Category B-P of Section XI" only requires a visual examination of the reactor vessel during a system leakage test each refueling outage. Visual inspections may not detect gradual leakage as confirmed by industry experience.

Both the NRC and the industry took short-term actions to address primary water stress corrosion cracking (PWSCC) in the RCS pressure boundary because of limitations of the ASME BPV Code inspection programs to address PWSCC in the RCPB. In addition to issuing bulletins, NRC issued Order EA-03-009 and First Revised Order EA-03-009 to quickly establish interim inspection requirements for RPV upper heads at PWRs. However, these measures addressed the issue only temporarily and for specific locations. The industry also responded with measures, but these were only short term, such as by specifying that a one-time bare-metal visual inspection of all RCS nickel-based alloy components and weld locations be performed within two refueling outages.

ASME also took actions to address PWSCC. An ASME task group concluded that more rigorous inspections than those currently provided by the ASME Code are needed in the areas most susceptible to PWSCC. The task group developed ASME Code Case N-722 to enhance the current ASME Code requirements for detection of leakage and corrosion in the components considered to be susceptible to PWSCC. The code case specifies bare-metal visual examinations for all RCS pressure retaining components fabricated from Alloy 600/82/182 materials. This Code Case was approved by ASME in July 2005 and was published in Supplement 6 to the 2004 Code Cases; however, the Code Case is not mandatory for industry

to follow. The Code Case improves upon existing ASME Code inspection requirements, because it specifies *bare metal* visual examinations; however, such examinations are inadequate. Visual inspections do not always detect through-wall leakage or related corrosion until significant degradation has occurred.

Beyond the base metal visual inspection requirements and frequencies of inspections, ASME Code Case N-722 is relatively limited in scope. The NRC proposes to require non-visual inspection for items where leakage is identified in Class 1 components. The additional non-visual NDE would be required to determine whether circumferential cracking is present in the flawed material and if multiple circumferential flaws have initiated. Leakage detected by visual examination only identifies that a flaw exists, and is not able to characterize flaw orientations and locations. The NRC proposes to require NDE scope expansion once a circumferential flaw is identified in these components because once flaws are found, favorable conditions must be assumed to exist for additional flaws to develop in other similar components in similar environments. Circumferential cracking has occurred and is a particularly serious safety concern because it could, if undetected by NDE, lead to a complete severance of the piping and a loss-of-coolant-accident.

Therefore, the NRC proposes to require the application of Code Case N-722 with additional conditions; namely, to require additional NDE when leakage is detected and expansion of the sample size if a circumferential PWSCC flaw is detected. Operating experience has shown that bare metal visual inspections alone are not sufficient and that NDE is necessary in order to detect cracking.

ASME OM Code

The proposed revision to § 50.55a(b)(3) would incorporate by reference the 2004 Edition of the ASME OM Code subject to no new modifications or limitations.

Paragraph (b)(3)(iv)(D) would be revised to be less specific with regard to paragraph references in subsection ISTC [Inservice testing, the Code for Operation and Maintenance of Nuclear Power Plants] to eliminate inconsistencies in paragraph numbering. This is considered to be an editorial change that does not affect the intent or implementation of the current modification regarding the discontinuance of Appendix II condition monitoring programs of check valves.

III. 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 are adequate without change or augmentation for license renewal. Section XI, Division 1, of the ASME BPV Code is one of the existing programs in the GALL report that is evaluated as an aging management program (AMP) for license renewal. Subsections IWB, IWC, IWD, IWE, IWF, and IWL of the 2001 Edition up to and including the 2003 Addenda of Section XI of the ASME BPV Code for inservice inspection were evaluated in the GALL report and the conclusions in the GALL report are valid for this edition and addenda.

In the GALL report, Sections XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD," XI.S1, "ASME Section XI, Subsection IWE," XI.S2, "ASME Section XI, Subsection IWL," and XI.S3, "ASME Section XI, Subsection IWF," describe the

evaluation and technical bases for determining the adequacy of Subsections IWB, IWC, IWD, IWE, IWF, and IWL, respectively. In addition, many other AMPs in the GALL report rely in part, but to a lesser degree, on the requirements in the ASME Code, Section XI.

The NRC has evaluated Subsections IWB, IWC, IWD, IWE, IWF, and IWL of Section XI of the ASME BPV Code, 2004 Edition as part of the § 50.55a amendment process to incorporate by reference the 2004 Edition of the ASME BPV Code to determine if the conclusions of the GALL report also apply to AMPs that rely upon the ASME Code edition that is proposed for incorporation by reference into § 50.55a by this proposed rule. NRC finds that the 2004 Edition of Sections III and XI of the ASME BPV Code are acceptable and the conclusions of the GALL report remain valid. Accordingly, an applicant may use Subsections IWB, IWC, IWD, IWE, IWF, and IWL of Section XI of the 2004 Edition of the ASME BPV Code as acceptable alternatives to the requirements of the 2001 Edition up to and including the 2003 Addenda of the ASME Code, Section XI, referenced in the GALL AMPs 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 of the ASME BPV Code and the ASME Code edition and addenda used in the plant-specific license renewal application as acceptable alternatives to the AMPs described in the GALL report. However, a licensee must assess and follow applicable NRC requirements with regard to changes to its licensing basis.

The GALL report identified AMPs of the 2001 Edition through the 2003 Addenda of Section XI of the ASME Code that require augmentation (additional requirements) for license renewal. These areas that require augmentation also apply when implementing the 2004 edition. A license renewal applicant may either augment its AMPs in these areas as described

in the GALL report or propose alternatives for NRC review in its plant-specific license renewal application.

IV. Availability of Documents

The NRC is making the documents identified below available to interested persons through one or more of the following methods as indicated.

Public Document Room (PDR). The NRC Public Document Room is located at 11555 Rockville Pike, Rockville, Maryland.

Rulemaking Website (Web). The NRC's interactive rulemaking Website is located at <http://ruleforum.llnl.gov>. These documents may be viewed and downloaded electronically via this Website.

NRC's Electronic Reading Room. The NRC's public electronic reading room is located at <http://www.nrc.gov/reading-rm/adams.html>.

NRC Staff Contact. Single copies of the *Federal Register* Notice (which includes the draft Environmental Assessment) and draft Regulatory Analysis can be obtained from Lee Banic, Division of Policy and Rulemaking, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001 or at (301) 415-2771, or via e-mail at: mjb@nrc.gov.

Document	PDR	Web	ADAMS No.	NRC Staff
ASME BPV Code*			N/A	x
ASME OM Code*			N/A	x
ASME Code Case N-722	x		ML070170676	x
ASME Code Case N-729-1	x		ML070170679	x
Proposed <i>Federal Register</i> Notice	x	x	ML070240552	x
Draft Regulatory Analysis	x	x	ML070290497	x
EA-03-009	x	x	ML030380470	x
First Revised NRC Order EA- 03-009	x	x	ML040220181	x
GALL Report, NUREG-1801		x	ML012060392	x
			ML012060514	
			ML012060521	
			ML012060539	
Staff Requirements			ML003751061	
Memorandum (SRM) dated September 10, 1999				
RG 1.147, Revision 14	x	x	ML052510117	x

*Available on the ASME Web site

V. Plain Language

The Presidential Memorandum dated June 1, 1998, entitled, "Plain Language in Government Writing," directed that the Federal government's writing must be in plain language.

This memorandum was published on June 10, 1998 (63 FR 31883). The NRC requests comments on this proposed rule specifically with respect to the clarity and effectiveness of the language used. Comments should be sent to the address listed under the **ADDRESSES** caption above.

VI. Voluntary Consensus Standards

The National Technology Transfer and Advancement Act of 1995, Pub. L. 104-113, requires agencies to use technical standards that are developed or adopted by voluntary consensus standards bodies unless the use of such a standard is inconsistent with applicable law or is otherwise impractical. Pub. L. 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 a more recent edition of Sections III and XI of the ASME BPV Code and ASME OM Code, for construction, inservice inspection, and inservice testing of nuclear power plant components. ASME BPV 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 BPV Code and OM Code that the NRC proposes not to adopt, or to partially adopt, are identified in Section 2 of the preceding section and the draft regulatory analysis. The justification for not adopting parts of the ASME BPV Code, as set forth in these statements of consideration and the draft regulatory analysis for this proposed rule, satisfy the requirements of Section 12(d)(3) of Pub. L. 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 BPV Code and the ASME OM Code.

VII. Finding of No Significant Environmental Impact: Availability

This proposed action is in accordance with NRC's policy to incorporate by reference in 10 CFR 50.55a new editions and addenda of the ASME BPV 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, Pub. L. 104-113, to be used by government agencies unless the use of such a standard is inconsistent with applicable law or otherwise impractical.

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 (United States Code, Vol. 42, Section 4332(C) [42 U.S.C. §4332(C)]; NEPA §102(C)).

The Commission has determined under NEPA, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this 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; there is no increase in occupational exposure; and there is no significant increase in public radiation exposure. Some of the proposed changes concerning ensuring the integrity of the RCPB would reduce the probability of accidents and radiological impacts on the public. 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.

The NRC is sending a copy of the environmental assessment and this proposed rule to every State Liaison Officer and requesting their comments on the environmental assessment.

VIII. Paperwork Reduction Act Statement

This proposed rule increases the burden on licensees to report requirements and maintain records for examination requirements in ASME Code Section XI IWB-2500(b). The public burden for this information collection is estimated to average 3 hours every ten years per

request. Because the burden for this information collection is insignificant, OMB clearance is not required. Existing requirements were approved by the OMB, approval number 3150-0011.

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 requirement unless the requesting document displays a currently valid OMB control number.

IX. Regulatory Analysis

The NRC has prepared a draft regulatory analysis on this proposed rule. The draft analysis is available for review in the NRC's PDR, located in One White Flint North, 11555 Rockville Pike, Rockville, Maryland. In addition, copies of the draft regulatory analysis may be obtained as indicated in Section 4 of this document. The Commission requests public comment on the draft regulatory analysis and comments may be submitted to the NRC as indicated under the **ADDRESSES** heading.

X. Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this proposed amendment will not, if promulgated, have a significant economic impact on a substantial number of small entities. This proposed amendment would affect the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of small entities set forth in the

Regulatory Flexibility Act or the Small Business Size Standards set forth in regulations issued by the Small Business Administration at 13 CFR Part 121.

XI. Backfit Analysis

The NRC's Backfit Rule in 10 CFR 50.109 states that the Commission shall require the backfitting of a facility only when it finds the action to be justified under specific standards stated in the rule. Section 50.109(a)(1) defines backfitting as the modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position after issuance of the construction permit or the operating license or the design approval.

Section 50.55a requires nuclear power plant licensees to construct ASME BPV Code Class 1, 2, and 3 components in accordance with the rules provided in Section III, Division 1, of the ASME BPV Code; inspect Class 1, 2, 3, Class MC, and Class CC components in accordance with the rules provided in Section XI, Division 1, of the ASME BPV Code; and test Class 1, 2, and 3 pumps, valves, and dynamic restraints (snubbers) in accordance with the rules provided in the ASME OM Code. This proposed rule would incorporate by reference the 2004 Edition of Section III, Division 1, of the ASME BPV Code; Section XI, Division 1, of the ASME BPV Code; and the ASME OM Code.

Incorporation by reference of more recent editions and addenda of Section III, Division 1, of the ASME BPV Code does not affect a plant that has received a construction permit or an operating license or a design that has been approved, because the edition and addenda to be used in constructing a plant are, by rule, determined on the basis of the date of

the construction permit, and are not changed thereafter, except voluntarily by the licensee.

Thus, incorporation by reference of a more recent edition and addenda of Section III, Division 1, does not constitute a “backfitting” as defined in § 50.109(a)(1).

Incorporation by reference of more recent editions and addenda of Section XI, Division 1, of the ASME BPV Code and the ASME OM Code affect the ISI and IST programs of operating reactors. However, the Backfit Rule does not apply to incorporation by reference of later editions and addenda of the ASME BPV Code (Section XI) and OM Code. The NRC’s policy has been to incorporate later versions of the ASME Codes into its regulations. This practice is codified in § 50.55a which requires licensees to revise their ISI and IST programs every 120 months to the latest edition and addenda of Section XI of the ASME BPV Code and the ASME OM Code incorporated by reference in § 50.55a that is in effect 12 months prior to the start of a new 120-month ISI and IST interval.

Other circumstances where the NRC does not apply the Backfit Rule to the endorsement of a later Code are as follows:

(1) When the NRC takes exception to a later ASME BPV Code or OM Code provision but merely retains the current existing requirement, prohibits the use of the later Code provision, limits the use of the later Code provision, or supplements the provisions in a later Code, the Backfit Rule does not apply because the NRC is not imposing new requirements. However, the NRC explains any such exceptions to the Code in the Statement of Considerations and regulatory analysis for the rule;

(2) When an NRC exception relaxes an existing ASME BPV Code or OM code provision but does not prohibit a licensee from using the existing Code provision, the Backfit Rule does not apply because the NRC is not imposing new requirements and;

(3) Modifications and limitations imposed during previous routine updates of paragraph 50.55a have established a precedent for determining which modifications or limitations are backfits or require a backfit analysis (*e.g.*, final rule dated October 1, 2004 (69 FR 58804)). The application of the backfit requirements to modifications and limitations in the current proposed rule are consistent with the application of backfit requirements to modifications and limitations in previous rules.

There are some circumstances in which the endorsement of a later ASME BPV Code or OM Code introduces a backfit. In these cases, the NRC would perform a backfit analysis or documented evaluation in accordance with paragraph 50.109. These include the following:

(1) When the NRC endorses a later provision of the ASME BPV Code or OM Code that takes a substantially different direction from the existing requirements, the action is treated as a backfit, *see, e.g.*, 61 FR 41303 (August 8, 1996).

(2) When the NRC requires implementation of later ASME BPV Code or OM Code provision on an expedited basis, the action is treated as a backfit. This applies when implementation is required sooner than it would be required if the NRC simply endorsed the Code without any expedited language, *see, e.g.*, 64 FR 51370 (September 22, 1999).

(3) When the NRC takes an exception to a ASME BPV Code or OM Code provision and imposes a requirement that is substantially different from the existing requirement as well as substantially different than the later Code, *see, e.g.*, 67 FR 60529 (September 26, 2002).

The backfitting discussion for the proposed revisions to 10 CFR 50.55a is set forth below:

1. Remove 10 CFR 50.55a(b)(2)(xi) concerning components exempt from examination

This change would remove an existing limitation on the use of 1989 Addenda and later editions and addenda of the ASME Code, Section XI, regarding the use of subarticle IWB-1220 in the examinations of welds in the inaccessible locations. Licensees have either committed to perform augmented inspection or have followed the provisions of Generic Letter 88-01 and NUREG-0313 in examining the inaccessible welds. Therefore, this change is not considered as a backfit under 10 CFR 50.109.

2. Remove 10 CFR 50.55a(b)(2)(xiii) concerning the provisions of Code Case N-523-1, “Mechanical Clamping Devices for Class 2 and 3 Piping.”

Paragraph 10 CFR 50.55a(b)(2)(xiii) states that “Licensees may use the provisions of Code Case N-523-1, “Mechanical Clamping Devices for Class 2 and 3 Piping.” Paragraph 10 CFR 50.55a(b)(2)(xiii) does not require, but provides an option for, licensees to use Code Case N-523-1. In 2000, ASME updated Code Case N-523-1 to N-523-2 without changes to technical requirements. Code Case N-523-2, “Mechanical Clamping Devices for Class 2 and 3 Piping,” has been accepted in RG 1.147, Revision 14, which is incorporated by reference into paragraphs 10 CFR 50.55a(g)(4)(i) and 10 CFR 50.55a(g)(4)(ii). Code Case N-523-2 may be used by licensees without requesting authorization. According to RG 1.147, Revision 14, Code Case N-523-1 has been superseded by Code Case N-523-2. It is stated in RG 1.147, Revision 14, that “After the ASME annuls a Code Case and the NRC amends 10 CFR 50.55a and this guide [RG 1.147], licensees may not implement that Code Case for the first time. However, a licensee who implemented the Code Case prior to annulment may continue to use that Code Case through the end of the present ISI interval. An annulled Code Case cannot be used in the subsequent ISI interval unless implemented as an approved alternative under 10 CFR 50.55a(a)(3)...” The NRC has not annulled or prohibited the use of Code Case N-523-1 in RG

1.147, Revision 14. Licensees who have used Code Case N-523-1 may continue to use it. The NRC is not imposing new requirements by removing 10 CFR 50.55a(b)(2)(xiii). Therefore, the removal of 10 CFR 50.55a(b)(2)(xiii) is not a backfit.

3. Modify 10 CFR 50.55a(b)(2)(xv) to implement Appendix VIII of Section XI, the 1995 Edition through the 2004 Edition of the ASME BPV Code.

This change would update the edition of the ASME Code in 10 CFR 50.55a(b)(2)(xv), therefore, is not considered as a backfit under 10 CFR 50.109.

4. Add 10 CFR 50.55a(b)(2)(xx) to require NDE provision in IWA-4540(a)(2) of the 2002 Addenda of Section XI when performing system leakage tests.

Subarticle IWA-4540(a)(2) of the 2002 Addenda of the ASME Code, Section XI, requires a NDE be performed in combination with a system leakage test during repair/replacement activities. Subarticle IWA-4540(a)(2) of the 2003 Addenda through later editions and addenda of the ASME Code, Section XI, does not specify a NDE after a system leakage test. The proposed addition would require, as part of repair and replacement activities, that a NDE be performed per IWA-4540(a)(2) of the 2002 Addenda of the ASME Code, Section XI, after a system leakage test is performed per subarticle IWA-4540(a)(2) of the 2003 Addenda through later editions and addenda of the ASME Code, Section XI.

As it is stated above, when the NRC takes exception to a later ASME BPV Code provision but merely retains the existing requirement, prohibits the use of the later Code provision, limits the use of the later Code provision, or supplements the provisions in a later Code, the Backfit Rule does not apply because the NRC is not imposing new requirements. The addition retains the system leakage test requirement in IWA-4540(a)(2) of the 2003 Addenda through the later editions and addenda of the ASME Code, Section XI, but

supplements it with the NDE of IWA-4540(a)(2) of the 2002 Addenda of the Code. The proposed addition does not represent a new staff requirement because the NDE requirement is specified in previous addenda of the Code. Therefore, this change is not considered as a backfit under 10 CFR 50.109.

5. Revise 10 CFR 50.55a(b)(2)(xxi) to be consistent with the NRC's imposed condition for Code Case N-648-1 in RG 1.147, Revision 14.

This change would align the conditions imposed on visual examinations in 10 CFR 50.55a(b)(2)(xxi) with the conditions imposed on Code Case N-648-1 in RG 1.147, Revision 14 (70 FR 5680; Sept 29, 2005). The imposed conditions do not represent a new staff position. Therefore, this change is not considered as a backfit under 10 CFR 50.109.

6. Add 10 CFR 50.55a(b)(2)(xxviii) to correct a typographical error regarding an exponent in the evaluation of PWR reactor vessel head penetration nozzles.

This change would correct a typographical error in an equation used in the flaw evaluation in the ASME Section XI. Therefore, this change is not considered as a backfit under 10 CFR 50.109.

7. Remove 10 CFR 50.55a(g)(6)(ii)(A) and associated subparagraphs on the augmented examination of the reactor vessel.

This change would remove a one-time examination requirement which has been completed by all current licensees, and, therefore, is not considered as a backfit under 10 CFR 50.109. Future licensees will be subject to other Code provisions that preclude the need for this one-time examination.

8. Add Paragraph (D) to 10 CFR 50.55a(g)(6)(ii) - Augmented inspection of PWR Reactor Vessel Heads

The requirements in paragraph D, which impose ASME Code Case N-729-1 with conditions, were already imposed on existing licensees under NRC First Revised Order EA-03-009. Therefore, this requirement is not considered a backfit under 10 CFR 50.109(a)(1).

9. Add Paragraph (E) to 10 CFR 50.55a(g)(6)(ii) - Augmented Inspection of Class 1 Components Fabricated with Alloy 600/82/182 Materials

The NRC proposes to add 10 CFR 50.55a(g)(6)(ii)(E) to require augmented inspections of Class 1 components fabricated with Alloy 600/82/182 materials. The augmented inspection will consist of the requirements in Code Case N-722 which specifies inservice inspection for PWR ASME Code Class 1 components containing materials susceptible to PWSCC and NRC imposed conditions to the Code Case to require additional NDE when leakage is detected and expansion of the inspection sample size if a circumferential PWSCC flaw is detected. The intent of conditioning the Code Case is to identify leakage of and prevent unacceptable cracks and corrosion in Class 1 components, which are part of RCPB. The proposed requirements may considered backfitting under 10 CFR 50.109(a)(1). However, the NRC believes that the requirements are necessary for compliance with Commission requirements and/or license provisions. Therefore a backfit analysis need not be prepared under the “compliance” exception in 10 CFR 50.109(a)(4)(i). The following discussion constitutes the documented evaluation to support the invocation of the compliance exception.

As discussed earlier in Section 2, “10 CFR 50.55a(g)(6)(ii)(E) - Augmented Inspection of Class 1 Components Fabricated with Alloy 600/82/182 Materials,” failure of the RCPB could result in unacceptable challenges to reactor safety systems that, combined with other failures,

could lead to the release of radioactivity to the environment. Based on PWSCC experience in PWRs, the NRC concludes that there is a reasonable likelihood that PWR licensees would not be in compliance with appropriate regulatory requirements and current licensing basis with respect to structural integrity and leak-tightness throughout the term of the operating license, should PWSCC occur in their plants. The general design criteria (GDC) for nuclear power plants (Appendix A to 10 CFR Part 50) provide the regulatory requirements for the NRC's assessment of the potential for, and consequences of, degradation of the RCPB. The applicable GDCs include GDC 14 and GDC 31. GDC 14 specifies that the RCPB be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture. GDC 31 specifies that the probability of rapidly propagating fracture of the RCPB be minimized.

The nuclear plants that were licensed before GDC were incorporated in 10 CFR Part 50 also would not be in compliance with their licensing basis which requires maintenance of the structural and leakage integrity of the RCPB.

Leakage of primary system coolant as a result of PWSCC in Alloy 600/82/182 material is a non-compliance with GDC 14 and 31 and licensing bases because there have been many cases of leakage as a result of PWSCC of Alloy 600/82/182 material in PWRs. Therefore, leakage as a result of PWSCC has not been shown to be of extremely low probability (i.e. a non-compliance with GDC 14). In addition, the operating experience has shown that the crack growth rate of PWSCC in Alloy 600/82/182 material can be rapid. If PWSCC is not detected and removed, a crack, especially a circumferential crack in a pipe, would increase the probability of rapidly propagating fracture of RCPB (i.e, a non-compliance with GDC 31). Therefore, PWSCC in Alloy 600/82/182 material, if undetected, would be detrimental to the structural and leakage integrity of the RCPB. Code Case N-722 with conditions provides

inspection requirements to detect PWSCC so that licensees can repair or replace the affected components, thereby maintaining the structural and leakage integrity of the RCPB, assuring an extremely low probability of abnormal leakage, and the minimizing the probability of a rapidly propagating fracture of the RCPB.

The NRC concludes that licensees will not be in compliance with GDC and their licensing basis for structural and leakage integrity of Class 1 components that were made of Alloy 600/82/182 material throughout the term of their license (including any renewal periods) absent the imposition of Code Case N-722 with conditions. The NRC concludes, therefore, that the proposed 10 CFR 50.55a(g)(6)(ii)(E) is a compliance backfit under 10 CFR 50.109(a)(4)(i).

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Criminal penalties, Fire protection, Incorporation by reference, 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. 552 and 553, the NRC is proposing 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).

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951(42 U.S.C. 5851). 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(d), 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. Section 50.55a is amended by revising the introductory text of paragraphs (b)(1) and (b)(2), removing and reserving paragraphs (b)(2)(xi) and (b)(2)(xiii), revising the introductory text of paragraph(b)(2)(xv) and paragraphs (b)(2)(xx) and (b)(2)(xxi)(A), adding paragraph (b)(2)(xxviii), revising the introductory text of paragraph (b)(3) and paragraph (b)(3)(iv)(D), removing and reserving paragraph (g)(6)(ii)(A), adding paragraphs (g)(6)(ii)(D) and (g)(6)(ii)(E), and removing Footnote 10.

§ 50.55a Codes and standards.

* * * * *

(b) * * *

(1) As used in this section, references to Section III of the ASME *Boiler and Pressure Vessel Code* refer to Section III, and include the 1963 Edition through 1973 Winter Addenda, and the 1974 Edition (Division 1) through the 2004 Edition (Division 1), subject to the following limitations and modifications:

* * * * *

(2) As used in this section, references to Section XI of the ASME *Boiler and Pressure Vessel Code* refer to Section XI, and include the 1970 Edition through the 1976 Winter Addenda, and the 1977 Edition (Division 1) through the 2004 Edition (Division 1), subject to the following limitations and modifications:

* * * * *

(xi) [Reserved]

* * * * *

(xiii) [Reserved]

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(xv) *Appendix VIII Specimen Set and Qualification Requirements*. The following provisions may be used to modify implementation of Appendix VIII of Section XI, 1995 Edition through the 2004 Edition. Licensees choosing to apply these provisions shall apply all of the

following provisions under this paragraph except for those in § 50.55a(b)(2)(xv)(F) which are optional.

* * * * *

(xx) 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.

(xxi) * * *

(A) The provisions of Table IWB-2500-1, Examination Category B-D, Full Penetration Welded Nozzles in Vessels, Item B3.40 and B3.60 (Inspection Program A) and Items B3.120 and B3.140 (Inspection Program B) in 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 enhanced 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.

* * * * *

(xxviii) *Evaluation Procedure and Acceptance Criteria for PWR Reactor Vessel Head Penetration Nozzles*. When performing flaw growth calculations in accordance with non-mandatory Appendix O of Section XI of the ASME Code, as permitted by IWB-3660, the licensee shall use exponent - 2.2 as the exponent in the S_R equation in Subarticle O-3220.

(3) As used in this section, references to the OM Code refer to the ASME *Code for Operation and Maintenance of Nuclear Power Plants*, and include the 1995 Edition through the 2004 Edition subject to the following limitations and modifications:

* * * * *

(iv) * * *

(D) The applicable provisions of subsection ISTC must be implemented if the Appendix II condition monitoring program is discontinued.

* * * * *

(g) * * *

(6) * * *

(ii) * * *

(A) [Reserved]

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(D) Reactor Vessel Head Inspections.

(1) All licensees of pressurized water reactors shall augment their inservice inspection program by implementing ASME Code Case N-729-1 subject to the conditions specified in paragraphs (g)(6)(ii)(D)(2) through (6) of this section.

(2) Item B4.40 of Table 1 must be inspected at least every fourth refueling outage or at least every seven calendar years, whichever occurs first, after the first ten-year inspection interval.

(3) Instead of fulfilling the specified 'examination method' requirements for volumetric and surface examinations of Note 6 in Table 1, the licensee shall perform a volumetric or surface examination or both of essentially 100 percent of the required volume or equivalent surfaces of the nozzle tube, as identified by Fig. 2 of ASME Code Case N-729-1. A surface examination must be performed on all J-groove welds. If a surface examination is substituted

for a volumetric examination on a portion of a penetration nozzle that is below the toe of the J-groove weld (Point E on Fig. 2 of ASME Code Case N-729-1), the surface examination must be of the inside and outside wetted surfaces of the penetration nozzle not examined volumetrically.

(4) Ultrasonic examinations must be performed using personnel, procedures and equipment that have been qualified by blind demonstration on representative mockups using a methodology that meets the conditions specified in paragraphs (g)(6)(ii)(D)(4)(i) through (iv) of this section instead of using a methodology that satisfies the conditions specified by the qualification requirements of Paragraph-2500 of ASME Code Case N-729-1.

(i) The diameters of pipes in the specimen set shall be within $\frac{1}{2}$ in. (13 mm) of the nominal diameter of the qualification pipe size and a thickness tolerance of ± 25 percent of the nominal through-wall depth of the qualification pipe thickness. The specimen set must contain geometric and material indications that normally require discrimination from primary water stress corrosion cracking (PWSCC) flaws.

(ii) The specimen set must have a minimum of ten (10) flaws that provide an acoustic response similar to that of PWSCC indications. All flaw depths in the specimen set must be greater than 10 percent of the nominal pipe wall thickness. A minimum number of 30 percent of the total flaws must be connected to the outside diameter and 30 percent of the total flaws must be connected to the inside diameter. Further, at least 30 percent of the total flaws must measure from a depth of 10 to 30 percent of the wall thickness and at least 30 percent of the total flaws must measure from a depth of 31 to 50 percent of the wall thickness and be connected to the inside or outside diameter, as applicable. At least 30 percent, but no more than 60 percent, of the flaws must be oriented axially.

(iii) The procedures must identify the equipment and essential variable settings used to qualify the procedures. An essential variable is defined as any variable that affects the results

of the examination. The procedure must be requalified when an essential variable is changed to fall outside the demonstration range. A procedure must be qualified using the equivalent of at least three test sets that are used to demonstrate personnel performance. Procedure qualification must require at least one successful personnel performance demonstration.

(iv) The test acceptance criteria for a personnel performance demonstration must meet the detection test acceptance criteria for personnel performance demonstration in Table VIII-S10-1 of Section XI, Appendix VIII, Supplement 10. Examination procedures, equipment, and personnel must be considered qualified for depth sizing only if the root mean square (RMS) error of the flaw depth measurements, as compared to the true flaw depths, does not exceed 1/32-inch (0.8 mm). Examination procedures, equipment, and personnel must be considered qualified for length sizing if the RMS error of the flaw length measurements, as compared to the true flaw lengths, does not exceed 1/16-inch (1.6 mm).

(5) If flaws attributed to PWSCC have been identified, whether acceptable or not for continued service under Paragraphs -3130 or -3140 of ASME Code Case N-729-1, the reinspection interval must be each refueling outage instead of the reinspection intervals required by Table 1, Note (8) of ASME Code Case N-729-1.

(6) Appendix I of ASME Code Case N-729-1 must not be implemented without prior NRC approval.

(E) *Reactor Coolant Pressure Boundary Visual Inspections.*

(1) All licensees of pressurized water reactors shall augment their inservice inspection program by implementing ASME Code Case N-722 subject to the conditions specified in paragraphs (g)(6)(ii)(E)(2) through (4) of this section. The inspection requirements of ASME

Code Case N-722 only apply to components fabricated with Alloy 600/82/182 materials not 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 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 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.

(4) If ultrasonic examinations of butt welds are used to meet the NDE requirements in paragraphs (g)(6)(ii)(E)(2) or (g)(6)(ii)(E)(3) of this section, they must be performed using the appropriate supplement of Section XI, Appendix VIII of the ASME Boiler and Pressure Vessel Code.

* * * * *

Dated at Rockville, Maryland this 26th day of March, 2007.

For the U.S. Nuclear Regulatory Commission.

/RA/

Luis A. Reyes,
Executive Director
for Operations.

(4) If ultrasonic examinations of butt welds are used to meet the NDE requirements in paragraphs (g)(6)(ii)(E)(2) or (g)(6)(ii)(E)(3) of this section, they must be performed using the appropriate supplement of Section XI, Appendix VIII of the ASME Boiler and Pressure Vessel Code.

* * * * *

Dated at Rockville, Maryland this 26th day of March, 2007.
 For the U.S. Nuclear Regulatory Commission.

/RA/

Luis A. Reyes,
 Executive Director
 for Operations.

Package Accession No.: ML070240523

*Concurred by email

NOTE: The concurrences below apply to the entire proposed rule package. Original concurrence were obtained with the cover memo.

OFFICE	DPR/PRAB:PM	Tech Ed.	DPR/PRAB: BC	DPR: D	DCI:D
NAME	MBanic	C. Clark*	JZimmerman	MCase	MEvans
DATE	2/2/07	1/19/07	2/2/07	2/5/07	2/7/07

OFFICE	OCFO*	RES	OGC	ADM	OE
NAME	JFunches	BSheron	CCameron	MLesar	CCarpenter
DATE	2/16/07	3/1/07	3/8/07	2/8/07	2/16/07

OFFICE	OIS	NRO:DE	NRR:ADPT	NRR:D	EDO
NAME	MJanney	MMayfield	BBoger	JDyer	LReyes
DATE	2/26/07	3/6/07	3/12/07	3/14/07	3/26/07

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