

# Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

## NUCLEAR REGULATORY COMMISSION

### 10 CFR Part 50

[NRC–2017–0024]

RIN 3150–AJ93

### Approval of American Society of Mechanical Engineers' Code Cases

**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 proposed revisions of three regulatory guides (RGs), which would approve new, revised, and reaffirmed Code Cases published by the American Society of Mechanical Engineers (ASME). This proposed action would allow nuclear power plant licensees, and applicants for construction permits, operating licenses, combined licenses, standard design certifications, standard design approvals and manufacturing licenses, to use the Code Cases listed in these draft RGs as voluntary alternatives to engineering standards for the construction, inservice inspection (ISI), and inservice testing (IST) of nuclear power plant components. The NRC is requesting comments on this proposed rule and on the draft versions of the three RGs proposed to be incorporated by reference. The NRC is also making available a related draft RG that lists Code Cases that the NRC has not approved for use. This draft RG will not be incorporated by reference into the NRC's regulations.

**DATES:** Submit comments on the proposed rule and related guidance by October 30, 2018. Submit comments specific to the information collections aspects of this rule by September 17, 2018. 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:** You may submit comments on the proposed rule and related guidance by any of the following methods (unless this document describes a different method for submitting comments on a specific subject):

- *Federal Rulemaking website:* Go to <http://www.regulations.gov> and search for Docket ID NRC–2017–0024. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: [Carol.Gallagher@nrc.gov](mailto:Carol.Gallagher@nrc.gov). For technical questions contact the individuals listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

- *Email comments to:* [Rulemaking.Comments@nrc.gov](mailto:Rulemaking.Comments@nrc.gov). If you do not receive an automatic email reply confirming receipt, then contact us at 301–415–1677.

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

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

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

For additional direction on obtaining information and submitting comments, see “Obtaining Information and Submitting Comments” in the **SUPPLEMENTARY INFORMATION** section of this document.

**FOR FURTHER INFORMATION CONTACT:** Margaret Ellenson, Office of Nuclear Material Safety and Safeguards, telephone: 301–415–0894, email: [Margaret.Ellenson@nrc.gov](mailto:Margaret.Ellenson@nrc.gov); and Giovanni Facco, Office of Nuclear Regulatory Research, telephone: 301–415–6337; email: [Giovanni.Facco@nrc.gov](mailto:Giovanni.Facco@nrc.gov). Both are staff of the U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001.

### Executive Summary

#### A. Need for the Regulatory Action

The purpose of this regulatory action is to incorporate by reference into the NRC's regulations the latest revisions of three RGs (currently in draft form for comment). The three draft RGs identify new, revised, and reaffirmed Code Cases published by the ASME, which the NRC

has determined are acceptable for use as voluntary alternatives to compliance with certain provisions of the ASME *Boiler and Pressure Vessel Code* (BPV Code) and ASME *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) currently incorporated by reference into the NRC's regulations.

#### B. Major Provisions

The three draft RGs that the NRC proposes to incorporate by reference are RG 1.84, “Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,” Revision 38 (Draft Regulatory Guide (DG)–1345); RG 1.147, “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,” Revision 19 (DG–1342); and RG 1.192, “Operation and Maintenance [OM] Code Case Acceptability, ASME OM Code,” Revision 3 (DG–1343). This proposed action would allow nuclear power plant licensees and applicants for construction permits (CPs), operating licenses (OLs), combined licenses (COLs), standard design certifications, standard design approvals, and manufacturing licenses, to use the Code Cases newly listed in these revised RGs as voluntary alternatives to engineering standards for the construction, ISI, and IST of nuclear power plant components. The NRC also notes the availability of a proposed version of RG 1.193, “ASME Code Cases Not Approved for Use,” Revision 6 (DG–1344). This document lists Code Cases that the NRC has not approved for generic use, and will not be incorporated by reference into the NRC's regulations. The NRC is not requesting comment on DG–1344.

The NRC prepared a draft regulatory analysis to determine the expected quantitative costs and benefits of this proposed rule, as well as qualitative factors to be considered in the NRC's rulemaking decision. The analysis concluded that this proposed rule would result in net savings to the industry and the NRC. As shown below, the estimated total net benefit relative to the regulatory baseline, the quantitative benefits outweigh the costs by a range from approximately \$6.72 million (7-percent net present value (NPV)) to \$7.48 million (3-percent NPV).

## TOTAL AVERTED COSTS (COSTS)

Attribute	Undiscounted	7% NPV	3% NPV
Industry Implementation .....	\$0	\$0	\$0
Industry Operation .....	6,130,000	5,200,000	5,700,000
<i>Total Industry Costs</i> .....	6,130,000	5,200,000	5,700,000
NRC Implementation .....	(360,000)	(360,000)	(360,000)
NRC Operation .....	2,380,000	1,880,000	2,140,000
<i>Total NRC Cost</i> .....	2,020,000	1,520,000	1,780,000
<i>Net</i> .....	8,150,000	6,720,000	7,480,000

The regulatory analysis also considered the following qualitative considerations: (1) Flexibility and decreased uncertainty for licensees when making modifications or preparing to perform ISI or IST; (2) consistency with the provisions of the National Technology Transfer and Advancement Act of 1995 (NTTAA), which encourages Federal regulatory agencies to consider adopting voluntary consensus standards as an alternative to *de novo* agency development of standards affecting an industry; (3) consistency with the NRC's policy of evaluating the latest versions of consensus standards in terms of their suitability for endorsement by regulations and regulatory guides; and (4) consistency with the NRC's goal to harmonize with international standards to improve regulatory efficiency for both the NRC and international standards groups.

The draft regulatory analysis concludes that this proposed rule should be adopted because it is justified when integrating the cost-beneficial quantitative results and the positive and supporting nonquantitative considerations in the decision. For more information, please see the regulatory analysis (ADAMS Accession No. ML18099A054).

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**I. Obtaining Information and Submitting Comments****A. Obtaining Information**

Please refer to Docket ID NRC-2017-0024 when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- *Federal Rulemaking website*: Go to <http://www.regulations.gov> and search for Docket ID NRC-2017-0024.
- *NRC's Agencywide Documents Access and Management System (ADAMS)*: You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "ADAMS Public Documents" and then select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the "Availability of Documents" section.
- *NRC's PDR*: You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

• *NRC's PDR*: You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

**B. Submitting Comments**

Please include Docket ID NRC-2017-0024 in the subject line of your comment submission.

The NRC cautions you not to include identifying or contact information that

you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at <http://www.regulations.gov> as well as enter the comment submissions into ADAMS.

The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

**II. Background**

The ASME develops and publishes the ASME BPV Code, which contains requirements for the design, construction, and ISI examination of nuclear power plant components, and the ASME OM Code,<sup>1</sup> which contains requirements for IST of nuclear power plant components. In response to BPV and OM Code user requests, the ASME develops Code Cases that provide voluntary alternatives to BPV and OM Code requirements under special circumstances.

The NRC approves the ASME BPV and OM Codes in § 50.55a, "Codes and standards," of title 10 of the *Code of Federal Regulations* (10 CFR) through the process of incorporation by reference. As such, each provision of the ASME Codes incorporated by reference into, and mandated by § 50.55a constitutes a legally-binding NRC requirement imposed by rule. As noted previously, ASME Code Cases, for the most part, represent alternative

<sup>1</sup> The editions and addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants have had different titles from 2005 to 2017, and are referred to collectively in this rule as the "OM Code."

approaches for complying with provisions of the ASME BPV and OM Codes. Accordingly, the NRC periodically amends § 50.55a to incorporate by reference the NRC's RGs listing approved ASME Code Cases that may be used as voluntary alternatives to the BPV and OM Codes.<sup>2</sup>

This proposed rule is the latest in a series of rules that incorporate by reference new versions of several RGs identifying new, revised, and reaffirmed,<sup>3</sup> and unconditionally or conditionally acceptable ASME Code Cases that the NRC approves for use. In developing these RGs, the NRC staff reviews ASME BPV and OM Code Cases, determines the acceptability of each Code Case, and publishes its findings in the RGs. The RGs are revised periodically as new Code Cases are published by the ASME. The NRC incorporates by reference the RGs listing acceptable and conditionally acceptable ASME Code Cases into § 50.55a. The NRC published a final rule dated January 17, 2018 (83 FR 2331) that incorporated by reference into § 50.55a the most recent versions of the RGs, which are: RG 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," Revision 37; RG 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 18; and RG 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," Revision 2.

### III. Discussion

This proposed rule would incorporate by reference the latest revisions of the NRC's RGs that list ASME BPV and OM Code Cases that the NRC finds to be acceptable, or acceptable with NRC-specified conditions ("conditionally acceptable"). Regulatory Guide 1.84, Revision 38, DG-1345, would supersede the incorporation by reference of Revision 37; RG 1.147, Revision 19, DG-1342, would supersede the incorporation by reference of Revision 18; and RG 1.192, Revision 3, DG-1343, would supersede the incorporation by reference of Revision 2.

The ASME Code Cases that are the subject of this proposed rule are the new and revised Section III and Section XI Code Cases as listed in Supplement 11 to the 2010 BPV Code through Supplement 7 to the 2013 BPV Code, and the OM Code Cases published at the same time as the 2017 Edition. Additional Section XI Code Cases published from the 2015 Edition of the BPV Code are also included at the request of the ASME.

The latest editions and addenda of the ASME BPV and OM Codes that the NRC has approved for use are referenced in § 50.55a. The ASME also publishes Code Cases that provide alternatives to existing Code requirements that the ASME developed and approved. This proposed rule would incorporate by reference RGs 1.84, 1.147, and 1.192 allowing nuclear power plant licensees, and applicants for combined licenses, standard design certifications, standard design approvals, and manufacturing licenses under the regulations that govern license certifications, to use the Code Cases listed in these RGs as suitable alternatives to the ASME BPV and OM Codes for the construction, ISI, and IST of nuclear power plant components. The ASME publishes Code Cases in a separate document but at the same time as specific editions of the ASME OM Code. The ASME also publishes BPV Code Cases in a separate document and at a different time than ASME BPV Code Editions. This proposed rule identifies Code Cases by the edition of the ASME BPV Code or ASME OM Code under which they were published by ASME. This proposed rule only accepts Code Cases for use in lieu of the specific editions and addenda of the ASME BPV and OM Codes incorporated by reference in § 50.55a.

The following general guidance applies to the use of the ASME Code Cases approved in the latest versions of the RGs that are incorporated by reference into § 50.55a as part of this proposed rule. Specifically, the use of the Code Cases listed in RGs 1.84, 1.147, and 1.192 are acceptable with the specified conditions when implementing the editions and addenda of the ASME BPV and OM Codes incorporated by reference in 10 CFR 50.55a.

The approval of a Code Case in the NRC's RGs constitutes acceptance of its technical position for applications that are not precluded by regulatory or other requirements or by the recommendations in these or other RGs. The applicant and/or licensee is responsible for ensuring that use of the Code Case does not conflict with regulatory requirements or licensee

commitments. The Code Cases listed in the RGs are acceptable for use within the limits specified in the Code Cases. If the RG states an NRC condition on the use of a Code Case, then the NRC condition supplements and does not supersede any condition(s) specified in the Code Case, unless otherwise stated in the NRC condition.

The ASME Code Cases may be revised for many reasons (*e.g.*, to incorporate operational examination and testing experience and to update material requirements based on research results). On occasion, an inaccuracy in an equation is discovered or an examination, as practiced, is found not to be adequate to detect a newly discovered degradation mechanism.

Therefore, when an applicant or a licensee initially implements a Code Case, § 50.55a requires that the applicant or the licensee implement the most recent version of that Code Case, as listed in the RGs incorporated by reference. Code Cases superseded by revision are no longer acceptable for new applications unless otherwise indicated.

Section III of the ASME BPV Code applies only to new construction (*i.e.*, the edition and addenda to be used in the construction of a plant are selected based on the date of the construction permit and are not changed thereafter, except voluntarily by the applicant or the licensee). Hence, if a Section III Code Case is implemented by an applicant or a licensee and a later version of the Code Case is incorporated by reference into § 50.55a and listed in the RG, the applicant or the licensee may use either version of the Code Case (subject, however, to whatever change requirements apply to its licensing basis (*e.g.*, § 50.59)) until the next mandatory ISI or IST update.

A licensee's ISI and IST programs must be updated every 10 years to the latest edition and addenda of ASME BPV Code, Section XI, and the OM Code, respectively, that were incorporated by reference into § 50.55a and in effect 12 months prior to the start of the next inspection and testing interval. Licensees that were using a Code Case prior to the effective date of its revision may continue to use the previous version for the remainder of the 120-month ISI or IST interval. This relieves licensees of the burden of having to update their ISI or IST program each time a Code Case is revised by the ASME and approved for use by the NRC. Code Cases apply to specific editions and addenda, and Code Cases may be revised if they are no longer accurate or adequate, so licensees choosing to continue using a Code Case

<sup>2</sup> See **Federal Register** notice (FRN), "Incorporation by Reference of ASME BPV and OM Code Cases" (68 FR 40469; July 8, 2003).

<sup>3</sup> Code Cases are categorized by ASME as one of three types: New, revised, or reaffirmed. A new Code Case provides for a new alternative to specific ASME Code provisions or addresses a new need. The ASME defines a revised Code Case to be a revision (modification) to an existing Code Case to address, for example, technological advancements in examination techniques or to address NRC conditions imposed in one of the RGs that have been incorporated by reference into § 50.55a. The ASME defines "reaffirmed" as an OM Code Case that does not have any change to technical content, but includes editorial changes.

during the subsequent ISI or IST interval must implement the latest version incorporated by reference into § 50.55a and listed in the RGs.

The ASME may annul Code Cases that are no longer required, are determined to be inaccurate or inadequate, or have been incorporated into the BPV or OM Codes. A Code Case may be revised, for example, to incorporate user experience. The older or superseded version of the Code Case cannot be applied by the licensee or applicant for the first time.

If an applicant or a licensee applied a Code Case before it was listed as superseded, the applicant or the licensee may continue to use the Code

Case until the applicant or the licensee updates its construction Code of Record (in the case of an applicant, updates its application) or until the licensee's 120-month ISI or IST update interval expires, after which the continued use of the Code Case is prohibited unless NRC authorization is given under § 50.55a(z). If a Code Case is incorporated by reference into § 50.55a and later a revised version is issued by the ASME because experience has shown that the design analysis, construction method, examination method, or testing method is inadequate; the NRC will amend

§ 50.55a and the relevant RG to remove the approval of the superseded Code Case. Applicants and licensees should not begin to implement such superseded Code Cases in advance of the rulemaking.

*A. Code Cases Proposed To Be Approved for Unconditional Use*

The Code Cases discussed in Table I are new, revised or reaffirmed Code Cases in which the NRC is not proposing any conditions. The table identifies the draft regulatory guide listing the applicable Code Case that the NRC proposes to approve for use.

TABLE I

Code case No.	Published with supplement	Title
<b>Boiler and Pressure Vessel Code Section III (addressed in DG-1345, Table 1)</b>		
N-60-6 .....	11 (2010 Edition) .....	Material for Core Support Structures, Section III, Division 1.
N-249-15 .....	7 (2013 Edition) .....	Additional Materials for Subsection NF, Classes 1, 2, 3, and MC Supports Fabricated Without Welding, Section III, Division 1.
N-284-4 .....	11 (2010 Edition) .....	Metal Containment Shell Buckling Design Methods, Class MC, TC, and SC Construction Section III, Divisions 1 and 3.
N-520-6 .....	1 (2013 Edition) .....	Alternative Rules for Renewal of Active or Expired N-type Certificates for Plants Not in Active Construction, Section III, Division 1.
N-801-1 .....	11 (2010 Edition) .....	Rules for Repair of N-Stamped Class 1, 2, and 3 Components Section III, Division 1.
N-822-2 .....	7 (2013 Edition) .....	Application of the ASME Certification Mark Section III, Divisions 1, 2, 3, and 5.
N-833 .....	1 (2013 Edition) .....	Minimum Non-prestressed Reinforcement in the Containment Base Mat or Slab Required for Concrete Crack Control, Section III, Division 2.
N-834 .....	3 (2013 Edition) .....	ASTM A988/A988M-11 UNS S31603, Subsection NB, Class 1 Components, Section III, Division 1.
N-836 .....	3 (2013 Edition) .....	Heat Exchanger Tube Mechanical Plugging, Class 1, Section III, Division 1.
N-841 .....	4 (2013 Edition) .....	Exemptions to Mandatory Post Weld Heat Treatment (PWHT) of SA-738 Grade B for Class MC Applications, Section III, Division 1.
N-844 .....	5 (2013 Edition) .....	Alternatives to the Requirements of NB-4250(c), Section III, Division 1.
<b>Boiler and Pressure Vessel Code Section XI (addressed in DG-1342, Table 1)</b>		
N-513-4 .....	6 (2013 Edition) .....	Evaluation of Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping, Section XI, Division 1.
N-528-1 .....	5 (1998 Edition) .....	Purchase, Exchange, or Transfer of Material Between Nuclear Plant Sites Section XI, Division 1.
N-661-3 .....	6 (2015 Edition) .....	Alternative Requirements for Wall Thickness Restoration of Class 2 and 3 Carbon Steel Piping for Raw Water Service, Section XI, Division 1.
N-762-1 .....	3 (2013 Edition) .....	Temper Bead Procedure Qualification Requirements for Repair/Replacement Activities without Postweld Heat Treatment, Section XI, Division 1.
N-789-2 .....	5 (2015 Edition) .....	Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate Energy Carbon Steel Piping for Raw Water Service, Section XI, Division 1.
N-823-1 .....	4 (2013 Edition) .....	Visual Examination Section XI, Division 1.
N-839 .....	7 (2013 Edition) .....	Similar and Dissimilar Metal Welding Using Ambient Temperature SMAW <sup>1</sup> Temper Bead Technique Section XI, Division 1.
N-842 .....	4 (2013 Edition) .....	Alternative Inspection Program for Longer Fuel Cycles Section XI, Division 1.
N-853 .....	6 (2015 Edition) .....	PWR <sup>2</sup> Class 1 Primary Piping Alloy 600 Full Penetration Branch Connection Weld Metal Buildup for Material Susceptible to Primary Water Stress Corrosion Cracking, Section XI, Division 1.
N-854 .....	1 (2015 Edition) .....	Alternative Pressure Testing Requirements for Class 2 and 3 Components Connected to the Class 1 Boundary, Section XI, Division 1.
<b>OM Code (addressed in DG-1343, Table 1)</b>		
OMN-16 Revision 2 .....	2017 Edition .....	Use of a Pump Curve for Testing.
OMN-21 .....	2017 Edition .....	Alternative Requirements for Adjusting Hydraulic Parameters to Specified Reference Points.

<sup>1</sup> Shielded metal arc welding.

<sup>2</sup> Pressurized water reactor.

*B. Code Cases Approved for Use With Conditions*

The NRC has determined that certain Code Cases, as issued by the ASME, are generally acceptable for use, but that the alternative requirements specified in those Code Cases must be supplemented in order to provide an acceptable level of quality and safety. Accordingly, the NRC proposes to impose conditions on the use of these Code Cases to modify, limit or clarify their requirements. The

conditions would specify, for each applicable Code Case, the additional activities that must be performed, the limits on the activities specified in the Code Case, and/or the supplemental information needed to provide clarity. These ASME Code Cases, listed in Table II, are included in Table 2 of DG-1345 (RG 1.84), DG-1342 (RG 1.147), and DG-1343 (RG 1.192). The NRC's evaluation of the Code Cases and the reasons for the NRC's proposed

conditions are discussed in the following paragraphs. Notations have been made to indicate the conditions duplicated from previous versions of the RG.

The NRC requests public comment on these Code Cases and the proposed conditions. It should also be noted that the following paragraphs only address those Code Cases for which the NRC proposes to impose condition(s), which are listed in the RG for the first time.

TABLE II

Code case No.	Published with supplement	Title
<b>Boiler and Pressure Vessel Code Section III (addressed in DG-1345, Table 2)</b>		
N-71-19 .....	0 (2013 Edition) .....	Additional Materials for Subsection NF, Class 1, 2, 3, and MC Supports Fabricated by Welding, Section III, Division 1.
<b>Boiler and Pressure Vessel Code Section XI (addressed in DG-1342, Table 2)</b>		
N-516-4 .....	7 (2013 Edition) .....	Underwater Welding, Section XI, Division 1.
N-597-3 .....	5 (2013 Edition) .....	Evaluation of Pipe Wall Thinning, Section XI, Division 1.
N-606-2 .....	2 (2013 Edition) .....	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW <sup>1</sup> Temper Bead Technique for BWR <sup>2</sup> CRD <sup>3</sup> Housing/Stub Tube Repairs, Section XI, Division 1.
N-638-7 .....	2 (2013 Edition) .....	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique, Section XI, Division 1.
N-648-2 .....	7 (2013 Edition) .....	Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles, Section XI, Division 1.
N-695-1 .....	0 (15 Edition) .....	Qualification Requirements for Dissimilar Metal Piping Welds Section XI, Division 1.
N-696-1 .....	6 (2013 Edition) .....	Qualification Requirements for Mandatory Appendix VIII Piping Examination Conducted from the Inside Surface, Section XI, Division 1.
N-702 .....	12 (2001 Edition) .....	Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1.
N-705 (Errata) .....	11 (2010 Edition) .....	Evaluation Criteria for Temporary Acceptance of Degradation in Moderate Energy Class 2 or 3 Vessels and Tanks, Section XI, Division 1.
N-711-1 .....	0 (2017 Edition) .....	Alternative Examination Coverage Requirements for Examination Category B-F, B-J, C-F-1, C-F-2, and R-A Piping Welds, Section XI, Division 1.
N-754-1 .....	1 (2013 Edition) .....	Optimized Structural Dissimilar Metal Weld Overlay for Mitigation of PWR Class 1 Items, Section XI, Division 1.
N-766-1 .....	1 (2013 Edition) .....	Nickel Alloy Reactor Coolant Inlay and Onlay for Mitigation of PWR Full Penetration Circumferential Nickel Alloy Dissimilar Metal Welds in Class 1 Items, Section XI, Division 1.
N-824 .....	11 (2010 Edition) .....	Ultrasonic Examination of Cast Austenitic Piping Welds From the Outside Surface Section XI, Division 1.
N-829 .....	0 (2013 Edition) .....	Austenitic Stainless Steel Cladding and Nickel Base Cladding Using Ambient Temperature Machine GTAW Temper Bead Technique, Section XI, Division 1.
N-830 .....	7 (2013 Edition) .....	Direct Use of Master Fracture Toughness Curve for Pressure-Retaining Materials of Class 1 Vessels, Section XI, Division 1.
N-831 .....	0 (2017 Edition) .....	Ultrasonic Examination in Lieu of Radiography for Welds in Ferritic Pipe, Section XI, Division 1.
N-838 .....	2 (2015 Edition) .....	Flaw Tolerance Evaluation of Cast Austenitic Stainless Steel Piping, Section XI, Division 1.
N-843 .....	4 (2013 Edition) .....	Alternative Pressure Testing Requirements Following Repairs or Replacements for Class 1 Piping between the First and Second Injection Isolation Valves, Section XI, Division 1.
N-849 .....	7 (2013 Edition) .....	In situ VT-3 Examination of Removable Core Support Structures Without Removal, Section XI, Division 1.
<b>OM Code (addressed in DG-1343, Table 2)</b>		
OMN-1 Revision 2 .....	2017 Edition .....	Alternative Rules for Preservice and Inservice Testing of Active Electric Motor.
OMN-3 .....	2017 Edition .....	Requirements for Safety Significance Categorization of Components Using Risk Insights for Inservice Testing of LWR <sup>4</sup> Power Plants.

TABLE II—Continued

Code case No.	Published with supplement	Title
OMN-4 .....	2017 Edition .....	Requirements for Risk Insights for Inservice Testing of Check Valves at LWR Power Plants.
OMN-9 .....	2017 Edition .....	Use of a Pump Curve for Testing.
OMN-12 .....	2017 Edition .....	Alternative Requirements for Inservice Testing Using Risk Insights for Pneumatically and Hydraulically Operated Valve Assemblies in Light-Water Reactor Power Plants (OM-Code 1998, Subsection ISTC).
OMN-18 .....	2017 Edition .....	Alternate Testing Requirements for Pumps Tested Quarterly Within $\pm 20\%$ of Design Flow.
OMN-19 .....	2017 Edition .....	Alternative Upper Limit for the Comprehensive Pump Test.
OMN-20 .....	2017 Edition .....	Inservice Test Frequency.

<sup>1</sup> Gas tungsten arc welding.

<sup>2</sup> Boiling water reactor.

<sup>3</sup> Control rod drive.

<sup>4</sup> Light water reactor.

# 1. ASME BPV Code, Section III Code Cases (DG-1345/RG 1.84)

Code Case N-71-19 [Supplement 0, 2013 Edition]

*Type:* Revised.

*Title:* *Additional Materials for Subsection NF, Class 1, 2, 3, and MC Supports Fabricated by Welding.*

The first condition on Code Case N-71-19 is identical to the first condition on Code Case N-71-18 that was first approved by the NRC in Revision 33 of RG 1.84 in August 2005. The condition stated that, “The maximum measured ultimate tensile strength (UTS) of the component support material must not exceed 170 ksi in view of the susceptibility of high strength materials to brittleness and stress corrosion cracking.” When ASME revised N-71, the code case was not modified in a way that would make it possible for the NRC to remove the first condition. Therefore, the first condition would be retained in Revision 38 of RG 1.84.

The second condition on Code Case N-71-18 was removed because it related to materials of up to 190 ksi and the first condition has a UTS limit of 170 ksi on materials. The staff is not aware of any materials listed in this Code Case to which this condition would apply so it was deleted and the subsequent conditions renumbered.

The second condition on Code Case N-71-19 is an update to the third condition on Revision 18 of the Code Case. This condition has been modified so that it references the correct sentence and paragraph of the revised Code Case and now refers to paragraph 5.2 of the Code Case, instead of paragraph 5.5 to reference “5.3.2.3, ‘Alternative Atmosphere Exposure Time Periods Established by Test,’ of the AWS [American Welding Society] D1.1 Code for the evidence presented to and accepted by the Authorized Inspector concerning exposure of electrodes for a

longer period of time.” The basis for this change is that the paragraph of the Code Case identified by this condition has been renumbered and is now 5.2. When ASME revised N-71, the code case was not modified in a way that would make it possible for the NRC to remove the second condition. Therefore, the second condition would be retained in Revision 38 of RG 1.84.

The third condition on Code Case N-71-19 is substantively the same as the fourth condition on Code Case N-71-18 that was first approved by the NRC in Revision 33 of RG 1.84 in August 2005, except that it now references the renumbered paragraphs of the revised Code Case. The condition now reads “Paragraph 16.2.2 of Code Case N-71-19 is not acceptable as written and must be replaced with the following: ‘When not exempted by 16.2.1 above, the post weld heat treatment must be performed in accordance with NF-4622 except that ASTM A-710 Grade A Material must be at least 1000 °F (540 °C) and must not exceed 1150 °F (620 °C) for Class 1 and 2 material and 1175 °F (640 °C) for Class 3 material.’” When ASME revised N-71, the code case was not modified in a way that would make it possible for the NRC to remove the third condition. Therefore, the third condition would be retained in Revision 38 of RG 1.84.

The fourth condition on Code Case N-71-19 is identical to the fifth condition on Code Case N-71-18 that was first approved by the NRC in Revision 33 of RG 1.84 in August 2005. The condition stated that, “The new holding time-at-temperature for weld thickness (nominal) must be 30 minutes for welds ½ inch or less in thickness, 1 hour per inch of thickness for welds over ½ inch to 5 inches, and for thicknesses over 5 inches, 5 hours plus 15 minutes for each additional inch over 5 inches.” When ASME revised N-71, the code case was not modified in a way that would make it possible for the NRC to remove the

fourth condition. Therefore, the fourth condition would be retained in Revision 38 of RG 1.84.

The fifth condition on Code Case N-71-19 is identical to the sixth condition on Code Case N-71-18 that was first approved by the NRC in Revision 33 of RG 1.84 in August 2005. The condition stated that, “The fracture toughness requirements as listed in this Code Case apply only to piping supports and not to Class 1, 2 and 3 component supports.” When ASME revised N-71, the code case was not modified in a way that would make it possible for the NRC to remove the fifth condition. Therefore, the fifth condition would be retained in Revision 38 of RG 1.84.

The sixth condition is a new condition, which states that when welding P-Number materials listed in the Code Case, the corresponding S-Number welding requirements shall apply. Previous revisions of the Code Case assigned every material listed in the Code Case an S-Number designation. Welding requirements for materials in the Code Case are specified based on the S-Number. The current version of the Code Case was modified to assign corresponding P-Numbers to those Code Case materials, which are also listed in ASME Code Section IX and have a P-Number designation. However, the Code Case was not modified to make clear that the Code Case requirements for welding S-Number materials are also applicable to the P-Number materials, all of which were previously listed with S-Numbers. Therefore, as written, if a user applies this Code Case and uses a P-Number material listed in the tables, it is not clear that the corresponding S-Number welding requirements apply. To clarify the application of S-Number welding requirements to P-Number materials, the NRC proposes the sixth condition as stated. This new condition would not impose any additional restrictions on the use of this Code Case

from those placed on the previous revisions.

2. ASME BPV Code, Section XI Code Cases (DG-1342/RG 1.147)

Code Case N-516-4 [Supplement 7, 2013 Edition]

*Type:* Revised.

*Title:* *Underwater Welding, Section XI, Division 1.*

The previously approved revision of this Code Case, N-516-3, was conditionally accepted in RG 1.147 to require that licensees obtain NRC approval in accordance with § 50.55a(z) regarding the technique to be used in the weld repair or replacement of irradiated material underwater. The rationale for this condition was that it was known that materials subjected to high neutron fluence could not be welded without cracking (this is discussed in more detail in the next paragraph). However, the condition applied to Code Case N-516-3 did not provide any guidance on what level of neutron irradiation could be considered a threshold for weldability.

The technical basis for imposing conditions on the welding of irradiated materials is that neutrons can generate helium atoms within the metal lattice through transmutation of various isotopes of boron and/or nickel. At high temperatures, such as those during welding, these helium atoms rapidly diffuse through the metal lattice, forming helium bubbles. In sufficient concentration, these helium atoms can cause grain boundary cracking that occurs in the fusion zones and heat affected zones during the heatup/cooldown cycle.

In the rulemaking for the 2009-2013 Editions of the ASME Code, the NRC adopted conditions that should be applied to Section XI, Article IWA-4660 when performing underwater welding on irradiated materials. These conditions provide guidance on what level of neutron irradiation and/or helium content would require approval by the NRC because of the impact of neutron fluence on weldability. These conditions provide separate criteria for three generic classes of material: ferritic material, austenitic material other than P-No. 8 (e.g., nickel based alloys) and austenitic P-No. 8 material (e.g., stainless steel alloys). These conditions are currently located in § 50.55a(b)(2)(xii). Although these conditions apply to underwater welding performed in accordance with IWA-4660, they do not apply to underwater welding performed in accordance with Code Case N-516-4.

Therefore, the NRC proposes to approve Code Case N-516-4 with the

following conditions for underwater welding. The first condition captures the § 50.55a(b)(2)(xii) requirement for underwater welding of ferritic materials, and states that licensees must obtain NRC approval in accordance with § 50.55a(z) regarding the welding technique to be used prior to performing welding on ferritic material exposed to fast neutron fluence greater than  $1 \times 10^{17}$  n/cm<sup>2</sup> ( $E > 1$  MeV). The second condition captures the § 50.55a(b)(2)(xii) requirement for underwater welding of austenitic material other than P-No. 8, and states that licensees must obtain NRC approval in accordance with § 50.55a(z) regarding the welding technique to be used prior to performing welding on austenitic material other than P-No. 8, exposed to thermal neutron fluence greater than  $1 \times 10^{17}$  n/cm<sup>2</sup> ( $E < 0.5$  eV). The third condition captures the § 50.55a(b)(2)(xii) requirement for underwater welding of austenitic P-No. 8 material, and states that licensees must obtain NRC approval in accordance with § 50.55a(z) regarding the welding technique to be used prior to performing welding on austenitic P-No. 8 material exposed to thermal neutron fluence greater than  $1 \times 10^{17}$  n/cm<sup>2</sup> ( $E < 0.5$  eV) and measured or calculated helium concentration of the material greater than 0.1 atomic parts per million.

Code Case N-597-3 [Supplement 5, 2013 Edition]

*Type:* Revised.

*Title:* *Evaluation of Pipe Wall Thinning Section XI.*

The NRC revised the conditions to clarify their intent. The conditions on N-597-3 are all carryovers from the previous version of this Code Case N-597-2. The first condition on Code Case N-597-3 addresses the NRC's concerns regarding how the corrosion rate and associated uncertainties will be determined when N-597-3 is applied to evaluate the wall thinning in pipes for degradation mechanisms other than flow accelerated corrosion. Therefore, the NRC is proposing a condition that requires the corrosion rate be reviewed and approved by the NRC prior to the use of the Code Case.

The second condition on Code Case N-597-3 has two parts that allow the use of this Code Case to mitigate flow accelerated corrosion, but only if both of the requirements of the condition are met. Due to the difficulty inherent in calculating wall thinning, the first part of Condition 2 requires that the use of N-597-3 on flow-accelerated corrosion piping must be supplemented by the provisions of Electric Power Research Institute (EPRI) Nuclear Safety Analysis

Center Report 202L-2, "Recommendations for an Effective Flow Accelerated Corrosion Program," April 1999, which contain rigorous provisions to minimize wall thinning.

The first part of Condition 2 (i.e., (2)(a)) on Code Case N-597-3 is identical to the first condition on Code Case N-597-2 that was first approved by the NRC in Revision 15 of RG 1.147 in October 2007. The condition stated that the "Code Case must be supplemented by the provisions of EPRI Nuclear Safety Analysis Center Report (NSAC) 202L-2, "Recommendations for an Effective Flow Accelerated Corrosion Program" (Ref. 6), April 1999, for developing the inspection requirements, the method of predicting the rate of wall thickness loss, and the value of the predicted remaining wall thickness. As used in NSAC-202L-R2, the term "should" is to be applied as "shall" (i.e., a requirement)." When ASME revised N-597, the code case was not modified in a way that would make it possible for the NRC to remove the first part of Condition 2. Therefore, the first part of Condition 2 would be retained in Revision 19 of RG 1.147.

The second part of Condition 2 (i.e., (2)(b)) on Code Case N-597-3 is identical to the second condition on Code Case N-597-2 that was first approved by the NRC in Revision 15 of RG 1.147 in October 2007. The condition stated that "Components affected by flow-accelerated corrosion to which this Code Case are applied must be repaired or replaced in accordance with the construction code of record and owner's requirements or a later NRC approved edition of Section III, 'Rules for Construction of Nuclear Power Plant Components,' of the ASME Code prior to the value of  $t_p$  reaching the allowable minimum wall thickness,  $t_{min}$ , as specified in -3622.1(a)(1) of this Code Case. Alternatively, use of the Code Case is subject to NRC review and approval per § 50.55a(z)." When ASME revised N-597, the code case was not modified in a way that would make it possible for the NRC to remove the second part of Condition 2. Therefore, the second part of Condition 2 would be retained in Revision 19 of RG 1.147.

The third condition on Code Case N-597-3 is identical to the fourth condition on Code Case N-597-2 that was first approved by the NRC in Revision 15 of RG 1.147 in October 2007. The condition stated that for those components that do not require immediate repair or replacement, the rate of wall thickness loss is to be used to determine a suitable inspection frequency, so that repair or replacement occurs prior to reaching allowable

minimum wall thickness. When ASME revised N-597, the code case was not modified in a way that would make it possible for the NRC to remove the third condition. Therefore, the third condition would be retained in Revision 19 of RG 1.147.

The fourth condition on Code Case N-597-3 is updated from the sixth condition on Code Case N-597-2 that was first approved by the NRC in Revision 17 of RG 1.147 in August 2014. This condition allows the use of Code Case N-597-3 to calculate wall thinning for moderate-energy Class 2 and 3 piping (using criteria in Code Case N-513-2) for temporary acceptance (until the next refueling outage). When ASME revised N-597, the code case was not modified in a way that would make it possible for the NRC to remove the fourth condition. Therefore, the fourth condition would be retained in Revision 19 of RG 1.147.

The fifth condition is also updated from the sixth condition on Code Case N-597-2 that was first approved by the NRC in Revision 17 of RG 1.147 in August 2014. This condition prohibits the use of this Code Case in evaluating through-wall leakage in high energy piping due to the consequences and safety implications associated with pipe failure.

Code Case N-606-2 [Supplement 2, 2013 Edition]

*Type:* Revised.

*Title:* *Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique for BWR CRD Housing/Stub Tube Repairs.*

The condition on Code Case N-606-2 is identical to the condition on Code Case N-606-1 that was first approved by the NRC in Revision 13 of RG 1.147 in January 2004. The condition stated that "Prior to welding, an examination or verification must be performed to ensure proper preparation of the base metal, and that the surface is properly contoured so that an acceptable weld can be produced. This verification is to be required in the welding procedure." When ASME revised N-606, the code case was not modified in a way that would make it possible for the NRC to remove the condition. Therefore, the condition would be retained in Revision 19 of RG 1.147.

Code Case N-638-7 [Supplement 2, 2013 Edition]

*Type:* Revised.

*Title:* *Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique.*

The condition on Code Case N-638-7 is identical to the condition on Code Case N-638-6 that was first approved by the NRC in Revision 18 of RG 1.147 in the January 2018 final rule and states that "demonstration for ultrasonic examination of the repaired volume is required using representative samples which contain construction type flaws." When ASME revised N-638, the code case was not modified in a way that would make it possible for the NRC to remove the condition. Therefore, the condition would be retained in Revision 19 of RG 1.147.

Code Case N-648-2 [Supplement 7, 2013 Edition]

*Type:* Revised.

*Title:* *Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles Section XI.*

The NRC is proposing one condition for this Code Case related to preservice inspections. The condition on N-648-2 is that this Code Case shall not be used to eliminate the preservice or inservice volumetric examination of plants with a combined operating license pursuant to 10 CFR part 52, or a plant that receives its operating license after October 22, 2015.

The NRC staff's position regarding this Code Case is that the required preservice volumetric examinations should be performed on all vessel nozzles for comparison with volumetric examinations later, if indications of flaws are found. Eliminating the volumetric preservice or inservice examination is predicated on good operating experience for the existing fleet, which has not found any inner radius cracking in the nozzles within the scope of the code case. At this time, the new reactor designs have no inspection history or operating experience available to support eliminating the periodic volumetric examination of the nozzles in question. Use of Code Case N-648-2 would not eliminate preservice examinations for the existing fleet since all plants have already completed a preservice examination.

Code Case N-695-1 [Supplement 6, 2013 Edition]

*Type:* Revised.

*Title:* *Qualification Requirements for Dissimilar Metal Piping Welds Section XI, Division 1.*

The NRC proposes to approve Code Case N-695-1 with the following condition. Inspectors qualified using the 0.25 root mean square (RMS) error for measuring the depths of flaws using N-695-1 are not qualified to depth-size inner diameter (ID) surface breaking

flaws greater than 50 percent through-wall in dissimilar metal welds 2.1 inches or greater in thickness. When an inspector qualified using N-695-1 measures a flaw as greater than 50 percent through-wall in a dissimilar metal weld from the ID, the flaw shall be considered to have an indeterminate depth.

Code Case N-695-1 provides alternative rules for ultrasonic inspections of dissimilar metal welds from the inner and outer surfaces. Code Case N-695 was developed to allow for inspections from the inner surface in ASME Code Section XI editions prior to 2007. However, no inspection vendor was able to meet the depth-sizing requirements of 0.125 inch RMS error. The NRC has granted relief to several licensees to allow the use of alternate depth-sizing requirements. The NRC reviewed the depth-sizing results at the Performance Demonstration Institute (PDI) for procedures able to achieve an RMS error over 0.125 inches but less than 0.25 inches. The review found that the inspectors tend to oversize small flaws and undersize deep flaws. The flaws sized by the inspectors as 50 percent through-wall or less were accurately or conservatively measured. There were, however, some instances of very large flaws being measured as significantly smaller than the true state, but they were not measured as less than 50 percent through-wall.

Code Case N-695-1 changes the depth sizing requirements for inner-surface examinations of test blocks of 2.1 inches or greater thickness to 0.25 inches. This change is in line with the granted relief requests and with the NRC's review of the PDI test results.

The depth-sizing capabilities of the inspections does not provide sufficient confidence in the ability of an inspector qualified using a 0.25 inch RMS error to accurately measure the depth of deep flaws. The NRC proposes a condition on Code Case N-695-1 in that any surface-connected flaw sized over 50 percent through-wall should be considered of indeterminate depth.

Code Case N-696-1 [Supplement 6, 2013 Edition]

*Type:* Revised.

*Title:* *Qualification Requirements for Mandatory Appendix VIII Piping Examination Conducted From the Inside Surface.*

The NRC proposes to approve Code Case N-696-1 with the following condition. Inspectors qualified using the 0.25 RMS error for measuring the depths of flaws using N-696-1 are not qualified to depth-size ID surface breaking flaws greater than 50 percent through-wall in



dissimilar metal welds 2.1 inches or greater in thickness. When an inspector qualified using N-696-1 measures a flaw as greater than 50 percent through-wall in a dissimilar metal weld from the ID, the flaw shall be considered to have an indeterminate depth. Code Case N-696-1 provides alternative rules for ultrasonic inspections of Supplement 2, 3 and 10 welds from the inner and outer surfaces. Code Case N-696 was developed to allow for inspections for welds from the inner surface in ASME Code Section XI editions prior to 2007. However, no inspection vendor was able to meet the depth-sizing requirements of 0.125 inch root mean square (RMS) error. The NRC staff granted relief to several licensees to allow the use of alternate depth-sizing requirements. The NRC reviewed the depth-sizing results at the PDI for procedures able to achieve an RMS error over 0.125 inches but less than 0.25 inches. The review found that the inspectors tend to oversize small flaws and undersize deep flaws. The flaws sized by the inspectors as 50 percent through-wall or less were accurately or conservatively measured. There were, however, some instances of very large flaws being measured as significantly smaller than the true state, but they were not measured as less than 50 percent through-wall.

Code Case N-696-1 changes the depth sizing requirements for inner-surface examinations of test blocks of 2.1 inches or greater thickness to 0.25 inches. This change is consistent with the granted relief requests and with the NRC staff review of the PDI test results. The depth-sizing capabilities of the inspections does not provide sufficient confidence in the ability of an inspector qualified using a 0.25 inch RMS error to accurately measure the depth of deep flaws. Therefore, the NRC proposes a condition on Code Case N-696-1 that any surface-connected flaw sized over 50 percent through-wall should be considered of indeterminate depth.

Code Case N-702 [Supplement 11, 2010 Edition]

*Type:* Revised.

*Title:* *Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1.*

The NRC previously accepted with conditions Code Case N-702 in RG 1.147, Revision 18. For Revision 19 of RG 1.147 the NRC proposes revisions to the conditions on Code Case N-702. The original conditions in RG 1.147, Revision 17, were consistent with the established review procedure for applications for use of Code Case N-702 before August 2014 for the original 40

years of operation. The previous conditions on Code Case N-702 required licensees to prepare and submit for NRC review and approval an evaluation demonstrating the applicability of Code Case N-702 prior to the application of Code Case N-702. Subsequent reviews by the NRC of requests to utilize the provisions of Code Case N-702 show that all licensees have adequately evaluated the applicability of Code Case N-702 during the original 40 years of operation. Therefore future review by the NRC is not needed. For the period of extended operation, the application of Code Case N-702 is prohibited. Licensees that wish to use Code Case N-702 in the period of extended operation may submit relief requests based on BWRVIP-241, Appendix A, "BWR Nozzle Radii and Nozzle-to-Vessel Welds Demonstration of Compliance with the Technical Information Requirements of the License Renewal Rule (10 CFR 54.21)," approved on April 26, 2017, or plant-specific probabilistic fracture mechanics analyses. Therefore, the NRC proposes to revise the RG 1.147, Revision 17, condition to reflect these changes.

Consistent with the safety evaluations for all prior ASME Code Case N-702 requests, a condition on visual examination is being added to clarify that the NRC is not relaxing the licensees' practice on VT-1 on nozzle inner radii.

The revised conditions on Code Case N-702 state the following: The applicability of Code Case N-702 for the first 40 years of operation must be demonstrated by satisfying the criteria in Section 5.0 of NRC Safety Evaluation regarding BWRVIP-108 dated December 18, 2007, (ADAMS Accession No. ML073600374) or Section 5.0 of NRC Safety Evaluation regarding BWRVIP-241 dated April 19, 2013 (ADAMS Accession No. ML13071A240).

The use of Code Case N-702 in the period of extended operation is prohibited. If VT-1 is used, it shall utilize ASME Code Case N-648-2, "Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles, Section XI Division 1," with the associated required conditions specified in Regulatory Guide 1.147.

Code Case N-705 (Errata) [Supplement 11, 2010 Edition]

*Type:* Revised.

*Title:* *Evaluation Criteria for Temporary Acceptance of Degradation in Moderate Energy Class 2 or 3 Vessels and Tanks.*

The NRC has already accepted Code Case N-705 in Regulatory Guide 1.147,

Revision 16, without conditions. The revised Code Case in Supplement 11 contains only editorial changes. However, the NRC has identified an area of concern. Paragraph 1(d) of Code Case N-705 states that the evaluation period is the operational time for which the temporary acceptance criteria are satisfied (*i.e.*, evaluation period  $\leq t_{allow}$ ) but not greater than 26 months from the initial discovery of the condition. The NRC finds the 26 months duration unacceptable. The Code Case is applicable to the temporary acceptance of degradation, which could be a through wall leak, and would permit a vessel or tank to leak coolant for 26 months without repair or replacement. The NRC finds it is unacceptable for plant safety to permit a through wall leak in vessels or tanks for 26 months without an ASME Code repair. Therefore, the NRC proposes the following condition on Code Case N-705: The ASME Code repair or replacement activity temporarily deferred under the provisions of this Code Case shall be performed during the next scheduled refueling outage. If a flaw is detected during a scheduled shutdown, an ASME code repair is required before plant restart.

Code Case N-711-1 [Supplement 0, 2017 Edition]

*Type:* Revised.

*Title:* *Alternative Examination Coverage Requirements for Examination Category B-F, B-J, C-F-1, C-F-2, and R-A Piping Welds.*

Code Case N-711 was first listed as unacceptable for use by the NRC in Revision 3 of RG 1.193 in October 2010. Code Case N-711-1 was created to incorporate several NRC conditions for the use of Code Case N-711. This Code Case provides requirements for determining an alternative required examination volume, which is defined as the volume of primary interest based on the postulated degradation mechanism in a particular piping weld.

The NRC finds Code Case N-711-1 acceptable with one condition. The Code Case shall not be used to redefine the required examination volume for preservice examinations or when the postulated degradation mechanism for piping welds is primary water stress corrosion cracking (PWSCC), intergranular stress corrosion cracking (IGSCC) or crevice corrosion (CC). For PWSCC, the staff finds that the examination volume must meet the requirements of ASME Code Case N-770-1 as conditioned by § 50.55a(g)(6)(ii)(F). For IGSCC and CC, the Code Case does not define a volume of primary interest and therefore it

cannot be used for these degradation mechanisms. The Code Case requires selection of an alternative inspection location within the same risk region or category if it will improve the examination coverage of the volume of primary interest. Use of the Code Case must be identified in the licensee's 90-day post outage report of activities identifying the examination category, weld number, weld description, percent coverage and a description of limitation. The NRC determined that the Code Case provides a suitable process for determining the appropriate volume of primary interest based on the degradation mechanism postulated by the degradation mechanism analysis, except as noted in the proposed condition.

Code Case N-754-1 [Supplement 1, 2013 Edition]

*Type:* Revised.

*Title:* *Optimized Structural Dissimilar Metal Weld Overlay for Mitigation of PWR Class 1 Items.*

The first condition on Code Case N-754-1 is the same as the first condition on N-754 that was first approved by the NRC in Revision 18 of RG 1.147 in January 2018. The condition stated that: "The conditions imposed on the optimized weld overlay design in the NRC safety evaluation for MRP-169, Revision 1-A (ADAMS Accession Nos. ML101620010 and ML101660468) must be satisfied." When ASME revised N-754, the code case was not modified in a way that would make it possible for the NRC to remove the first condition. Therefore, the first condition would be retained in Revision 19 of RG 1.147.

The second condition on Code Case N-754-1 is the same as the second condition on N-754 that was first approved by the NRC in Revision 18 of RG 1.147 in January 2018. The condition stated that: "2) The preservice and inservice inspections of the overlaid weld must satisfy 10 CFR 50.55a(g)(6)(ii)(F)." When ASME revised N-754, the code case was not modified in a way that would make it possible for the NRC to remove the second condition. Therefore, the second condition would be retained in Revision 19 of RG 1.147.

The third condition on Code Case N-754-1 is new and states that the optimized weld overlay in this Code Case can only be installed on an Alloy 82/182 weld where the outer 25 percent of weld wall thickness does not contain indications that are greater than 1/16 inch in length or depth. The optimized weld overlay is designed with the structural support from the outer 25

percent of the existing weld metal (*i.e.*, the base metal) intact. As such, the outer 25 percent of the weld metal needs to be free of degradation prior to the overlay installation. The Code Case is not clear with regard to the condition of the outer 25 percent of the Alloy 82/182 weld prior to the overlay installation. Therefore, the NRC proposes this condition to ensure that the outer 25 percent of the base metal (the weld) has no indications greater than 1/16 inches so that the structural integrity of the repaired weld is maintained.

Code Case N-766-1 [Supplement 1, 2013 Edition]

*Type:* Revised.

*Title:* *Nickel Alloy Reactor Coolant Inlay and Onlay for Mitigation of PWR Full Penetration Circumferential Nickel Alloy Dissimilar Metal Welds in Class 1 Items.*

Code Case N-766-1 contains provisions for repairing nickel-based Alloy 82/182 dissimilar metal butt welds in Class 1 piping using weld inlay and onlay. The NRC notes that the Code Case provides adequate requirements on the design, installation, pressure testing, and examinations of the inlay and onlay. The NRC finds that the weld inlay and onlay using the Code Case provides reasonable assurance that the structural integrity of the repaired pipe will be maintained. However, certain provisions of the Code Case are inadequate and therefore the NRC proposes five conditions. The NRC staff notes that the preservice and inservice inspection requirements of inlay and onlay are specified in Code Case N-770-1 as stated in Section 3(e) of Code Case N-766-1.

The first condition on Code Case N-766-1 is new and prohibits the reduction of preservice and inservice inspection requirements specified by this Code Case for inlays or onlays applied to Alloy 82/182 dissimilar metal welds, which contain an axial indication that has a depth of more than 25 percent of the pipe wall thickness and a length of more than half axial width of the dissimilar metal weld, or a circumferential indication that has a depth of more than 25 percent of the pipe wall thickness and a length of more than 20 percent of the circumference of the pipe. Paragraph 1(c)(1) of the Code Case states that:

... Indications detected in the examination of 3(b)(1) that exceed the acceptance standards of IWB-3514 shall be corrected in accordance with the defect removal requirements of IWA-4000. Alternatively, indications that do not meet the acceptance standards of IWB-3514 may

be accepted by analytical evaluation in accordance with IWB-3600 . . .

This alternative would allow a flaw with a maximum depth of 75 percent through wall to remain in service in accordance with the ASME Code, Section XI, IWB-3643. Even if the inlay or onlay will isolate the dissimilar metal weld from the reactor coolant to minimize the potential for stress corrosion cracking, the NRC finds that having a 75 percent flaw in the Alloy 82/182 weld does not provide reasonable assurance of the structural integrity of the pipe. The NRC finds that the indication in the Alloy 82/182 weld needs to be limited in size to ensure structural integrity of the weld.

The second condition on Code Case N-766-1 is new and modifies the Code Case to require that pipe with any thickness of inlay or onlay must be evaluated for weld shrinkage, pipe system flexibility, and additional weight of the inlay or onlay. Paragraph 2(e) of the Code Case states that:

... If the inlay or onlay deposited in accordance with this Case is thicker than 1/8t, where t is the original nominal DMW [Dissimilar Metal Weld] thickness, the effects of any change in applied loads, as a result of weld shrinkage from the entire inlay or onlay, on other items in the piping system (*e.g.*, support loads and clearances, nozzle loads, and changes in system flexibility and weight due to the inlay or onlay) shall be evaluated. Existing flaws previously accepted by analytical evaluation shall be evaluated in accordance with IWB-3640 . . .

The NRC finds that a pipe with any thickness of inlay or onlay must be evaluated for weld shrinkage, pipe system flexibility, and additional weight of the inlay or onlay.

The third condition on Code Case N-766-1 is new. The third condition sets re-examination requirements for inlay or onlay when applied to an Alloy 82/182 dissimilar metal weld with any indication that the weld exceeds the acceptance standards of IWB-3514 and is accepted for continued service in accordance with IWB-3132.3 or IWB-3142.4. This condition states that the subject weld must be inspected in three successive examinations after the installation of the inlay or onlay. The NRC has concerns regarding the fact that the Code Case permits indications exceeding IWB-3514 to remain in service after inlay or onlay installation, based on analytical evaluation of IWB-3600. The IWB-2420 requires three successive examinations for indications that are permitted to remain in service per IWB-3600. The Code Case does not discuss the three successive examinations. If an inlay or onlay is applied to an Alloy 82/182 dissimilar

metal weld that contains an indication that exceeds the acceptance standards of IWB-3514 and is accepted for continued service in accordance with IWB-3132.3 or IWB-3142.4, the subject weld must be inspected in three successive examinations after inlay or onlay installation. The NRC proposes this condition to ensure that the three successive examinations will be performed.

The fourth condition on Code Case N-766-1 is new and prohibits an inlay or onlay with detectable subsurface indication discovered by eddy current testing in the acceptance examinations from remaining in service. Operational experience has shown that subsurface flaws on alloy 52 welds for upper heads may be very near the surface. However, these flaws are undetectable by liquid dye penetrant, as there are no surface breaking aspects during initial construction. Nevertheless, in multiple cases, after a plant goes through one or two cycles of operation, these defects become exposed to the primary coolant. The exposure of these subsurface defects to primary coolant challenges the effectiveness of the alloy 52 weld mitigation of only 3mm in total thickness. In the upper head scenario, these welds are inspected each outage. In order to allow the extension of the inspection frequency to that defined by § 50.55a(g)(6)(ii)(F), the NRC found that all detectable subsurface indications by eddy current examination should be removed from the alloy 52 weld layer.

The fifth condition on Code Case N-766-1 is new and requires that the flaw analysis of paragraph 2(d) of the Code Case shall also consider primary water stress corrosion cracking growth in the circumferential and axial directions, in accordance with IWB-3640. The postulated flaw evaluation in the Code Case only requires a fatigue analysis. Conservative generic analysis by the NRC has raised the concern that a PWSCC could potentially grow through the inner alloy 52 weld layer and into the highly susceptible alloy 82/182 weld material, to a depth of 75 percent through-wall, within the period of reexamination frequency required by § 50.55a(g)(6)(ii)(F). Therefore, users of this Code Case will verify, for each weld, that a primary water stress corrosion crack will not reach a depth of 75 percent through-wall within the required re-inspection interval due to PWSCC.

Code Case N-824 [Supplement 11, 2010 Edition]

*Type:* New.

*Title:* *Ultrasonic Examination of Cast Austenitic Piping Welds From the Outside Surface, Section XI, Division 1.*

Code Case N-824 is a new Code Case for the examination of cast austenitic piping welds from the outside surface. The NRC, using NUREG/CR-6933 and NUREG/CR-7122, determined that inspections of cast austenitic stainless steel (CASS) materials are very challenging, and sufficient technical basis exists to condition the Code Case to bring the Code Case into agreement with the NUREG/CR reports. The NUREG/CR reports also show that CASS materials produce high levels of coherent noise. The noise signals can be confusing and mask flaw indications.

The use of dual element phased-array search units showed the most promise in obtaining meaningful responses from flaws. For this reason, the NRC is proposing to add a condition to require the use of dual, transmit-receive, refracted longitudinal wave, multi-element phased array search units when utilizing N-824 for the examination of CASS components.

The optimum inspection frequencies for examining CASS components of various thicknesses are described in NUREG/CR-6933 and NUREG/CR-7122. For this reason, the NRC is proposing to add a condition to require that ultrasonic examinations performed to implement ASME BPV Code Case N-824 on piping greater than 1.6 inches thick shall use a phased array search unit with a center frequency of 500 kHz with a tolerance of  $\pm 20$  percent.

The NUREG/CR-6933 shows that the grain structure of CASS can reduce the effectiveness of some inspection angles, namely angles including, but not limited to, 30 to 55 degrees with a maximum increment of 5 degrees. Because the NRC is requiring the use of a phased array search unit, the NRC finds that the use of the phased array search unit must be limited so that the unit is used at inspection angles that would provide acceptable results. For this reason, the NRC is adding a condition to require that ultrasonic examinations performed to implement ASME BPV Code Case N-824 shall use a phased array search unit that produce angles including, but not limited to, 30 to 55 degrees with a maximum increment of 5 degrees. Therefore, the NRC finds Code Case N-824 acceptable with the following proposed conditions: (1) Instead of Paragraph 1(c)(1)-(c)(-2), licensees shall use a phased array search unit with a center frequency of 500 kHz with a tolerance of  $\pm 20$  percent, and (2) instead of Paragraph 1(c)(1)-(d), the phased array search unit must produce angles

including, but not limited to, 30 to 55 degrees with a maximum increment of 5 degrees.

Existing regulations in § 50.55a paragraphs (a)(1)(iii)(E) and (b)(2)(xxvii) discuss N-824 and the associated conditions. Because N-824 would now be discussed in RG 1.147, the existing requirements are redundant. These paragraphs would be removed.

Code Case N-829 [Supplement 0, 2013 Edition]

*Type:* New.

*Title:* *Austenitic Stainless Steel Cladding and Nickel Base Cladding Using Ambient Temperature Machine GTAW Temper Bead Technique.*

Code Case N-829 is a new Code Case for the use of automatic or machine GTAW temper bead technique for the repair of stainless steel cladding and nickel-base cladding without the specified preheat or postweld heat treatment in Section XI, Paragraph IWA-4411.

The NRC finds the Code Case acceptable on the condition that the provisions of Code Case N-829, paragraph 3(e)(2) or 3(e)(3) may only be used when it is impractical to use the interpass temperature measurement methods described in 3(e)(1), such as in situations where the weldment area is inaccessible (e.g., internal bore welding) or when there are extenuating radiological conditions. The NRC has determined that interpass temperature measurement is critical to obtaining acceptable corrosion resistance and/or notch toughness in a weld. Only in areas which are totally inaccessible to temperature measurement devices or when there are extenuating radiological conditions shall alternate methods be allowed such as the calculation method from section 3(e)(2) in ASME Code Case N-829 or the weld coupon test method shown in section 3(e)(3) in ASME Code Case N-829.

Code Case N-830 [Supplement 7, 2013 Edition]

*Type:* New.

*Title:* *Direct Use of Master Fracture Toughness Curve for Pressure-Retaining Materials of Class 1 Vessels.*

Code Case N-830 is a new Code Case introduced in the 2013 Edition of the ASME Code. This Code Case outlines the use of a material specific master curve as an alternative fracture toughness curve for crack initiation,  $K_{IC}$ , in Section XI, Division 1, Appendices A and G, for Class 1 pressure retaining materials, other than bolting.

The NRC finds the Code Case acceptable with one condition to prohibit the use of the provision in

Paragraph (f) of the Code Case that allows for the use of an alternative to limiting the lower shelf of the 95 percent lower tolerance bound Master Curve toughness,  $K_{JC-lower\ 95\%}$ , to a value consistent with the current KIC curve. Code Case N-830 contains provisions for using the  $K_{JC-lower\ 95\%}$  curve and the master curve-based reference temperature  $T_o$  as an alternative to the KIC curve and the nil-ductility transition reference temperature  $RT_{NDT}$  in Appendices A and G of the ASME Code, Section XI.  $T_o$  is determined in accordance with ASTM International Standard E 1921, "Standard Test Method for the Determination of Reference Temperature,  $T_o$ , for Ferritic Steels in the Transition Range," from direct fracture toughness testing data. The  $RT_{NDT}$  is determined in accordance with ASME Code, Section III, NB-2330, "Test Requirements and Acceptance Standards," from indirect Charpy V-notch testing data, and RG 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials." Considering the entire test data at a wide range of  $T-RT_{NDT}$  ( $-400\text{ }^{\circ}\text{F}$  to  $100\text{ }^{\circ}\text{F}$ ), the NRC found that the current KIC curve also represents approximately a 95 percent lower tolerance bound for the data. Thus, using  $K_{JC-lower\ 95\%}$  curve based on the Master Curve is acceptable. However, since Paragraph (f) provides a significant deviation from the  $K_{JC-lower\ 95\%}$  curve for  $(T-T_o)$  below  $-115\text{ }^{\circ}\text{F}$  in a non-conservative manner without justification, the NRC determined that Paragraph (f) of N-830 must not be applied when using N-830.

Code Case N-831 [Supplement 0, 2017 Edition]

*Type:* New.

*Title:* *Ultrasonic Examination in Lieu of Radiography for Welds in Ferritic Pipe.*

Code Case N-831 is a new Code Case, which provides an alternative to radiographic testing when it is required by the construction code for Section XI repair/replacement activities. This Code Case describes the requirements for inspecting ferritic welds for fabrication flaws using Ultrasonic Testing (UT) as an alternative to the current requirements to use radiography. The Code Case describes the scanning methods, recordkeeping and performance demonstration qualification requirements for the ultrasonic procedures, equipment, and personnel.

The NRC finds the Code Case acceptable with the condition that it is prohibited for use in new reactor construction. History has shown that the combined use of radiographic testing for

weld fabrication examinations followed by the use of UT for pre-service inspections (PSI) and ISI ensures that workmanship is maintained (with radiographic testing) while potentially critical planar fabrication flaws are not put into service (with UT). Until studies are completed that demonstrate the ability of UT to replace radiographic testing (repair/replacement activity), the NRC will not generically allow the substitute of UT in lieu of radiographic testing for weld fabrication examinations. In addition, ultrasonic examinations are not equivalent to radiographic examinations as they use different physical mechanisms to detect and characterize discontinuities. These differences in physical mechanisms result in several key differences in sensitivity and discrimination capability. As a result of these differences, as well as in consideration of the inherent strengths of each of the methods, the two methods are not considered to be interchangeable, but are considered complementary. Therefore, the NRC determined that this Code Case is not acceptable for use on new reactor construction.

Code Case N-838 [Supplement 2, 2015 Edition]

*Type:* New.

*Title:* *Flaw Tolerance Evaluation of Cast Austenitic Stainless Steel Piping Section XI, Division 1.*

The NRC proposes to approve Code Case N-838 with the following condition: Code Case N-838 shall not be used to evaluate flaws in cast austenitic stainless steel piping where the delta ferrite content exceeds 25 percent.

Code Case N-838 contains provisions for performing a postulated flaw tolerance evaluation of ASME Class 1 and 2 CASS piping with delta ferrite exceeding 20 percent. The Code Case provides a recommended target flaw size for the qualification of nondestructive examination methods, along with an approach that may be used to justify a larger target flaw size, if needed. The Code Case is intended for the flaw tolerance evaluation of postulated flaws in CASS base metal adjacent to welds, in conjunction with license renewal commitments. The NRC notes that the Code Case is limited in application and provides restrictions so that the Code Case will not be misused. For example, the Code Case is applicable to portions of Class 1 and 2 piping comprised of SA-351 statically- or centrifugally-cast Grades CF3, CF3A, CF3M, CF8, CF8A and CF8M base metal with delta ferrite exceeding 20 percent and niobium or columbium content not greater than 0.2 weight percent. This

Code Case is limited to be applied to thermally aged CASS material types as listed with normal operating temperatures between  $500\text{ }^{\circ}\text{F}$  and  $662\text{ }^{\circ}\text{F}$ . The Code Case is not applicable for evaluation of detected flaws. Section 3 of the Code Case provides specific analytical evaluation procedures for the pipe mean-radius-to-thickness ratio greater than 10 and for those with a ratio less than 10. Tables 1 through 4 provide the maximum tolerable flaw depth-to-thickness ratio for circumference and axial flaws.

However, the NRC finds paragraph 3(c) of the Code Case to be inadequate. Paragraph 3(c) specifies that for delta ferrite exceeding 25 percent, or pipe mean radius-to-thickness ratio,  $R/t$ , exceeding 10, the flaw tolerance evaluation shall be performed except that representative data shall be used to determine the maximum tolerable flaw depths applicable to the CASS base metal and  $R/t$  in lieu of Tables 1 through 4 of the Code Case.

The NRC notes that there are insufficient fracture toughness data for cast austenitic stainless steel that is greater than 25 percent in the open source literature. As such, the NRC needs to review flaw tolerance evaluations to ensure that they are performed with adequate conservatism. Therefore, the NRC proposes a condition to prohibit the use of this Code Case where delta ferrite in cast austenitic stainless steel piping exceeds 25 percent.

Code Case N-843 [Supplement 4, 2013 Edition]

*Type:* New.

*Title:* *Alternative Pressure Testing Requirements Following Repairs or Replacements for Class 1 Piping between the First and Second Inspection Isolation Valves, Section XI, Division 1.*

Code Case N-843 is consistent with alternatives that have been granted by the NRC. The NRC is concerned about return lines being included that could allow significantly lower pressures to be used on Class 1 portions of return lines. Therefore, the NRC proposes a condition to ensure the injection lines are tested at the highest pressure of the line's intended safety function. If the portions of the system requiring pressure testing are associated with more than one safety function, the pressure test and visual examination VT-2 shall be performed during a test conducted at the higher of the operating pressures for the respective system safety functions.

Code Case N-849 [Supplement 7, 2013 Edition]

Type: New.

Title: *In Situ VT-3 Examination of Removable Core Support Structures Without Removal.*

Code Case N-849 is a new Code Case introduced in the 2013 Edition of ASME Code. This Code Case is meant to provide guidelines for allowing the VT-3 inspection requirements of Table IWB-2500-1 for preservice or inservice inspections of the core support structures to be performed without the removal of the core support structure. The NRC finds the Code Case acceptable with two proposed conditions.

The first condition on Code Case N-849 limits the use of the Code Case to plants that are designed with accessible core support structures to allow for *in situ* inspection. Code Case N-849 allows the performance of VT-3 preservice or inservice visual examinations of removable core support structures *in situ* using a remote examination system. A provision of the Code Case is that all surfaces accessible for examination when the structure is removed shall be accessible when the structure is *in situ*, except for load bearing and contact surfaces, which would only be inspected when the core barrel is removed. Designs for new reactors, such as small modular reactors, may include accessibility of the annulus between the core barrel and the reactor vessel. Unlike new reactor designs, currently operating plants were not designed to allow *in situ* VT-3 examinations. There are no industry survey results of the current fleet to provide an evaluation of operating plant inspection findings. Therefore, applicability to the designs of currently operating plants has not been satisfactorily addressed.

The second condition on Code Case N-849 requires that prior to initial plant startup, the VT-3 preservice examination shall be performed with the core support structure removed, as required by ASME Section XI, IWB-2500-1, and shall include all surfaces that are accessible when the core support structure is removed, including all load bearing and contact surfaces. The NRC has concerns that a preservice examination would not be performed on the load bearing and contact surfaces even though the surfaces would be accessible prior to installing the core support structure. There is also no evidence that the *in situ* examination will achieve the same coverage as the examination with the core support structure removed.

3. ASME Operation and Maintenance Code Cases (DG-1343/RG 1.192)

Code Case OMN-1 Revision 2 [2017 Edition]

Type: Revised.

Title: *Alternative Rules for Preservice and Inservice Testing of Active Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants.*

The proposed conditions on Code Case OMN-1, Revision 2 [2017 Edition] are identical to the conditions on OMN-1 Revision 1 [2012 Edition] that were approved by the NRC in Revision 2 of RG 1.192 in January 2018. When ASME revised OMN-1, the code case was not modified in a way that would make it possible for the NRC to remove the conditions. Therefore the conditions would be retained in Revision 3 of RG 1.192.

Code Case OMN-3 [2017 Edition]

Type: Reaffirmed.

Title: *Requirements for Safety Significance Categorization of Components Using Risk Insights for Inservice Testing of LWR Power Plants.*

The proposed conditions on Code Case OMN-3 [2017 Edition] are identical to the conditions on OMN-3 [2012 Edition] that were approved by the NRC in Revision 2 of RG 1.192 in January 2018. When ASME revised OMN-3, the code case was not modified in a way that would make it possible for the NRC to remove the conditions. Therefore the conditions would be retained in Revision 3 of RG 1.192.

Code Case OMN-4 [2017 Edition]

Type: Reaffirmed.

Title: *Requirements for Risk Insights for Inservice Testing of Check Valves at LWR Power Plants.*

The proposed conditions on Code Case OMN-4 [2017 Edition] are identical to the conditions on OMN-4 [2012 Edition] that were approved by the NRC in Revision 2 of RG 1.192 in January 2018. When ASME revised OMN-4, the code case was not modified in a way that would make it possible for the NRC to remove the conditions. Therefore, the conditions would be retained in Revision 3 of RG 1.192.

Code Case OMN-9 [2017 Edition]

Type: Reaffirmed.

Title: *Use of a Pump Curve for Testing.*

The proposed conditions on Code Case OMN-9 [2017 Edition] are identical to the conditions on OMN-9 [2012 Edition] that were approved by the NRC in Revision 2 of RG 1.192 in January 2018. When ASME revised OMN-9, the code case was not modified

in a way that would make it possible for the NRC to remove the conditions. Therefore, the conditions would be retained in Revision 3 of RG 1.192.

Code Case OMN-12 [2017 Edition]

Type: Reaffirmed.

Title: *Alternative Requirements for Inservice Testing Using Risk Insights for Pneumatically and Hydraulically Operated Valve Assemblies in Light-Water Reactor Power Plants (OM-Code 1998, Subsection ISTC).*

The proposed conditions on Code Case OMN-12 [2017 Edition] are identical to the conditions on OMN-12 [2012 Edition] that were approved by the NRC in Revision 2 of RG 1.192 in January 2018. When ASME revised OMN-12, the code case was not modified in a way that would make it possible for the NRC to remove the conditions. Therefore, the conditions would be retained in Revision 3 of RG 1.192.

Code Case OMN-18 [2017 Edition]

Type: Reaffirmed.

Title: *Alternate Testing Requirements for Pumps Tested Quarterly Within  $\pm 20\%$  of Design Flow.*

The proposed conditions on Code Case OMN-18 [2017 Edition] are identical to the conditions on OMN-18 [2012 Edition] that were approved by the NRC in Revision 2 of RG 1.192 in January 2018. When ASME revised OMN-18, the code case was not modified in a way that would make it possible for the NRC to remove the conditions. Therefore, the conditions would be retained in Revision 3 of RG 1.192.

Code Case OMN-19 [2017 Edition]

Type: Reaffirmed.

Title: *Alternative Upper Limit for the Comprehensive Pump Test.*

The proposed conditions on Code Case OMN-19 [2017 Edition] are identical to the conditions on OMN-19 [2012 Edition] that were approved by the NRC in Revision 2 of RG 1.192 in January 2018. When ASME revised OMN-19, the code case was not modified in a way that would make it possible for the NRC to remove the conditions. Therefore, the conditions would be retained in Revision 3 of RG 1.192.

Code Case OMN-20 [2017 Edition]

Type: Reaffirmed.

Title: *Inservice Test Frequency.*

This Code Case is applicable to the editions and addenda of the OM Code listed in § 50.55a(a)(1)(iv).

With the acceptance of Code Case OMN-20 in RG 1.192, Revision 3,

paragraphs (a)(1)(iii)(G) and (b)(3)(x) in § 50.55a accepting Code Case OMN-20 are unnecessary and would be removed with this proposed rule.

*C. ASME Code Cases not Approved for Use (DG-1344/RG 1.193)*

The ASME Code Cases that are currently issued by the ASME but not approved for generic use by the NRC are listed in RG 1.193, “ASME Code Cases not Approved for Use.” In addition to ASME Code Cases that the NRC has found to be technically or programmatically unacceptable, RG 1.193 includes Code Cases on reactor designs for high-temperature gas-cooled reactors and liquid metal reactors, reactor designs not currently licensed by the NRC, and certain requirements in Section III, Division 2, for submerged spent fuel waste casks, that are not endorsed by the NRC. Regulatory Guide 1.193 complements RGs 1.84, 1.147, and 1.192. It should be noted that the NRC is not proposing to adopt any of the Code Cases listed in RG 1.193. However, comments have been submitted in the past on certain Code Cases listed in RG 1.193 where the commenter believed that additional technical information was available that might not have been considered by the NRC in its determination to not approve the use of these Code Cases. While the NRC will consider those comments, the NRC is not requesting comment on RG 1.193 at this time. Any changes in the NRC’s non-approval of such Code Cases will be the subject of an additional opportunity for public comment.

#### IV. Section-by-Section Analysis

The following paragraphs in § 50.55a would be revised as follows:

*Paragraph (a)(1)(iii)(E)*

This proposed rule would remove and reserve paragraph (a)(1)(iii)(E).

*Paragraph (a)(1)(iii)(G)*

This proposed rule would remove paragraph (a)(1)(iii)(G).

*Paragraph (a)(3)*

This proposed rule would include a condition in paragraph (a)(3) stating that the Code Cases listed in RGs 1.84, 1.147, and 1.192 may be applied with the specified conditions when implementing the editions and addenda of the ASME BPV and OM Codes incorporated by reference in § 50.55a.

*Paragraph (a)(3)(i)*

This proposed rule would revise the reference to “NRC Regulatory Guide 1.84, Revision 37,” by removing

“Revision 37” and adding in its place “Revision 38.”

*Paragraph (a)(3)(ii)*

This proposed rule would revise the reference to “NRC Regulatory Guide 1.147, Revision 18,” by removing “Revision 18” and adding in its place “Revision 19.”

*Paragraph (a)(3)(iii)*

This proposed rule would revise the reference to “NRC Regulatory Guide 1.192, Revision 2,” by removing “Revision 2” and adding in its place “Revision 3.”

*Paragraph (b)(2)(xxvii)*

This proposed rule would remove paragraph (b)(2)(xxvii).

*Paragraph (b)(3)(x)*

This proposed rule would remove and reserve paragraph (b)(3)(x).

#### V. Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act (5 U.S.C. 605(b)), the Commission certifies that this rule, if adopted, will not have a significant economic impact on a substantial number of small entities. This proposed rule affects only 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 size standards established by the NRC (10 CFR 2.810).

#### VI. Regulatory Analysis

The NRC has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the NRC. The NRC requests public comment on the draft regulatory analysis. The regulatory analysis is available as indicated in the “Availability of Documents” section of this document. Comments on the draft analysis may be submitted to the NRC as indicated under the **ADDRESSES** caption of this document.

#### VII. Backfitting and Issue Finality

The provisions in this proposed rule would allow licensees and applicants to voluntarily apply NRC-approved Code Cases, sometimes with NRC-specified conditions. The approved Code Cases are listed in three RGs that are proposed to be incorporated by reference into § 50.55a. An applicant’s or a licensee’s voluntary application of an approved Code Case does not constitute backfitting, inasmuch as there is no imposition of a new requirement or new position.

Similarly, voluntary application of an approved Code Case by a 10 CFR part 52 applicant or licensee does not represent NRC imposition of a requirement or action, which is inconsistent with any issue finality provision in 10 CFR part 52. For these reasons, the NRC finds that this proposed rule does not involve any provisions requiring the preparation of a backfit analysis or documentation demonstrating that one or more of the issue finality criteria in 10 CFR part 52 are met.

#### VIII. Plain Writing

The Plain Writing Act of 2010 (Pub. L. 111–274) requires Federal agencies to write documents in a clear, concise, and well-organized manner. The NRC has written this document to be consistent with the Plain Writing Act as well as the Presidential Memorandum, “Plain Language in Government Writing,” published June 10, 1998 (63 FR 31883). The NRC requests comment on this document with respect to the clarity and effectiveness of the language used.

#### IX. Environmental Assessment and Proposed Finding of No Significant Environmental Impact

The Commission has determined under the National Environmental Policy Act (NEPA) of 1969, 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; therefore, an environmental impact statement is not required.

The determination of this environmental assessment is that there will be no significant effect on the quality of the human environment from this action. Interested parties should note, however, that comments on any aspect of this environmental assessment may be submitted to the NRC as indicated under the **ADDRESSES** section of this document.

As voluntary alternatives to the ASME Code, NRC-approved Code Cases provide an equivalent level of safety. Therefore, the probability or consequences of accidents is not changed. There are also no significant, non-radiological impacts associated with this action because no changes would be made affecting non-radiological plant effluents and because no changes would be made in activities that would adversely affect the environment. The determination of this environmental assessment is that there will be no significant offsite impact to the public from this action.

## X. Paperwork Reduction Act Statement

This proposed rule contains new or amended collections of information subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This proposed rule has been submitted to the Office of Management and Budget (OMB) for approval of the information collections.

*Type of submission, new or revision:* Revision.

*The title of the information collection:* Domestic Licensing of Production and Utilization.

*Facilities:* Updates to Incorporation by Reference and Regulatory Guides.

*The form number if applicable:* Not applicable.

*How often the collection is required:* On occasion.

*Who will be required or asked to report:* Operating power reactor licensees and applicants for power reactors under construction.

*An estimate of the number of annual responses:* – 24 (reduction).

*The estimated number of annual respondents:* – 24 (reduction).

*An estimate of the total number of hours needed annually to complete the requirement or request:* – 9,120 hours (reduction of reporting hours.)

*Abstract:* This proposed rule is the latest in a series of rulemakings that incorporate by reference the latest versions of several Regulatory Guides identifying new and revised unconditionally or conditionally acceptable ASME Code Cases that are approved for use. The incorporation by reference of these Code Cases will reduce the number of alternative requests submitted by licensees under § 50.55a(z) by an estimated 24 requests annually.

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 the burden of the proposed information collection 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 proposed information collection on respondents be minimized, including the use of automated collection techniques or other forms of information technology?

A copy of the OMB clearance package and proposed rule is available in

ADAMS under Accession No. ML18099A046 or may be viewed free of charge at the NRC's PDR, One White Flint North, 11555 Rockville Pike, Room O-1 F21, Rockville, MD 20852. You may obtain information and comment submissions related to the OMB clearance package by searching on <http://www.regulations.gov> under Docket ID NRC-2017-0024.

You may submit comments on any aspect of these proposed information collections, including suggestions for reducing the burden and on the four issues, by the following methods:

- *Federal Rulemaking website:* Go to <http://www.regulations.gov> and search for Docket ID NRC-2017-0024.
- *Mail comments to:* Information Services Branch, Office of the Chief Information Officer, Mail Stop: T-2F43, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 or to the OMB reviewer at: OMB Office of Information and Regulatory Affairs (3150-0011) Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; email: [oir\\_submission@omb.eop.gov](mailto:oir_submission@omb.eop.gov).

Submit comments by September 17, 2018. Comments received after this date will be considered if it is practical to do so, but the NRC staff is able to ensure consideration only for comments received on or before this date.

## Public Protection Notification

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

## XI. Voluntary Consensus Standards

The National Technology Transfer and Advancement Act of 1995, Pub. L. 104-113, requires that Federal agencies use technical standards that are developed or adopted by voluntary consensus standards bodies unless using such a standard is inconsistent with applicable law or is otherwise impractical. In this proposed rule, the NRC is continuing to use ASME BPV and OM Code Cases, which are ASME-approved voluntary alternatives to compliance with various provisions of the ASME BPV and OM Codes. The NRC's approval of the ASME Code Cases is accomplished by amending the NRC's regulations to incorporate by reference the latest revisions of the following, which are the subject of this rulemaking, into § 50.55a: RG 1.84, Revision 38; RG 1.147, Revision 19; and RG 1.192, Revision 3. These RGs list the ASME Code Cases that the NRC has approved for use. The ASME Code

Cases are national consensus standards as defined in the National Technology Transfer and Advancement Act of 1995 and OMB Circular A-119. The ASME Code Cases constitute voluntary consensus standards, in which all interested parties (including the NRC and licensees of nuclear power plants) participate. The NRC invites comment on the applicability and use of other standards.

## XII. Incorporation by Reference

The NRC proposes to incorporate by reference three NRC RGs that list new and revised ASME Code Cases that the NRC has approved as voluntary alternatives to certain provisions of NRC-required Editions and Addenda of the ASME BPV Code and the ASME OM Code. The draft regulatory guides DG-1345, DG-1342, and DG-1343 will correspond to final RG 1.84, Revision 38; RG 1.147, Revision 19; and RG 1.192, Revision 3, respectively. A summary of the material the NRC proposes to incorporate by reference is provided in the "Discussion" section of this document.

The NRC is required to obtain approval for incorporation by reference from the Office of the Federal Register (OFR) as set forth in 1 CFR part 51. The OFR regulations require an agency to include in a proposed rule a discussion of the ways that the materials the agency proposes to incorporate by reference are reasonably available to interested parties or how it worked to make those materials reasonably available to interested parties. The discussion in this section complies with the requirement for proposed rules as set forth in 1 CFR 51.5(a)(1).

The NRC considers "interested parties" to include all potential NRC stakeholders, not only the individuals and entities regulated or otherwise subject to the NRC's regulatory oversight. These NRC stakeholders are not a homogenous group, so the considerations for determining "reasonable availability" vary by class of interested parties. The NRC identifies six classes of interested parties with regard to the material to be incorporated by reference in an NRC rule:

- Individuals and small entities regulated or otherwise subject to the NRC's regulatory oversight. This class includes applicants and potential applicants for licenses and other NRC regulatory approvals, and who are subject to the material to be incorporated by reference. In this context, "small entities" has the same meaning as set out in 10 CFR 2.810.
- Large entities otherwise subject to the NRC's regulatory oversight. This



class includes applicants and potential applicants for licenses and other NRC regulatory approvals, and who are subject to the material to be incorporated by reference. In this context, a “large entity” is one that does not qualify as a “small entity” under 10 CFR 2.810.

- Non-governmental organizations with institutional interests in the matters regulated by the NRC.
- Other Federal agencies, states, local governmental bodies (within the meaning of 10 CFR 2.315(c)).
- Federally-recognized and State-recognized Indian tribes.
- Members of the general public (*i.e.*, individual, unaffiliated members of the public who are not regulated or otherwise subject to the NRC’s regulatory oversight) and who need access to the materials that the NRC proposes to incorporate by reference in order to participate in the rulemaking.

The three draft RGs that the NRC proposes to incorporate by reference in this proposed rule are available without cost and can be read online, downloaded, or viewed, by appointment, at the NRC Technical Library, which is located at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland 20852; telephone: 301-415-7000; email:

[Library.Resource@nrc.gov](mailto:Library.Resource@nrc.gov). The final RGs, if approved by the OFR for incorporation by reference, will also be available for inspection at the OFR, as described in 10 CFR 50.55a(a).

Because access to the three draft regulatory guides, and eventually, the final regulatory guides, are available in various forms at no cost, the NRC determines that the three draft regulatory guides, DG-1345, DG-1342, and DG-1343, and final regulatory guides 1.84, Revision 38; RG 1.147, Revision 19; and RG 1.192, Revision 3, once approved by the OFR for

incorporation by reference, are reasonably available to all interested parties.

### XIII. Availability of Documents

The documents identified in the following tables are available to interested persons through one or more of the following methods, as indicated. Throughout the development of this rule, the NRC may post documents related to this rule, including public comments, on the Federal rulemaking website at: <http://www.regulations.gov> under Docket ID NRC-2017-0024. The Federal rulemaking website allows you to receive alerts when changes or additions occur in a docket folder. To subscribe: (1) Navigate to the docket folder (NRC-2017-0024); (2) click the “Sign up for Email Alerts” link; and (3) enter your email address and select how frequently you would like to receive emails (daily, weekly, or monthly).

TABLE III—RULEMAKING RELATED DOCUMENTS

Document title	ADAMS accession No./ Federal Register citation
<b>Federal Register</b> notice—“Incorporation by Reference of ASME BPV and OM Code Cases,” July 8, 2003 .....	68 FR 40469.
<b>Federal Register</b> Notice—“Fracture Toughness Requirements for Light Water Reactor Pressure Vessels,” December 19, 1995.	60 FR 65456.
Final Safety Evaluation for Nuclear Energy Institute “Topical Report Materials Reliability Program (MRP): Technical Basis for Preemptive Weld Overlays for Alloy 82/182 Butt Welds in Pressurized Water Reactors (MRP-169) Revision 1-A,” August 9, 2010.	ML101620010. ML101660468.
EPRI Nuclear Safety Analysis Center Report 202L-2, “Recommendations for an Effective Flow Accelerated Corrosion Program,” April 1999.	Available for purchase.
ASTM International Standard E 921, “Standard Test Method for the Determination of Reference Temperature, T <sub>0</sub> , for Ferritic Steels in the Transition Range,”	Available for purchase.
ASME Code, Section III, NB-2330, “Test Requirements and Acceptance Standards,” .....	Available for purchase.
Regulatory Guide 1.99, Revision 2, “Radiation Embrittlement of Reactor Vessel Materials,” .....	ML102310298.
<b>Federal Register</b> notice—“Approval of American Society of Mechanical Engineers’ Code Cases” dated January 17, 2018.	83 FR 2331.
RG 1.193, “ASME Code Cases Not Approved for Use,” Revision 6. (DG-1344) .....	ML18114A227.
Draft Regulatory Analysis .....	ML18099A054.

#### Documents Proposed To Be Incorporated by Reference

The NRC proposes to incorporate by reference three NRC RGs that list new

and revised ASME Code Cases that the NRC has approved as voluntary alternatives to certain provisions of NRC-required Editions and Addenda of

the ASME BPV Code and the ASME OM Code.

TABLE IV—DRAFT REGULATORY GUIDES PROPOSED TO BE INCORPORATED BY REFERENCE IN 10 CFR 50.55A

Document title	ADAMS accession No./ Federal Register citation
RG 1.84, “Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,” Revision 38. (DG-1345).	ML18114A228.
RG 1.147, “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,” Revision 19. (DG-1342)	ML18114A225.
RG 1.192, “Operation and Maintenance Code Case Acceptability, ASME OM Code,” Revision 3. (DG-1343) .....	ML18114A226.

#### Code Cases for Approval in This Proposed Rule

The ASME BPV Code Cases that the NRC is proposing to approve as alternatives to certain provisions of the

ASME BPV Code, as set forth in Table V, are being made available by the ASME for read-only access during the public comment period on the <http://go.asme.org/NRC-ASME-CC>.

The ASME OM Code Cases that the NRC is proposing to approve as alternatives to certain provisions of the ASME OM Code, as set forth in Table V, are being made available for read-only



access during the public comment period by the ASME on the <http://go.asme.org/NRC-ASME-CC>.

The ASME is making the Code Cases listed in Table V available for limited, read-only access at the request of the NRC. The NRC believes that stakeholders need to be able to read these Code Cases in order to provide meaningful comment on the three RGs

(listed in Table IV) that the NRC is proposing to incorporate by reference into § 50.55a. It is the NRC's position that the listed Code Cases, as modified by any conditions contained in the three RGs and thus serving as alternatives to requirements in § 50.55a, are legally-binding regulatory requirements. An applicant or licensee must comply with a listed Code Case and any conditions

to be within the scope of the NRC's approval of the Code Case as a voluntary alternative for use. These requirements cannot be fully understood without knowledge of the Code Case to which the proposed condition applies, and to this end, the NRC has requested that ASME provide limited, read-only access to the Code Cases in order to facilitate meaningful public comment.

TABLE V—ASME CODE CASES PROPOSED FOR NRC APPROVAL

Code case No.	Supplement	Title
<b>Boiler and Pressure Vessel Code Section III</b>		
N-60-6 .....	11 (2010 Edition) .....	Material for Core Support Structures, Section III, Division 1 SUPP 11.
N-71-19 .....	0 (2013 Edition) .....	Additional Materials for Subsection NF, Class 1, 2, 3, and MC Supports Fabricated by Welding, Section III, Division 1.
N-249-15 .....	7 (2013 Edition) .....	Additional Materials for Subsection NF, Classes 1, 2, 3, and MC Supports Fabricated Without Welding, Section III, Division 1.
N-284-4 .....	11 (2010 Edition) .....	Metal Containment Shell Buckling Design Methods, Class MC, TC, and SC Construction Section III, Divisions 1 and 3.
N-520-6 .....	1 (2013 Edition) .....	Alternative Rules for Renewal of Active or Expired N-type Certificates for Plants Not in Active Construction, Section III, Division 1.
N-801-1 .....	11 (2010 Edition) .....	Rules for Repair of N-Stamped Class 1, 2, and 3 Components Section III, Division 1.
N-822-2 .....	7 (2013 Edition) .....	Application of the ASME Certification Mark Section III, Divisions 1, 2, 3, and 5.
N-833 .....	1 (2013 Edition) .....	Minimum Non-prestressed Reinforcement in the Containment Base Mat or Slab Required for Concrete Crack Control, Section III, Division 2.
N-834 .....	3 (2013 Edition) .....	ASTM A988/A988M-11 UNS S31603, Subsection NB, Class 1 Components, Section III, Division 1.
N-836 .....	3 (2013 Edition) .....	Heat Exchanger Tube Mechanical Plugging, Class 1, Section III, Division 1.
N-841 .....	4 (2013 Edition) .....	Exemptions to Mandatory Post Weld Heat Treatment (PWHT) of SA-738 Grade B for Class MC Applications, Section III, Division 1.
N-844 .....	5 (2013 Edition) .....	Alternatives to the Requirements of NB-4250(c), Section III, Division 1.
<b>Boiler and Pressure Vessel Code Section XI</b>		
N-513-4 .....	6 (2013 Edition) .....	Evaluation of Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping, Section XI, Division 1.
N-516-4 .....	7 (2013 Edition) .....	Underwater Welding, Section XI, Division 1.
N-528-1 .....	5 (1998 Edition) .....	Purchase, Exchange, or Transfer of Material Between Nuclear Plant Sites Section XI, Division 1.
N-597-3 .....	5 (2013 Edition) .....	Evaluation of Pipe Wall Thinning, Section XI, Division 1.
N-606-2 .....	2 (2013 Edition) .....	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique for BWR CRD Housing/Stub Tube Repairs, Section XI, Division 1.
N-638-7 .....	2 (2013 Edition) .....	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique.
N-648-2 .....	7 (2013 Edition) .....	Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles, Section XI, Division 1.
N-661-3 .....	6 (2015 Edition) .....	Alternative Requirements for Wall Thickness Restoration of Class 2 and 3 Carbon Steel Piping for Raw Water Service, Section XI, Division 1.
N-695-1 .....	0 (2015 Edition) .....	Qualification Requirements for Dissimilar Metal Piping Welds Section XI, Division 1.
N-696-1 .....	6 (2013 Edition) .....	Qualification Requirements for Mandatory Appendix VIII Piping Examination Conducted from the Inside Surface, Section XI, Division 1.
N-702 .....	12 (2001 Edition) .....	Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1.

TABLE V—ASME CODE CASES PROPOSED FOR NRC APPROVAL—Continued

Code case No.	Supplement	Title
N-705(Errata) .....	11 (2010 Edition) .....	Evaluation Criteria for Temporary Acceptance of Degradation in Moderate Energy Class 2 or 3 Vessels and Tanks, Section XI, Division 1.
N-711-1 .....	0 (2017 Edition) .....	Alternative Examination Coverage Requirements for Examination Category B-F, B-J, C-F-1, C-F-2, and R-A Piping Welds.
N-754-1 .....	1 (2013 Edition) .....	Optimized Structural Dissimilar Metal Weld Overlay for Mitigation of PWR Class 1 Items, Section XI, Division 1.
N-762-1 .....	3 (2013 Edition) .....	Temper Bead Procedure Qualification Requirements for Repair/Replacement Activities without Postweld Heat Treatment, Section XI, Division 1.
N-766-1 .....	1 (2013 Edition) .....	Nickel Alloy Reactor Coolant Inlay and Onlay for Mitigation of PWR Full Penetration Circumferential Nickel Alloy Dissimilar Metal Welds in Class 1 Items, Section XI, Division 1.
N-789-2 .....	5 (2015 Edition) .....	Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate Energy Carbon Steel Piping for Raw Water Service.
N-823-1 .....	4 (2013 Edition) .....	Visual Examination Section XI, Division 1.
N-824 .....	11 (2010 Edition) .....	Ultrasonic Examination of Cast Austenitic Piping Welds From the Outside Surface Section XI, Division 1.
N-829 .....	0 (2013 Edition) .....	Austenitic Stainless Steel Cladding and Nickel Base Cladding Using Ambient Temperature Machine GTAW Temper Bead Technique, Section XI, Division 1.
N-830 .....	7 (2013 Edition) .....	Direct Use of Master Fracture Toughness Curve for Pressure-Retaining Materials of Class 1 Vessels, Section XI.
N-831 .....	0 (2017 Edition) .....	Ultrasonic Examination in Lieu of Radiography for Welds in Ferritic Pipe.
N-838 .....	2 (2015 Edition) .....	Flaw Tolerance Evaluation of Cast Austenitic Stainless Steel Piping, Section XI, Division 1.
N-839 .....	7 (2013 Edition) .....	Similar and Dissimilar Metal Welding Using Ambient Temperature SMAW Temper Bead Technique Section XI, Division 1.
N-842 .....	4 (2013 Edition) .....	Alternative Inspection Program for Longer Fuel Cycles Section XI, Division 1.
N-843 .....	4 (2013 Edition) .....	Alternative Pressure Testing Requirements Following Repairs or Replacements for Class 1 Piping between the First and Second Injection Isolation Valves, Section XI, Division 1.
N-849 .....	7 (2013 Edition) .....	In situ VT-3 Examination of Removable Core Support Structures Without Removal, Section XI.
N-853 .....	6 (2015 Edition) .....	PWR Class 1 Primary Piping Alloy 600 Full Penetration Branch Connection Weld Metal Buildup for Material Susceptible to Primary Water Stress Corrosion Cracking, Section XI, Division 1.
N-854 .....	1 (2015 Edition) .....	Alternative Pressure Testing Requirements for Class 2 and 3 Components Connected to the Class 1 Boundary, Section XI, Division 1.
<b>OM Code</b>		
Code case No.	Edition <sup>4</sup>	Title
OMN-16 Revision 2 .....	2017 Edition .....	Use of a Pump Curve for Testing.
OMN-21 .....	2017 Edition .....	Alternative Requirements for Adjusting Hydraulic Parameters to Specified Reference Points.

**List of Subjects in 10 CFR Part 50**

Administrative practice and procedure, Antitrust, Classified information, Criminal penalties, Education, Fire prevention, Fire protection, Incorporation by reference, Intergovernmental relations, Nuclear

<sup>4</sup> The column labelled "Edition" in this table refers to the point in time a Code Case was issued. For example, an entry associated with the 2017 Edition means the Code Case was issued at the same time as the 2017 Edition of the code.

power plants and reactors, Penalties, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements, Whistleblowing.

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:** Atomic Energy Act of 1954, secs. 11, 101, 102, 103, 104, 105, 108, 122, 147, 149, 161, 181, 182, 183, 184, 185, 186, 187, 189, 223, 234 (42 U.S.C. 2014, 2131, 2132, 2133, 2134, 2135, 2138, 2152, 2167, 2169, 2201, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2239, 2273, 2282); Energy

Reorganization Act of 1974, secs. 201, 202, 206, 211 (42 U.S.C. 5841, 5842, 5846, 5851); Nuclear Waste Policy Act of 1982, sec. 306 (42 U.S.C. 10226); National Environmental Policy Act of 1969 (42 U.S.C. 4332); 44 U.S.C. 3504 note; Sec. 109, Pub. L. 96–295, 94 Stat. 783.

■ 2. In § 50.55a:

■ a. Remove and reserve paragraphs (a)(1)(iii)(E) and (G);

■ b. Revise paragraph (a)(3) introductory text;

■ c. In paragraph (a)(3)(i), remove the phrase “Revision 37” and add in its place the phrase “Revision 38”;

■ d. In paragraph (a)(3)(ii), remove the phrase “Revision 18” and add in its place the phrase “Revision 19”;

■ e. In paragraph (a)(3)(iii), remove the phrase “Revision 2” and add in its place the phrase “Revision 3”;

■ f. Remove paragraph (b)(2)(xxxvii); and

■ g. Remove and reserve paragraph (b)(3)(x).

The revision reads as follows:

**§ 50.55a Codes and standards.**

(3) *U.S. Nuclear Regulatory Commission (NRC) Public Document Room*, 11555 Rockville Pike, Rockville, Maryland 20852; telephone: 1–800–397–4209; email: [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov); <http://www.nrc.gov/reading-rm/doc-collections/reg-guides/>. The use of Code Cases listed in the NRC regulatory guides in paragraphs (a)(3)(i) through (iii) of this section is acceptable with the specified conditions in those guides when implementing the editions and addenda of the ASME BPV Code and ASME OM Code incorporated by reference in paragraph (a)(1) of this section.

\* \* \* \* \*

Dated at Rockville, Maryland, this 26th day of July, 2018.

For the Nuclear Regulatory Commission.

**Michele G. Evans,**

*Deputy Director, Office of Nuclear Reactor Regulation.*

[FR Doc. 2018–17650 Filed 8–15–18; 8:45 am]

**BILLING CODE 7590–01–P**

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA–2018–0710; Product Identifier 2018–NM–079–AD]

RIN 2120–AA64

### Airworthiness Directives; Bombardier, Inc., Airplanes

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** We propose to adopt a new airworthiness directive (AD) for certain Bombardier, Inc., Model BD–700–1A10 and BD–700–1A11 airplanes. This proposed AD was prompted by in-service findings that a cotter pin at the main fitting joint of the nose landing gear (NLG) retraction actuator to the NLG strut showed evidence of shearing after a NLG retraction-extension cycling. This proposed AD would require revising the maintenance or inspection program, as applicable, a general visual inspection for damage of a certain cotter pin present on certain configurations of the NLG strut assembly and for the modification number shown on the identification plate for the NLG strut, and modification of the NLG retraction actuator hardware on any damaged NLG strut assembly. We are proposing this AD to address the unsafe condition on these products.

**DATES:** We must receive comments on this proposed AD by October 1, 2018.

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.

- *Fax:* 202–493–2251.

- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- *Hand Delivery:* Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Bombardier, Inc., 400 Côte-Vertu Road West, Dorval, Québec H4S 1Y9, Canada; telephone 514–855–5000; fax 514–855–7401; email [thd.crj@aero.bombardier.com](mailto:thd.crj@aero.bombardier.com); internet <http://www.bombardier.com>. You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206–231–3195.

#### Examining the AD Docket

You may examine the AD docket on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA–2018–0710; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the regulatory evaluation, any comments received, and other information. The

street address for Docket Operations (phone: 800–647–5527) is in the **ADDRESSES** section. Comments will be available in the AD docket shortly after receipt.

#### FOR FURTHER INFORMATION CONTACT:

Cesar Gomez, Aerospace Engineer, Airframe and Mechanical Systems Section, FAA, New York ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516–228–7318; fax 516–794–5531; email [9-avs-nyaco-cos@faa.gov](mailto:9-avs-nyaco-cos@faa.gov).

#### SUPPLEMENTARY INFORMATION:

##### Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the **ADDRESSES** section. Include “Docket No. FAA–2018–0710; Product Identifier 2018–NM–079–AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this NPRM. We will consider all comments received by the closing date and may amend this NPRM because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this NPRM.

##### Discussion

Transport Canada Civil Aviation (TCCA), which is the aviation authority for Canada, has issued Canadian AD CF–2018–05, dated January 23, 2018 (referred to after this as the Mandatory Continuing Airworthiness Information, or “the MCAI”), to correct an unsafe condition for certain Bombardier, Inc., Model BD–700–1A10 and BD–700–1A11 airplanes. The MCAI states:

There have been in-service findings whereby the cotter pin at the retraction actuator to nose landing gear (NLG) strut main fitting was observed to be damaged after a NLG retraction-extension cycling. This condition could lead to a loss of hardware and result in an actuator disconnect resulting in a failure to retract or extend, or in an undamped freefall of the NLG [which could adversely affect the airplane’s continued safe flight and landing].

This AD mandates a revision to the approved maintenance schedule. This AD also mandates a visual inspection of the cotter pin for certain configurations of NLG strut assembly, and if found damaged, the incorporation of a modification which introduces a new castellated nut, spacer, end plate and sleeve to the NLG retraction actuator to main fitting joint.