

**DR. JENNIFER UHLE**  
*Vice President, Generation & Suppliers*

1201 F Street, NW, Suite 1100  
Washington, DC 20004  
P: 202.739.8164  
jlu@nei.org  
nei.org



January 28, 2021

Mr. Robert M. Taylor  
Deputy Director for New Reactors  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject:** Backfit Concerns with Proposed 10 CFR 50.55a Condition on Operational Leakage

Dear Mr. Taylor:

Late last year, the U.S. Nuclear Regulatory Commission (NRC) released a draft of a proposed amendment to 10 CFR 50.55a concerning the treatment of operational leakage.<sup>1</sup> Through public interactions with the staff<sup>2</sup> over the past several months, the Nuclear Energy Institute (NEI)<sup>3</sup> has communicated serious concerns about the implications of the proposed change. The dialogue with the staff in these public meetings has sharpened our understanding of the gap between our views and the staff's, but has not resolved our concerns. We write to ensure that you are aware of the extent of our concerns and the implications for operating plants. The proposed amendment substantially expands the applicability of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code, Section XI, imposes new limits on methods to evaluate structural integrity, conflates code compliance with operability determinations, and creates potential conflicts with 10 CFR 50.69. Therefore, NEI respectfully requests that the NRC not make this amendment associated with this rulemaking to 10 CFR 50.55a, or perform the requisite backfit analysis required by 10 CFR 50.109 to justify this change.

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<sup>1</sup> Draft proposed rule language is discussed in the January 19, 2021 staff presentation (ML21019A227).

<sup>2</sup> Public meetings were held on September 24, 2020 (ML20268A157 & ML20338A553) and January 19, 2021 (ML21019A294).

<sup>3</sup> The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

## Summary of Concerns

The proposed change adds 10 CFR 50.55a(g)(4)(vi), Applicable ISI Code: Operational Leakage. The text of the proposed revision was made public on January 6, 2021.<sup>4</sup> The proposed wording is as follows:

*(iv) Applicable ISI Code: Operational leakage.*

*(A) Operational Leakage is leakage through a flaw in the pressure retaining boundary discovered outside any ASME BPV Code required pressure test. The term, "through-wall," is an adjective used to describe a condition that extends from one surface to another surface in a component. For the purposes of paragraph (B) below, a component is defined as a vessel, pump, valve, storage tank, or piping system.*

*(B) If through-wall Operational Leakage is observed from an ASME BPV Code Class 1, 2 or 3 component and the structural integrity of the component must be established, then the methods described in the provisions of the applicable inservice inspection requirements, as specified in paragraph (g) of this section, must be used. These methods require implementation of an NRC approved Code Case or Nonmandatory Appendix U of ASME BPV Code, Section XI, to verify structural integrity or perform a repair/replacement activity.*

Based upon our interactions with the NRC staff during the public meetings referenced above, we have the following concerns regarding this proposed amendment to section 50.55a:

- The proposed amendment to the Commission's regulations would substantially expand the applicability of ASME Boiler and Pressure Vessel Code, Section XI, without evaluating the change pursuant to the backfitting requirements of 10 CFR 50.109.
- The proposed amendment to the Commission's regulations would impose a new legally-binding requirement mandating use of NRC-approved Code Cases or Nonmandatory Appendix U to evaluate structural integrity in situations where the Code does not apply, without evaluating the change pursuant to the backfitting requirements of 10 CFR 50.109.
- The proposed amendment to the Commission's regulations would unnecessarily conflate maintaining ASME Code compliance with operability determinations, which will result in unnecessary exigent requests for Code relief and unnecessary potential plant shutdowns which could result in increased plant risk.

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<sup>4</sup> ADAMS accession number ML20337A396.

- The proposed amendment to the Commission's regulations could create potential conflicts with 10 CFR 50.69.

These concerns are described in greater detail below.

## **I. The Proposed Amendment to Section 50.55a Substantially Expands the Applicability of Section XI to Address Operational Leakage and Should be Evaluated as Backfitting.**

The proposed amendment to section 50.55a would expand the applicability of the ASME BPV Code Section XI to cover leakage that occurs outside of the course of inservice inspections (i.e., the proposed change would make Section XI applicable to "operational leakage"). As the ASME Code Committee has pointed out repeatedly since the late 1980s,<sup>5</sup> Section XI, by its own terms, does not apply outside of the course of an inservice inspection or a Section XI required pressure test. The NRC seemed to acknowledge the limitations of Section XI in a 2015 letter to the ASME.<sup>6</sup> This letter was the culmination of a nine-year exchange between ASME and the NRC "regarding the lack of formal ASME Code rules on operational leakage in nuclear power plants."<sup>7</sup> Specifically, the NRC acknowledged that:

Current ASME Code, Section XI rules provide requirements when leakage is found during a pressure test in all components. However, it does not provide requirements, other than for repair/replacement activities, when a leak is found at a time not associated with a code required pressure test. Therefore, in view of ASME's Pressure Boundary Leakage project team's conclusions, the NRC will evaluate the necessity of additional regulatory activities to address operational leakage.<sup>8</sup>

Further, the current requirements of 10 CFR 50.55a, which incorporate Section XI by reference into the Commission's regulations, do not expand the applicability of Section XI beyond what is stated in the Code itself.<sup>9</sup> Once a standard is incorporated by reference into the Commission's regulations, a

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<sup>5</sup> See, e.g., "Proposed New 10 CFR 50.55a Condition on Operational Leakage," NEI slide deck presented at NRC public meeting on Jan. 19, 2021 (ASME slides detailing Code provisions and ASME interpretations dating back to 1989 stating that Section XI does not address leakage detected outside of inservice examinations), Letter from B.A. Erler (ASME) to M.G. Evans (NRC), "Letter from Michele Evans (Directory Division of Component Integrity, NRR) to Bryan Erler (Vice President, Nuclear Codes and Standards), dated June 27, 2008," Nov. 26, 2008 (stating "Section XI currently does not address operational leakage. Operational leakage include leakage through mechanical connection as well as through-wall leakage.")

<sup>6</sup> Letter from B.E. Thomas (NRC) to R. Hill, III (American Society of Mechanical Engineers), July 14, 2015 ("2015 ASME Letter").

<sup>7</sup> *Id.* at 1.

<sup>8</sup> *Id.* The current revision to Inspection Manual Chapter 0326 seems to take a contrary position, stating that contrary to the conclusions of the ASME Committee "it is the NRC's position that the provisions of the ASME BPV Code Section XI are incorporated by reference in 10 CFR 50.55a and *are applicable at all times because they do not, by their own terms, limit application to ASME Code examinations.*" IMC 0326, at pg. 19 (emphasis added). While it is true that Section XI is incorporated by reference in section 50.55a, the NRC's claim that the terms of the Code don't limit its application is contrary to the language of the Code itself, the interpretations of the ASME BVP XI Standards Committee, and NRC's own acknowledgement in the 2015 ASME Letter.

<sup>9</sup> IMC 0326 states: "10 CFR 50.55a(g)(4) further requires, 'Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except

rulemaking is necessary to impose an amendment of that standard on licensees.<sup>10</sup> Presumably, that is why the NRC is seeking to add 50.55a(g)(4)(vi)(A) and (B) to its regulations. The NRC simply could not have expanded the applicability of a standard that it incorporated by reference into its regulations via the issuance of generic communications or other guidance, such as inspection manual chapters. Attempting to impose a revision to such a Code through agency guidance would violate the requirements of the Administrative Procedure Act.<sup>11</sup>

The NRC has acknowledged that the backfitting requirements in 10 CFR 50.109 apply “[w]hen the NRC takes an exception to an ASME BPV or OM code provision and imposes a requirement that is substantially different from the current existing requirement as well as substantially different than the later code. . . .”<sup>12</sup> Expanding the applicability of Section XI of the ASME BPV Code to address operational leakage is substantially different from the existing requirement, which is limited to addressing leakage detected during an inservice inspection or required pressure test. In this case, ASME has not proposed modifying Section XI to cover operational leakage. Thus, according to the NRC’s guidance, this change should be evaluated as backfitting prior to being imposed on licensees.<sup>13</sup>

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design and access provisions and pre-service examination requirements, set forth in Section XI...” Although this statement is not explained further in the document, it could be taken out of context to imply that the NRC did intend to expand the applicability of Section XI to cover operational leakage when it incorporated the code by reference in section 50.55a. But the possibility of any such interpretation disappears when the full context of section 50.55a(g)(4) is examined. Specifically, when read in full, the partial quotation in IMC 0326 states:

(4) Inservice inspection standards requirement for operating plants. Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) that are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and access provisions and preservice examination requirements, *set forth in Section XI of editions and addenda of the ASME BPV Code (or ASME OM Code for snubber examination and testing) that become effective subsequent to editions specified in paragraphs (g)(2) and (3) of this section* . . . to the extent practical within the limitations of design, geometry, and materials of construction of the components.

It is clear that this paragraph is simply communicating that, throughout the service life of the plant, ASME Class 1, 2, or 3 components must meet the requirements set forth in Section XI that become effective in the future, and that are incorporated by reference in (a)(1)(ii) or (iv). It is not modifying the scope or applicability of Section XI itself.

<sup>10</sup> See, e.g., 1 CFR § 51.1(f) (limiting incorporation by reference of a standard to the edition of the publication that is approved by the Director of the Office of the Federal Register and stating that future amendments to or revisions of the standard are not included). As commentators have pointed out, “[t]his requirement of static incorporation is consistent with the purpose of the publication requirement because it ensures clear notice of regulatory requirements. Relatedly, it prevents confusion regarding the requirements of the law at any given point in time, both for the agency and for regulated parties.” *Incorporation by Reference in an Open-Government Age*, 36 Harv. J.L. & Pub. Pol’y 131, 185 (2013).

<sup>11</sup> 5 U.S.C. §§ 551(5), 553(b)-(d); see also *Perez v. Mortg. Bankers Ass’n*, 135 S. Ct. 1199, 1206 (2015) (agencies must “use the same procedures when they amend or repeal a rule as they used to issue the rule in the first instance”).

<sup>12</sup> “Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission,” NUREG/BR-0058, Rev. 5 (April 2017), at Appendix D, pg. D-4.

<sup>13</sup> As explained during several recent public meetings, NEI also believes that the proposed change to section 50.55a also clearly meets the definition of backfitting provided in section 50.109(a)(1).

## **II. The Proposed Amendment to Section 50.55a Imposes a New Legally Binding Requirement Mandating Use of NRC Approved Code Cases or Nonmandatory Appendix U to Evaluate Structural Integrity.**

In expanding the applicability of Section XI to address operational leakage, the proposed wording would impose a new legally binding requirement mandating that licensees use certain prescribed methods to evaluate structural integrity when operational leakage occurs (i.e., an NRC approved Code Case or Nonmandatory Appendix U). We acknowledge that structural integrity must be evaluated when certain flaws (including “operational leakage” as defined in the proposed 50.55a(g)(4)(vi)(A)) are detected in ASME Class 1, 2 or 3 Technical Specification Structures, Systems or Components during plant operation. But we are not aware of any current legally-binding requirements limiting those evaluation methods to approved NRC Code Cases or Nonmandatory Appendix U to the exclusion of all other methods. And, while we appreciate the NRC staff’s willingness to discuss this issue, thus far the staff has not identified any such requirements.

As discussed above, Section XI of the ASME Code, as incorporated by reference into 10 CFR 50.55a, simply does not apply to operational leakage. That said, we understand that this issue has a long and complex regulatory history and that the staff may have communicated expectations regarding the evaluation of structural integrity in the past. For example, during the recent public meetings on this issue, the staff has described several generic communications and other guidance documents that it believes address this issue.<sup>14</sup> But the imposition of expectations regarding the evaluation of structural integrity through agency guidance, and voluntary industry conformance to those positions, does not establish a legally binding requirement limiting the evaluation methods available to licensees. At most, the positions that the NRC has taken in generic communications and other guidance documents in the past have articulated several, non-exclusive methods for evaluating structural integrity, which the staff finds acceptable. Indeed, that is the express purpose of much of the agency’s guidance.

However, the staff now seeks to amend 10 CFR 50.55a and impose a legally-binding requirement *limiting the acceptable methods of evaluation to approved Code Cases and Nonmandatory Appendix U*, while claiming that this constitutes no change at all. Imposition of a new legally-binding requirement prescribing specific evaluation methods is categorically different – from both a legal and regulatory practice standpoint – than identifying non-binding, non-exclusive, acceptable methods of demonstrating compliance in agency guidance. The proposed amendment to section 50.55a(g)(4) constitutes a new or amended provision of the Commission’s regulations that would require changes to procedures required to operate commercial power reactors. Thus, this proposed amendment to the Commission’s regulations would clearly meet the definition of backfitting provided in 10 CFR 50.109(a)(1) and should be evaluated as such.

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<sup>14</sup> Slide 8 in NRC’s January 19, 2021 presentation (ADAMS ML21019A227) lists, Generic Letter 90-05; Generic Letter 91-18; NRC Inspection Manual Part 9900; Regulatory Issue Summary 05-20, Revisions 0, 1 & 2; Inspection Manual Chapter 0326, Revision 2.

The Commission's backfitting rule cannot be avoided by setting agency expectations through generic communications and guidance documents, then stating there is no change in agency position when those expectations are later imposed via legally binding requirements, such as a new or amended regulation. Such an approach encourages regulation by informal "ratcheting" of regulatory requirements and is inconsistent with the Commission's longstanding position that backfits should be evaluated prior to being imposed on licensees.

### **III. The Proposed Amendment Would Unnecessarily Conflate Code Compliance with Operability Determinations.**

NEI 18-03, "Operability Determination," contains industry guidance on actions to take when assessing a flaw (including through wall/through weld) identified in an ASME Class 1, 2 or 3 Technical Specification Structure, System or Component. It was written in parallel with changes to the most recent revision to NRC Inspection Manual Chapter on operability determinations, IMC-0326, issued in October 2019.<sup>15</sup> Both of these documents provide guidance on how to evaluate operability when a condition involving a flaw with operational leakage is identified. NEI 18-03 directs a licensee to consider the need to evaluate the structural integrity of a component when a leak is identified and to consider the ASME code requirements in that evaluation. That guidance states that if an approved or endorsed NRC structural integrity evaluation method exists, then it shall be used and followed. This could include the ASME code itself, endorsed code case, or other approved method. However, there are some flaws for which there is no NRC approved structural integrity evaluation method, either because of the flaw location, or flaw configuration, or because specific conditions of an approved method don't apply. In those cases an alternative method of evaluation may be needed.

The fact that an approved evaluation method does not exist does not mean that structural integrity cannot be demonstrated when necessary, or that the component should be automatically declared inoperable. The use of alternative, non-approved, non-licensing basis evaluation methods has been and continues to be allowed when evaluating operability. NEI 18-03's section dedicated to the use of alternative analytical methods when determining operability, stating specifically that "when performing ODs [operability determinations], licensees sometimes use analytical methods or computer codes different from those originally used in calculations supporting plant design." Very similar language on the use of alternative methods to determine operability is contained in IMC-0326<sup>16</sup> and its predecessor on operability, Part 9900 Technical Guidance.<sup>17</sup> So, the concept of using non-approved or endorsed evaluation methods when assessing operability is amply supported.

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<sup>15</sup> [IMC-0326, "Operability Determinations" \(ML19273A878\)](#)

<sup>16</sup> IMC-0326; 08.04, Use of Alternative Analytical Methods in Operability Determinations, states: "When performing ODs, licensees sometimes use analytical methods or computer codes different from those originally used in the calculations supporting the plant design. This practice involves applying "engineering judgment" to determine if an SSC remains capable of performing its specified safety function(s) during the corrective action period."

<sup>17</sup> [NRC Inspection Manual Part 9900: Technical Guidance \(ML073531346\)](#)

It is important to recognize that the use of alternative methods to assess operability is a different activity than performing a corrective action to restore compliance with the ASME code. Specific to this situation, operability of a component with a flaw may be assessed using alternative analytical methods until ASME code compliance can be restored through the corrective action program.

Relative to the proposed 50.55a rulemaking condition on operational leakage, this condition is a new requirement being imposed that conflicts with the industry and NRC allowance to use alternative methods to evaluate structural integrity when approved evaluation methods do not exist.

Specifically, paragraph iv(B) of the proposed operational leakage condition limits structural integrity evaluations to only NRC-approved code cases or one singular provision of ASME Section XI, Nonmandatory Appendix U. While these are preferred methods when available, NRC-approved code cases and Nonmandatory Appendix U do not cover many of the through-wall/through-weld leakage conditions encountered in the industry in ASME Class 2 or 3 TS SSCs (e.g., valve bodies, pump casings, prohibitive configurations). Alternative methods to demonstrate structural integrity in support of operability is perfectly acceptable while also following code requirements, use of code relief, etc., that are needed until such time as repair or replacement is practical.

In NEI's view, TS operability and ASME Code compliance are separate requirements and licensees should assess both when evaluating operational leakage. The proposed rule as written could create significant adverse safety consequences by limiting methods licensees can use to demonstrate structural integrity that could lead to isolating and removing systems important to safety from service, prematurely declaring technical specifications SSCs inoperable, or shutting down plants due to short duration TS Limiting Conditions for Operation (LCOs) solely based on not being able to apply an NRC-approved structural integrity evaluation method described in the proposed rule.

#### **IV. The Proposed Amendment Creates Potential Conflicts with 10 CFR 50.69.**

Although the current version of the proposed condition makes no direct reference to 10 CFR 50.69 RISC-3 classified components, as we communicated in earlier interactions with the staff, the wording could create potential conflicts and confusion with the allowances in 10 CFR 50.69 for licensees to apply alternate treatments. 10 CFR 50.69 excludes RISC-3 components from inservice testing requirements of 10 CFR 50.55a(f), inservice inspection, and repair and replacement requirements for ASME Class 2 and 3 SSCs in 10 CFR 50.55a(g), and electrical component quality and qualification requirements in 10 CFR 50.55a(h).

Under 10 CFR 50.69(a), a licensee may voluntarily comply with the requirements in 10 CFR 50.69 as an alternative to compliance with 10 CFR 50.55a(g). This would include the proposed operational leakage condition. When this concern was raised during the January 19, 2021 public meeting, the staff

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discussion did not make clear that the proposal would nevertheless preserve these allowances under 10 CFR 50.69; we request clarification on this issue.

## Summary

In summary, NEI requests that the NRC reconsider and not include this condition in the next rulemaking for 10 CFR 50.55a, or, as a minimum, recognize that this meets the definition of a backfit and conduct the appropriate analysis to determine if the change is justified. As NEI and industry stakeholders have conveyed, this condition would be contrary to the plain language of ASME Section XI describing the applicability of the Code; conflict, limit and cause industry changes in operability guidance incorporated into plant procedures; potentially conflict with implementation of 10 CFR 50.69 by clouding the application of exemption to 10 CFR 50.55a(f) and (g) for RISC-3 components; and amend NRC's regulations to impose new generic requirements causing licensees to modify procedures and therefore meets the definition of backfitting under 10 CFR 50.109(a)(1).

Thank you for your consideration of NEI's comments on behalf of the industry. If the NRC staff has questions or would like to discuss these or other issues, please do not hesitate to contact me (jlu@nei.org; 202.739.8164) or Thomas Basso (tbb@nei.org; 202.739.8049).

Sincerely,



Jennifer Uhle

cc: Stephanie Coffin, Chair, Committee to Review Generic Requirements