



Industry Perspectives on Draft Operational Leakage Regulatory Issue Summary

MAY 13, 2022

Agenda

- Overview of NEI's Regulatory and Backfitting Position on the Draft RIS
- ASME Perspective on Scope of Section XI of the ASME Boiler and Pressure Vessel (BPV) Code
- Overview of How the Draft RIS Unnecessarily Limits Needed Flexibility in Making Operability Determinations
- Conclusions

Overview of NEI Regulatory and Backfitting Position on Draft RIS

Summary of NEI's Regulatory/Backfitting Position



- NEI and our members agree that when operational leakage is identified the impact on Technical Specification (TS) operability must be evaluated.
- We disagree with the position articulated in the draft RIS limiting how operability must be evaluated.
- There are no legally binding requirements for the use of Section XI flaw acceptance and evaluation methods to evaluate the operability of Class 2 and 3 SSCs* in response to operational leakage.
 - In contrast, we recognize that plant TS prohibit operational leakage in the reactor coolant system pressure boundary (ASME Class 1 SSCs).
- If finalized, the draft RIS would amend 50.55a(g)(4) and impose an unanalyzed backfit on commercial reactor licensees.

* SSC = systems, structures and components

The Starting Point

Draft RIS states . . .

- Operational leakage in ASME BPV Code Class 2 and 3 SSCs must be evaluated for operability “and the only approved methods for doing so are provided in the ASME BPV Code, as incorporated by reference, in 10 CFR 50.55a. . . .”
- “[O]perational leakage must be addressed in the same manner as leakage detected during an ASME BPV Code, Section XI, pressure test.”

Draft RIS, at pgs. 2, 3 (emphasis added)

Source of “requirements”?

- Section XI of the ASME BPV Code?
- 10 CFR 50.55a Codes and Standards?
- Plant TS?

Section XI

- Section XI incorporated-by-reference (IBR) in 10 CFR 50.55a(a)(1)(ii)
- Text of Section XI is clear - the flaw acceptance and evaluation standards apply only to flaws discovered during the inspections and tests required by Section XI
- Those portions of Section XI do not apply to operational leakage
- Both ASME and NRC have acknowledged that fact



Currently, leakage in all reactor coolant system components is governed by plant Technical Specifications and ASME Code Section XI requirements. Code Cases N-513-3 and N-705 (and Non-mandatory Appendix U starting with the 2013 Edition of Section XI) address leakage in low and moderate energy (temperature less than or equal to 200°F and pressure less than or equal to 275 psig) Class 2 and 3 systems. 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. We thank ASME for its support in this matter.

Non-mandatory Appendix U starting with the 2013 Edition of Section XI) address leakage in low and moderate energy (temperature less than or equal to 200°F and pressure less than or equal to 275 psig) Class 2 and 3 systems. 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. We thank ASME for its support in this matter.

10 CFR 50.55a

- Changes to the applicability of consensus standards must be clearly and explicitly communicated when those standards are IBR into 10 CFR via the notice-and-comment rulemaking process
- Over 30 conditions on use of Section XI included in 10 CFR 50.55a(b)(2) – none expand applicability of Section XI to address operational leakage
- Instead, draft RIS points to section 50.55a(g)(4) “Inservice inspection standards for operating plants”

Inservice inspection standards for operating plants

10 CFR 50.55a(g)(4)

- “Throughout the service life of a . . . 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 . . . set forth in Section XI of editions and addenda of the ASME BPV Code . . . **that become effective subsequent to editions specified in paragraphs (g)(2) and (3) of this section and that are [IBR] in paragraph (a)(1)(ii) . . . to the extent practical. . . .**” (emphasis added)

What does paragraph (g)(4) say?

- When new editions or addenda of Section XI are IBR in the future, licensees must comply with those new editions or addenda to the extent practical.
- Nothing in this rule language or the relevant regulatory history communicates an expansion of the applicability of Section XI to address operational leakage.
- **The language of paragraph (g)(4) does not support the assertions made in the draft RIS.**

Generic Communications, Letters, *etc.*

- The generic communications and letters discussed in the draft RIS cannot and do not purport to impose the requirement articulated in the draft RIS.
- Where a regulation is clear on its face, deferring to an agency position that is inconsistent with the regulation would “permit the agency, under the guise of interpreting a regulation, to create a *de facto* new regulation.”
Christensen v. Harris County, 529 U.S. 576, 588 (2000)

The position articulated in the draft RIS meets the regulatory definition of backfitting . . .

10 CFR 50.109(a)(1)

BACKFITTING

§ 50.109 Backfitting.

(a)(1) Backfitting is defined as the modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position after:

The draft RIS . . .

- Would amend, rather than clarify or interpret, the requirement in 10 CFR 50.55a(g)(4)
- In addition to violating the Admin. Procedure Act, this effective amendment to the regulation would require changes to procedures required to operate commercial power reactors
 - Engineering and operations procedures governing operability determinations, functional evaluations, and tracking of Limiting Conditions for Operations

The NRC's guidance also directs that this change be treated as backfitting . . .

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APPENDIX D

GUIDANCE ON REGULATORY ANALYSIS RELATED TO ASME CODE CHANGES

- Section D.5 “Endorsement of Later ASME BPV or OM Codes that are Considered Backfits”
- Circumstances under which the NRC considers it appropriate to assess the costs and benefits of a later ASME BPV or OM code:
 - “When 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 from the later code, the NRC treats this as a new requirement.”
- The draft RIS is taking a position on the applicability of Section XI that is substantially different from the code, as well as the requirement in section 50.55a(g)(4).

Backfitting analysis is warranted as a matter of policy

- Even if the draft RIS were communicating a “clarification” of an existing requirement (and it is not), the requirement expanding the applicability of Section XI was imposed on licensees at some point in time.
- We are not aware of any existing backfitting analysis or documented evaluation addressing the expansion of Section XI to cover operational leakage.
- Thus, imposition of this modification to Section XI has escaped the required backfitting analysis, regardless of when it was imposed on licensees.
- The NRC should perform a backfitting analysis as a matter of sound policy.

Conclusions

- Neither Section XI nor section 50.55a(g)(4) impose the requirement articulated in the draft RIS.
- The position articulated in the draft RIS is not consistent with the language of 10 CFR 50.55a(g)(4).
- If finalized in its current form, the draft RIS would not provide a “clarification” of existing requirements. Rather, it would effectively amend section 50.55a(g)(4) to significantly expand the scope of Section XI to apply to operational leakage.
- Imposition of the position articulated in the draft RIS requires a notice-and-comment rulemaking to amend section 50.55a, supported by a backfitting analysis.

ASME Perspective on Scope of Section XI of the Boiler and Pressure Vessel (BPV) Code

ASME – Pressure Boundary Leakage

ASME BPV Section XI

- ASME Boiler & Pressure Vessel (BPV) Code
- Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components
- Developed and Maintained through a Multi-Tiered, Consensus Committee Body
- Direct Responsibility – BPV XI Standards Committee
- Under the Board on Nuclear Codes & Standards (BNCS)
- Required by the NRC in 10CFR50.55a
- Latest Version in 50.55a: Section XI, 2017 Edition

ASME BPV Section XI

- **Scope** – requirements for inservice inspection of nuclear power plants
- **Inspection** – examination and testing requirements (types, methods, frequency, qualifications)
- **Evaluation** – requirements for flaws detected during an inservice examination
- **Characterization** – for flaws detected by the preservice and inservice examinations
- **Repair/Replacement* of Code Components** – one subsection where code rules are specifically required regardless of the reason for the activity

** Note: Within Section XI, “Repair/Replacement” encompasses repairs to, replacements of, modifications to, and alterations of ASME Code Classed components due to design change, damage, failure, end of component life, etc.*

ASME – Pressure Boundary Leakage

ASME BPV Section XI

- ASME “Requirement” Interpretations
 - BPV XI has the only authority to interpret Code (Uses Consensus Body Procedures)
 - Requirement Interpretations simply refer to existing Code (no new, intent bases, or alternatives)

- Conclusions from three such published Requirement Interpretations:
 - Section XI **does not address** additional exams for flaws detected outside the course of an inservice examination.
 - Section XI corrective actions for pressure testing **do not apply** to leakage found at times other than during a Section XI system pressure test.
 - Requirements for the evaluation of pressure testing corrective measures **do not apply** to leakage identified during normal plant operation.

ASME – Pressure Boundary Leakage

ASME BPV Section XI

- Past Committee History regarding Operational Leakage
 - 2008 – In response to a 2006 NRR letter, ASME creates a project team comprised of multiple Working Groups
 - 2014 – Committee completes actions
 - ◆ Significant improvements and additions to Code rules
 - ◆ New Code Cases developed for Temporary Acceptance
 - ◆ New Non-Mandatory Appendix developed for Evaluation
- Closure – Standards Committee & Executive Committee confirm the scope of BPV XI relative to evaluation criteria shall be specified only for Section XI inspections/tests

ASME BPV Section XI

- Operability Determinations
 - It has been long standing practice that ASME BPV XI does not make system or component Operability Determinations.
 - Multiple considerations, which may include ASME Code inspections and evaluations, are factored into operability determinations by licensees.
- ASME BPV Code Companion Guide
 - “The referenced interpretations... include several examples of how ASME Section XI does not provide requirements for the evaluation and acceptance of flaws identified by means other than a required inservice inspection or examination.”

ASME BPV Section XI

■ Conclusions

- ASME, through consensus committees and consistent application of policy and procedures, has maintained that the inservice inspection rules of Section XI apply only to Section XI required activities and results.
- Any additional application of the Code, such as application to conditions identified during the performance of plant operation, maintenance, walkdowns, or other activities, are beyond the direct jurisdiction and requirements of ASME Codes & Standards.
- Similar to the prior proposed 50.55a(g)(4)(vi) revision, the current draft RIS would expand the applicability of Section XI beyond current ASME Code requirements.

Draft RIS Unnecessarily Limits Needed
Flexibility in Making Operability
Determinations

Concept of OPERABILITY

- Defined in and limited to TS
 - Safety focused decision
 - SSC capability of performing a TS specified safety function with existence of deficient condition
 - Licensee owns process and decision
 - Real-time decision made w/in constraints of TS Limiting Conditions for Operation
 - ◆ Based on engineering judgment and sound technical concepts
 - ◆ Relies upon best available information
 - ◆ Continuous process
 - ◆ May rely upon alternative methods beyond approved licensing basis
 - Operability determination does not change the licensing basis
- NRC evaluates operability determinations through inspection

Operability Determination vs Corrective Action

- Operational leakage requires BOTH Operability Determination (OD) and Corrective Action
 - Plant processes/procedures are separate and distinct
 - Operability is typically assessed prior to restoring compliance
 - Licensees ARE required to restore compliance w/Licensing Basis
 - Corrective Action Program (CAP) is used to fix the degraded condition to restore compliance
 - ◆ Timeliness is commensurate w/safety significance
 - ◆ Required regardless of how operational leakage identified
 - ◆ Repair or replacement per 10 CFR 50.55a & ASME requirements, or via change to the facility
 - ◆ Corrective Action Program assessed through inspection

IMC 0326 Revision History: Responsibilities and Authorities (0326-05), and Reference (0326-09) Items removed (Functionality Assessment, Anything CAP related, Immediate and Prompt Operability Determinations, Appendix B, and Attachments 1 and 2) Items relocated (Appendix A is now Section 0326-07 and Appendix C is now Section 0326-08)

Position in Draft Operational Leakage RIS

Draft RIS

- The position that only NRC Code approved methods may be used limits the OD process
 - Code does not address all conditions, configurations or components
 - w/no NRC authorized method licensee must declare inoperable
 - Contradicts NRC position in IMC 0326 and precludes use of alternate methods
 - Inserts NRC approval into OD
 - Conflates OD and CAP

“If through-wall operational leakage is observed from an ASME BPV Code Class 1, 2, or 3 SSC...then the methods described in the provisions of the applicable inservice inspection requirements, as specified in 10 CFR 50.55a(g), must be used. “

“10 CFR 50.55a(z), ‘Alternatives to codes and standards requirements,’ can be used as long as NRC staff authorization is granted prior to its implementation.

Implementation is deemed to be the moment that the structural integrity of the component is required to be established (e.g., before expiration of the TS allowed completion time).“

Impact of Draft Operational Leakage RIS

- Directly contradicts existing NRC position on use of alternative methods and engineering judgement to assess operability
- May lead to unnecessary plant shutdown & transient when safety may not be compromised
 - SSCs prematurely declared inoperable or removed from service
 - Reduces safety
- Creates Organizational Distraction
 - Timeliness of initial OD must meet TS LCO
- Does not acknowledge varying levels of safety significance
- Require plant operational and procedure changes

Conclusions

Conclusions

- If finalized in its current form, the draft RIS would not provide a “clarification” of existing requirements. Rather, it would amend section 50.55a(g)(4) to expand the scope of Section XI to apply to operational leakage
- Imposition of the position articulated in the draft RIS requires a notice-and-comment rulemaking to amend section 50.55a, supported by a backfitting analysis
- Limits use of alternate methods for ODs for Class 2 and 3 SSCs leading to increased organizational distraction, unnecessarily declaring SSCs inoperable, reduced safety, and potential unit shutdowns
- Draft RIS should be withdrawn

Questions

Backup Slide – Alternative Methods

IMC 0326

- Alternative methods are permitted
- Conditions to be assessed for Operability may not be covered by the Code
- Methods must be technically appropriate and may rely on engineering judgment
- “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. The use of alternative methods for the purpose of evaluating operability is not subject to 10 CFR 50.59 unless the methods are used in the final corrective action. Section 50.59 is applicable upon implementation of the corrective action. “