EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Nondestructive Evaluation (NDE): 20190117-001

January 21, 2019

Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Attn: Rulemakings and Adjudications Staff

Subject: EPRI Comments on the American Society of Mechanical Engineers 2015–2017 Code Editions Incorporation by Reference, Proposed Rule, Docket ID NRC-2016-0082

Dear Sir or Madam:

This letter provides comments to the subject proposed rulemaking titled, *"American Society of Mechanical Engineers 2015–2017 Code Editions Incorporation by Reference"* on behalf of the Nuclear Nondestructive Evaluation (NDE) Program at the Electric Power Research Institute (EPRI). Comments for consideration on the proposed rule are provided below.

1. Paragraphs 50.55a(g)(4)(i) and 50.55a(g)(4)(ii)

NRC Conditions:

(i) Applicable ISI Code: Initial 120-month interval. In-service examination of components and system pressure tests conducted during the initial 120-month inspection interval must comply with the requirements in the latest edition and addenda of the ASME Code incorporated by reference in paragraph (a) of this section on the date 12 months before the date of issuance of the operating license under this part, or 12 months before the date scheduled for initial loading of fuel under a combined license under part 52 of this chapter (or the optional ASME Code Cases listed in NRC Regulatory Guide 1.147, when using ASME BPV Code, Section XI, or NRC Regulatory Guide 1.192, when using the ASME OM Code, as incorporated by reference in paragraphs (a)(3)(ii) and (iii) of this section, respectively), subject to the conditions listed in paragraph (b) of this section. Licensees may, at any time in their 120-month ISI interval, elect to use the Appendix VIII in the latest edition and addenda of the ASME BPV Code incorporated by reference in paragraph (a) of this section, subject to any applicable conditions listed in paragraph (b) of this section. Licensees using this option must also use the same edition and addenda of Appendix I as Appendix VIII, including any applicable conditions listed in paragraph (b) of this section.

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(ii) Applicable ISI Code: Successive 120-month intervals. In-service examination of components and system pressure tests conducted during successive 120-month inspection intervals must comply with the requirements of the latest edition and addenda of the ASME Code incorporated by reference in paragraph (a) of this section 12 months before the start of the 120-month inspection interval (or the optional ASME Code Cases listed in NRC Regulatory Guide 1.147, when using ASME BPV Code, Section XI, or NRC Regulatory Guide 1.192, when using the ASME OM Code, as incorporated by reference in paragraphs (a)(3)(ii) and (iii) of this section), subject to the conditions listed in paragraph (b) of this section. However, a licensee whose in-service inspection interval commences during the 12 through 18-month period after August 17, 2017, may delay the update of their Appendix VIII program by up to 18 months after August 17, 2017. Alternatively, licensees may, at any time in their 120-month ISI interval, elect to use the Appendix VIII in the latest edition and addenda of the ASME BPV Code incorporated by reference in paragraph (a) of this section, subject to any applicable conditions listed in paragraph (b) of this section. Licensees using this option must also use the same Edition and Addenda of Appendix I as Appendix VIII, including any applicable conditions listed in paragraph (b) of this section.

EPRI Comment:

The provision in both paragraphs that allows licensees to use Appendix VIII in the latest incorporated edition and addenda of the ASME Code was added in response to comments provided for the previous rulemaking. This addition is appreciated but the final sentence in both paragraphs which requires the use of Appendix I from the same Edition or Addenda poses an issue when implementing this option. The implementation issue is related to the fact that other parts of the Code (e.g. Section V) are also referenced in Appendix I. If the Final Rule made it clear that licensees were only required to implement the parts of Appendix I applicable to Appendix VIII, it would allow the industry to more easily update ISI programs to use the most up to date performance demonstration requirements.

Based on the information provided above, it is recommended that NRC consider using the following sentence to replace the final sentence in Paragraphs (g)(4)(i) and (g)(4)(ii):

<u>Licensees using this option must also use the paragraphs in Appendix I (from same edition and addenda) that are applicable to Appendix VIII, including any applicable conditions listed in paragraph (b) of this section.</u>

2. Paragraph 50.55a (g)(6)(ii)(F)(11)

NRC Condition:

(11) Cast stainless steel. Examination of ASME BPV Code Class 1 piping and vessel nozzle butt welds involving cast stainless steel materials, will be performed with Appendix VIII, Supplement 9 qualifications, or qualifications similar to Appendix VIII, Supplement 2 or 10 using cast stainless steel mockups no later than the next scheduled weld examination after January 1, 2022, in accordance with the requirements of Paragraph –2500(a) or, as an alternative, using inspections that meet the requirements of ASME Code Case N-824 as conditioned in Regulatory Guide 1.147.

EPRI Comment:

There are 92 dissimilar metal welds in the U.S. fleet that contain cast austenitic stainless steel (CASS) base material as well as 82/182 weld material. From this population of applicable welds, there are 22 that achieve less than 100% coverage of the susceptible material when examining for circumferential flaws and 11 that achieve less than 100% coverage of the susceptible material when examining for axial flaws. Of the configurations with missed coverage the majority (21 of 22 and 8 of 11) are Combustion Engineers (CE) designed reactor coolant pump (RCP) welds. The examinations of the CE design RCP welds average circumferential and axial flaw coverage of the susceptible material is 97.5% and 99.8%, respectively. The coverage limitations of these components are generally related to challenging scan conditions (short safe-ends, weld and component tapers, branch connections, and etc.) in the examination area and techniques identified in Code Case N-824 would be equally challenged to acquire any additional coverage. The condition as written would require the use of a second examination technique to interrogate all 92 welds with CASS base material and 82/182 weld material regardless of the fact approximately two-thirds of the welds achieve 100% coverage of the susceptible material. Material presented to the NRC in March 2018 and January 2019 illustrated the additional coverage capable of being obtained from the CASS base material is minimal with no significant increase to safety and the additional requirement of this condition significantly increases the amount of time and dose associated with examining these components.

Based on the information provided above, it is recommended that NRC consider the elimination of condition (g)(6)(ii)(F)(11) in its entirety.

3. Paragraph 50.55a(b)(2)(xv)(L)

NRC Condition:

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

EPRI Comment:

In 2013, an internal program audit by the EPRI Performance Demonstration (PD) Program staff revealed inconsistencies between the bolt and stud NDE qualification methods used in the PD Program and those required by the ASME Code. The NRC was notified, and steps were taken (i.e. development of CC N-845) immediately to align the PD process and the ASME Code. In January 2015, the NRC issued an enforcement guidance memorandum (EGM) and a regulatory issue summary (RIS) on the topic which allowed licensees to use the process outlined by the PD program in lieu of the specific requirements found in the ASME Code Section XI, Appendix VIII, Supplement 8 until the rulemaking incorporated the 2015 edition of Section XI or the NRC approval of an applicable Code Case. The condition found in paragraph (L) is in opposition of the guidance found in Code Case N-845 which requires the notch locations to be within one diameter of the start or end of examination volume, and not the end of the bolt or stud. The reason for this is many stud designs include buttress threads above the nut that are not included in the examination volume of the component. The requirement of the above condition would create a situation where notches in test specimens would be required outside of the examination volume.

Based on the information provided above, it is recommended that NRC consider the elimination of 50.55a(b)(2)(xv)(L) or have it replaced with the requirement to use the latest NRC approved Code Case (CC-845) until the licensee updates to a edition of the Code which includes the revised requirements in Section XI, Appendix VIII, Supplement 8.

4. Paragraph 50.55a(b)(2)(xv)(A)(2)

NRC Condition:

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

on austenitic welds or dissimilar metal welds, full coverage credit from a single side may be claimed only after completing a successful single-sided Appendix VIII demonstration using flaws on the opposite side of the weld. Dissimilar metal weld qualifications must be demonstrated from the austenitic side of the weld, and the qualification may be expanded for austenitic welds with no austenitic sides using a separate add-on performance demonstration. Dissimilar metal welds may be examined from either side of the weld.

EPRI Comment:

EPRI provided a comment on the above condition during the previous rulemaking process but the issue was not addressed in the subsequent Final Rule. The comment is again presented for consideration during this rule making process.

The intent of the qualification process is to assure that qualifications are performed from the most conservative direction. The condition above does not provide specific details for single side qualifications of dissimilar metal welds when both sides of the base material is ferritic material. Several configurations in both boiling water reactors (BWR) and pressurized water reactors (PWR) have configurations that either do not have an austenitic side or only allow access from the ferritic side. The qualification for single side needs to be performed from the side of the weld which allows access. 10CFR50 should not exclude configurations from the qualification test that are needed to reliably detect, size and characterize flaws in realistic and challenging plant conditions.

The industry has worked with NRC staff via the American Society of Mechanical Engineers (ASME) Code to address these requirements and have been successful in introducing Code actions that have been board approved. Specifically, Code action BC 14-1374 introduced words into Code Case N-695-1 to address these requirements. In addition, Code action BC 14-1375 incorporated the same changes into the 2015 Edition, which is published. To resolve the issue described it is recommended that the words in §50.55a(b)(2)(xv)(A)(2) that address single side qualification of dissimilar metal welds be consistent with the changes made to the aforementioned Code actions. These conditions would only apply to licensees using earlier editions of the Code.

Based on the information provided above, it is recommended that NRC consider using the following statement to replace the final sentence in Paragraph (b)(2)(xv)(A)(2):

<u>Single side dissimilar metal weld qualifications shall be performed with specimen sets that contain a range of access restrictions. For components that have scan access from both the ferritic and austenitic sides, qualification shall be performed from the austenitic</u>

side of the weld only. For components with no austenitic side, or for which scan access is limited to the ferritic side only, qualification may be performed from the ferritic side.

We appreciate the opportunity to provide comments to this proposed rulemaking. Should you have any questions pertaining to the comments provided in this letter, please contact Carl Latiolais for clarification.

Sincerely,

Digitally signed by Carl Latiolais
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20190117-001/jyb

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RulemakingComments Resource

From:	Latiolais, Carl <clatiola@epri.com>
Sent:	Monday, January 21, 2019 12:46 PM
To:	RulemakingComments Resource
Cc:	Feldman, Heather; Bouck, Robert; Kull, Doug; Cinson, Tony
Subject:	[External_Sender] EPRI Comments on the American Society of Mechanical Engineers 2015–2017 Code Editions Incorporation by Reference, Proposed Rule, Docket ID NRC-2016-0082
Attachments:	NDE20190117-001_10CFR50 Comments.pdf

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Regards