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General Comment

ASME is pleased to have the opportunity to provide comments and suggestions on your Nuclear Regulatory Commission (NRC), 10 CFR Part 50, RIN 3150-AJ74, Incorporation by Reference of American Society of Mechanical Engineers Codes and Code Cases, Proposed Amended Requirements, published in Reference 1.

A complete cover letter statement and comments are contained in the attached file.

Attachments

ASME Comments 10CFR50Rule

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January 21, 2019

Secretary, U.S. Nuclear Regulatory Commission Washington, DC 20555-0001

Attention: Rulemakings and Adjudications Staff

Subject: **Comments on Incorporation by Reference of American Society of Mechanical Engineers Codes and Code Cases, 10 CFR Part 50, RIN 3150-AJ74**

Reference: 1. Federal Register / Vol. 83, No. 218, pp. 56156-56196 / Friday, November 9, 2019 / Proposed Rule

Dear Sir or Madam:

ASME is pleased to have the opportunity to provide comments and suggestions on your Nuclear Regulatory Commission (NRC), 10 CFR Part 50, RIN 3150-AJ74, Incorporation by Reference of American Society of Mechanical Engineers Codes and Code Cases, Proposed Amended Requirements, published in Reference 1.

Specifically, ASME supports the NRC's endorsement of later editions, addenda, and revisions to its Nuclear Codes, Standards, and Code Cases in the Code of Federal Regulations in 10 CFR 50.55a. It is our understanding that within this proposed rulemaking, the NRC is amending this regulation to incorporate by reference the following ASME Codes, Standards, and Code Cases:

1. The 2015 and 2017 Editions of Section III, Division 1 and Section XI, Division 1 of the ASME Boiler and Pressure Vessel (BPV) Code, with conditions
2. The 2015 and 2017 Editions of the ASME Operation and Maintenance (OM) Code, with conditions
3. ASME BPV Code Cases N-729-6 and N-770-5, with conditions

The ASME comments included in Enclosure 1 are intended to support the nuclear industry while protecting the health and safety of the public, without placing unnecessary burden on licensees. Thus, Enclosure 1 is provided for the use by the NRC staff to support, reconsider, remove, or modify its proposed (and existing) conditions where comments are provided. It is hoped that upon review of these ASME comments that the NRC staff will be able to allow the necessary changes to be made or modify the conditions in the final rule to such a degree as to fully endorse the ASME Nuclear Codes and Standards contained in this proposed rulemaking.

If you have any questions concerning the contents of this letter, please direct them to Mr. Christian Sanna, Director, ASME Nuclear Codes & Standards by telephone (212) 591-8513 or by e-mail SannaC@asme.org.

Very Truly Yours,

Richard D. Porco, Chair
ASME Board on Nuclear Codes and Standards
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Enclosures:

1. ASME Comments on the Proposed Rule for 10 CFR 50.55a

cc: Michael Benson, USNRC (michael.benson@nrc.gov)
Officers of the ASME Board on Nuclear Codes and Standards
Officers of the ASME Standards Committee on Nuclear Inservice Inspection
Officers of the ASME Standards Committee on Construction of Nuclear Facility Components
Officers of the ASME Standards Committee on Operation and Maintenance of Nuclear Power Plants

§50.55a Paragraph	Existing §50.55a Regulations (as of 11/09/2018)	Proposed Changes to §50.55a Regulations (Changes denoted by Bold Italics)	ASME Comments on §50.55a Regulations - Existing and Proposed Changes
§50.55a(b)(1)(x)(A)	N/A	***Visual examination of bolts, studs, and nuts: First provision. When applying the provisions of NB–2582, NC–2582, ND–2582, NE–2582, NF–2582, NG–2582 in the 2017 Edition of Section III, the visual examinations are required to be performed in accordance with procedures qualified to NB–5100, NC–5100, ND–5100, NE–5100, NF–5100, NG–5100 and performed by personnel qualified in accordance with NB–5500, NC–5500, ND–5500, NE–5500, NF–5500, and NG–5500.***	ASME believes that it is unnecessary to require personnel performing these examinations to be qualified in accordance with Section III (SNT-TC-1A). Similarly, ASME believes that it is unnecessary to require visual examination procedures to be qualified to Section V, Article 9. Indications detected by visual examination personnel during these examinations would be directly identified and measured; unlike other NDE methods where an evaluation of the indication is performed to determine acceptability. *ASME believes that the proposed condition is unnecessary and should be removed.*
§50.55a(b)(1)(x)(B)	N/A	***Visual examination of bolts, studs, and nuts: Second provision. When applying the provisions of NB–2582, NC–2582, ND–2582, NE–2582, NF–2582, NG–2582 in the 2017 Edition of Section III, the acceptance criteria from NB–2582, NC–2582, ND–2582, NE–2582, NF–2582, NG–2582 in the 2015 Edition of Section III shall be used.***	The acceptance criteria in NB–2582, NC–2582, ND–2582, NE–2582, NF–2582, NG–2582 in the 2015 Edition of Section III are less prescriptive than those in the 2017 Edition. For example, NB-2582 (2015 Edition) allows cracks that would not be detrimental to the intended service to be acceptable, but it is not clear how a Material Organization would know how to apply this criterion without knowing the intended service for the items. ASTM F788 "establishes allowable limits for the various types of surface discontinuities that may occur during the manufacture and process of bolts, screws and studs..." and is much more prescriptive than the requirements of NX-2582 (2015 Edition). The same is true regarding ASTM F812. *ASME believes that the proposed condition is inappropriate and should be removed. Alternatively, the condition could be revised to require that the provisions of NB–2582, NC–2582, ND–2582, NE–2582, NF–2582, NG–2582 in the 2017 Edition of Section III be used when applying the acceptance criteria from NB–2582, NC–2582, ND–2582, NE–2582, NF–2582, NG–2582 in the 2015 Edition of Section III.*
§50.55a(b)(1)(xi)(A)	N/A	***Mandatory Appendix XXVI: First provision. When performing fusing procedure qualification tests and operator performance qualification tests in accordance with XXVI–4330 and XXVI–4340 the following essential variables shall be used for the performance qualification tests of butt fusion joints:*** ***(1) Joint Type: A change in the type of joint from that qualified, except that a square butt joint qualifies as a mitered joint.*** ***(2) Pipe Surface Alignment: A change in the pipe outside diameter (O.D.) surface misalignment of more than 10 percent of the wall thickness of the thinner member to be fused.*** ***(3) PE Material: Each lot of polyethylene source material to be used in production (XXVI–2310(c)).*** ***(4) Wall Thickness: Each thickness to be fused in***	The NRC proposes to add a new condition, (b)(1)(xi)(A), which specifies the essential variables to be used in qualifying fusing procedures for butt fusion joints in polyethylene piping. This includes four (4) variables in addition to those stated in Section IX that are pertinent to the fusing verification testing of XXVI-2300. These are diameter, cross-sectional area, ambient temperature [range specified in XXVI-4412(b)], and fusing machine carriage model. Previous discussions with the Regulator involving development and incorporation of Tables identifying all procedure variables applicable to testing required by Section IX and Appendix XXVI addressed only fusing procedure qualification and testing – not fusing operator performance qualification testing. However, the proposed amendment (xi)(A) under "PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES" includes applying these same essential variables to operator performance qualification. Fusing operator performance qualification testing is performed in accordance with XXVI-4341 and XXVI-4342 using fusing procedures tested in accordance with XXVI-2300. Such fusing procedures define the fusing machine make and model(s) to be used in production of each joint, so the fusing operator is required to qualify on the same machines and models. However, fusing operators are qualified to use

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		production (XXVI–2310(c)). ***(5) Diameter: Each diameter to be fused in production (XXVI–2310(c)).*** ***(6) Cross-sectional Area: Each combination of thickness and diameter (XXVI–2310(c)).*** ***(7) Position: Maximum machine carriage slope when greater than 20 degrees from horizontal (XXVI–4321(c)).*** ***(8) Heater Surface Temperature: A change in the heater surface temperature to a value beyond the range tested (XXVI–2321).*** ***(9) Ambient Temperature: A change in ambient temperature to less than 50 °F (10 °C) or greater than 125 °F (52 °C) (XXVI–4412(b)).*** ***(10) Interfacial Pressure: A change in interfacial pressure to a value beyond the range tested (XXVI–2321).*** ***(11) Decrease in Melt Bead Width: A decrease in melt bead size from that qualified.*** ***(12) Increase in Heater Removal Time: An increase in heater plate removal time from that qualified.*** ***(13) Decrease in Cool-down Time: A decrease in the cooling time at pressure from that qualified.*** ***(14) Fusing Machine Carriage Model: A change in the fusing machine carriage model from that tested (XXVI–2310(d)).***	those machines over ranges of diameters and thicknesses, not on each diameter to be fused. This is the approach that was approved by the USNRC as recently as two years ago for the Plant Hatch HDPE Project (ML 15337A414). To require each fusing operator to perform qualification testing on each diameter, thickness and lot of material would entail significant added expense and hardship without a commensurate improvement in quality or safety. *ASME recommends that the first paragraph of §50.55a(b)(1)(xi)(A) be revised to read as follows:* *"Mandatory Appendix XXVI: First provision. When performing fusing procedure qualification testing in accordance with XXVI-2300 and XXVI–4330 the following essential variables shall be used for the testing of butt fusion joints:"* *ASME notes that these requirements for fusing procedure testing will be addressed further with the publication of procedure testing changes in the 2019 Edition of ASME Section III, Appendix XXVI.*
§50.55a(b)(1)(xi)(B)	N/A	**Mandatory Appendix XXVI: Second provision. When performing qualification tests of butt fusion joints in accordance with XXVI–4342, both the bend test and the high speed tensile impact test shall be successfully completed.**	The NRC proposes to add a new paragraph (b)(1)(xi)(B), which will require both bend tests and high speed tensile impact testing (HSTIT) to qualify fusing procedures and to qualify fusing operators, for fusing joints in polyethylene piping.... The explanation of the proposed ruling states: "The NRC has performed limited confirmatory research on the ability of short-term mechanical tests to predict the in-service behavior of HDPE butt fusion joints. Based on this research as well as research results from the Welding Institute in the UK, the NRC lacks conclusive evidence that either of the two tests proposed in XXVI–4342(d) and XXVI–4342(e) is always a reliable predictor of joint quality. As a result, the NRC has determined that the combination of both test results provides increased and sufficient indication of butt fusion joint quality...." Comments: 1. Fusing Procedure Testing: Relative to joint testing for procedure qualification or XXVI-2300 fusing verification testing, the testing performed by The Welding Institute of UK indicated that the HSTI test may not detect joints fused with fine

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			sand or talcum powder sized particles placed within the joint. As a result of that testing, Paragraph XXVI-4412(a)(1) and XXVI-4412(a)(2) of Appendix XXVI specifically require that joint surfaces coming in contact with heaters must be protected and kept free of fine particulates, as well as other deleterious material. Also, EPRI Report 3002005434 "Advanced Nuclear Technology: Literature Review of Mechanical Testing Methods to Evaluate the Integrity of HDPE Butt-Fusion Joints," was developed to assist the NRC with evaluation of mechanical testing methods. This report provides the results of limited studies on the comparison of the high speed tensile impact test to the guided side bend and waisted tensile test methods. This report identifies that situations can occur with the HSTI test where the specimen ruptures outside of the fusion zone while using the HSTI test method. If this occurs, a recommendation is provided for nuclear applications that the cause be evaluated by assessing the amount of increased fusion interface resulting from the fusion beads, and/or presence of out-of-roundness of the joined parts. (If there is indication of minimal or no increased fusion interface, or that mismatch exists between the parts being joined, the test should be re-performed with beads and mismatch removed.) Therefore, this provision should be revised to instead require retests for any HSTI ruptures occurring away from the fusion zone. 2. B. Fusing Operator Testing: Reverse bend testing has been used extensively and successfully for decades for the qualification of fusing operators in the U.S. for joining polyethylene water and gas piping. Bend testing is endorsed by DOT for performance qualification for the fusing of interstate gas transmission pipelines as well as for local gas distribution pipelines (Ref. 49 CFR 192.285). Government acceptance for use of only visual inspection of the test joint plus bend testing for performance qualification on volatile gas pipelines certainly supports its use for nuclear applications - where, in addition to the visual inspection and bend testing, the joint parameters are also required to be recorded and verified during preparation of the qualification test coupons as well as for each installed fusion joints. This is the approach that was approved by the USNRC as recently as two years ago for the Plant Hatch HDPE Project (ML 15337A414). In addition, all installed nuclear fusion joints receive volumetric examination (ultrasonic or microwave) plus a hydrostatic test at 1.5 times maximum design pressure, validating the integrity of each joint fused by each operator. The additional requirement to perform HSTI test in addition to bend testing during performance qualification imposes additional hardship and increased cost without commensurate improvement in quality or safety. Paragraph 7.4 of EPRI Report 3002005434 provides reasons why the reverse bend test might be considered unacceptable for nuclear applications. The stated reasons are inaccurate based on the following explanations: a) Although ASTM F2620 lacks complete requirements for how to perform the reverse bend test including temperature range, Appendix XXVI-4342 invokes Section IX QF-143.1 which does provide explicit directions, including required temperature range. b) Although ASTM F2620 may lack clarity on how to perform the test, Section IX, QF-143.1 which is invoked by Appendix XXVI does provide specific

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			instructions on how to perform the test. c) Although ASTM F2620 may lack clarity on test radii or coupon thickness, Section IX, QF-143.1.3 and QF-463 provide explicit direction on how to cut the specimens and perform the test. The specimen thickness, t, is the thickness of the joint per QF-463, and the bend radius is defined by the 15t dimension either side of the joint with the requirement to bend back until both 15t ends touch. This defines the ratio of thickness to bending length, which is a direct proportion regardless of what thickness is bent, and always results in a defined bending radius or arc at the apex of the tested joint of approximately 3t. A 3t arc at the apex of the bend results in at least a 15% strain, which exceeds the 10-12% yield strain of HDPE material. d) One test report identified by EPRI stated that Reverse Bend testing of 1.33 in. thick 12 NPS PE pipe did not identify defects that were detected by HSTI testing and Guided Side Bend testing. With the advent of the GSB test, most fusing organizations are now using guided side bend tests in lieu of reverse bend tests for qualifying fusing operators on thick sections over 1.25 in. for personnel safety reasons. We suggest that the provision be reworded to address this specific concern when using reverse bend tests for thick sections as indicated in our revised wording, below. Note: HSTI testing machines are quite scarce and expensive. For fusing procedure verification testing (XXVI-2300) the test specimens are typically sent to a laboratory or shop to have the HSTI testing performed. To require this be done for performance qualification purposes would add extra non-productive days for fusing operators, plus it would require sending quality control personnel for witnessing the off-site testing. Since the only technical issue seems to be an anomaly with one test performed on 1.33 in. thick material, a reasonable resolution would be to reword the provision to mandate use of side bend tests (i.e., prohibit use of reverse bend tests) for performance qualification on all piping thicknesses over 1.25 in. e) Based on the above inaccuracies, the EPRI report suggested that other tests be used in place of or in addition to the Reverse Bend Test. Considering the scarcity and expense of using HSTI test machines, imposing the condition to require HSTI test in addition to Reverse Bend or Guided Side Bend testing for all performance qualification imposes excessive cost and additional hardship without a commensurate improvement in quality or safety. *ASME recommends that the proposed condition [§50.55a(b)(1)(xi)(B)] be revised to read as follows:* *"Mandatory Appendix XXVI: Second Provision. When performing procedure qualification HSTT testing of butt fusion joints in accordance with XXVI-2300 or XXVI-4330, specimen breaks away from the fusion zone shall require retesting. When performing fusing operator qualification bend tests of butt fusion joints in accordance with XXVI-4342, guided side bend testing shall be used for all thicknesses greater than 1.25 inches."*

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§50.55a(b)(1)(xi)(C)	N/A	***Mandatory Appendix XXVI: Third provision. When performing fusing procedure qualification tests and operator performance qualification tests in accordance with 2017 Edition of BPV Code Section III XXVI–4330 and XXVI– 4340, the following essential variables shall be used for the performance qualification tests of electrofusion joints:*** ***(1) Joint Design: A change in the design of an electrofusion joint.*** ***(2) Fit-up Gap: An increase in the maximum radial fit-up gap qualified.*** ***(3) Pipe PE Material: A change in the PE designation or cell classification of the pipe from that tested (XXVI– 2322(a)).*** ***(4) Fitting PE Material: A change in the manufacturing facility or production lot from that tested (XXVI–2322(b)).*** ***(5) Pipe Wall Thickness: Each thickness to be fused in production (XXVI–2310(c)).*** ***(6) Fitting Manufacturer: A change in fitting manufacturer.*** ***(7) Pipe Diameter: Each diameter to be fused in production (XXVI–2310(c)).*** ***(8) Cool-down Time: A decrease in the cool time at pressure from that qualified.*** ***(9) Fusion Voltage: A change in fusion voltage.*** ***(10) Nominal Fusion Time: A change in the nominal fusion time.*** ***(11) Material Temperature Range: A change in material fusing temperature beyond the range qualified.*** ***(12) Power Supply: A change in the make or model of electrofusion control box (XXVI–2310(f)).*** ***(13) Power Cord: A change in power cord material, length, or diameter that reduces current at the coil to below the minimum qualified.*** ***(14) Processor: A change in the manufacturer or model number of the processor. (XXVI–2310(f)).*** ***(15) Saddle Clamp: A change in the type of saddle***	The NRC is proposing to add a new paragraph (b)(1)(xi)(C), which specifies the essential variables to be used in qualifying fusing procedures for electrofusion of fusion joints in polyethylene piping that is to be installed in accordance with ASME BPV Code, Section III, Mandatory Appendix XXVI. This includes four (4) variables in addition to those stated in Section IX that are pertinent to the fusing verification testing of XXVI-2300. These are: fitting polyethylene material, pipe wall thickness, power supply, and processor. Previous discussions with the Regulator involving development and incorporation of Tables identifying all electrofusion procedure variables applicable to testing required by Section IX and Appendix XXVI addressed only fusing procedure qualification and testing – not fusing operator performance qualification testing. However, the proposed amendment (xi)(C) under "PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES" includes applying these same essential variables to operator performance qualification. Fusing operator performance qualification testing is performed in accordance with XXVI-4341 and XXVI-4342 using fusing procedures tested in accordance with XXVI-2300. Such fusing procedures define the electrofusion fitting material, pipe wall thickness, power supply and processor, to be used in production of each joint, so the fusing operator is already required to qualify using the same material and equipment. Therefore, the proposed wording of the paragraph (see Summary, below) involving performance qualification testing and reference to XXVI–4340 should be removed from that 10CFR50.55a paragraph. *ASME notes that these requirements for electrofusion procedure testing will be addressed further with the publication of procedure testing changes in the 2019 Edition of ASME Section III, Appendix XXVI.* *ASME recommends that the first paragraph of §50.55a(b)(1)(xi)(C) be revised to read as follows:* *"Mandatory Appendix XXVI: Third provision. When performing fusing procedure qualification tests in accordance with 2017 Edition of BPV Code Section III XXVI–2300 and XXVI-4330, the following essential variables shall be used for the testing of electrofusion joints:"*

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		clamp. ***(16) Scraping Device: A change from a clean peeling scraping tool to any other type of tool.***	
§50.55a(b)(1)(xi)(D)	N/A	***Mandatory Appendix XXVI: Fourth provision. Performance of crush tests in accordance with 2017 BPV Code Section III XXVI–2332(a) and XXVI–2332(b) and electrofusion bend tests in accordance with 2017 BPV Code Section III XXVI–2332(b) are required to qualify fusing procedures for electrofusion joints in polyethylene piping installed in accordance with 2017 Edition of ASME BPV Code Section III, Mandatory Appendix XXVI.***	Crush testing is designed for smaller fittings 8 NPS and less. Such tests are impractical and unsafe for sizes larger than 8 NPS due to the large hydraulic equipment that would be required. For this reason, ASTM F1055 provides the electrofusion bend test (FET) as a means of verifying fusion integrity for sizes over 8 NPS. There is no evidence that either of these tests are inadequate for their intended purpose. Every electrofusion socket joint installed in a nuclear system also requires producing and testing an identical coupon using the same lot, size and thickness of material and fitting, the same equipment, the same power supply and the same fusing procedure under -2300 of Appendix XXVI. In addition, every electrofusion joint installed in a nuclear system requires data recording to verify the operator used the correct procedure, each joint receives full visual inspection, receives full volumetric examination of the fused joint plus hydrostatic testing at 1.5 times the design pressure. This proposed condition imposes significant cost, hardship and personnel safety issues without any improvement in quality. *ASME recommends that the proposed condition be removed in the final rule.*
§50.55a(b)(1)(xi)(E)	N/A	***Mandatory Appendix XXVI: Fifth provision. Electrofusion saddle fittings and electrofusion saddle joints are not permitted for use. Only full 360-degree seamless sleeve electrofusion couplings and full 360-degree electrofusion socket joints are permitted.***	The NRC is proposing to add a new paragraph (b)(1)(xi)(E), which prohibits the use of electrofusion saddle fittings and electrofusion saddle joints. Some Department of Energy operational experience indicates that failures have occurred in electrofusion joints. The NRC has determined that the failure of a saddle type electrofusion joint could result in structural separation of the electrofusion saddle coupling from the HDPE pipe it is attached to, resulting in a potential loss of flow and loss of safety function in the system. Unlike the failures identified by DOE, every electrofusion saddle joint installed in a nuclear system requires producing and testing an identical coupon using the same equipment and power supply under -2300 of Appendix XXVI. In addition, each installed saddle joint receives visual verification of fit-up gaps, alignment and out-of-roundness, recording and verification of the actual fusing variables, full volumetric examination of the fused joint, and a hydrostatic pressure test at 1.5 times the design pressure. Without the capability of using electrofusion saddle connections, necessary modifications to or repairs of existing installations could be cost prohibitive, imposing significant hardship without any improvement in quality or safety. *ASME recommends that the proposed condition be removed in the final rule.*
§50.55a(b)(2)(viii)	(viii) *Section XI condition: Concrete containment examinations.* Applicants or licensees applying Subsection IWL, 1992 Edition with the 1992 Addenda, must apply paragraphs (b)(2)(viii)(A) through (E) of this	N/A	This condition applies to the several older editions and addenda of Section XI that, to the knowledge of ASME, are no longer in use in the United States. *ASME recommends that the NRC consider removing applicable conditions that apply to the 1992 Edition with the 1992 Addenda, and any later code editions and addenda that are no longer in use by any U.S. plants.*

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	section. Applicants or licensees applying Subsection IWL, 1995 Edition with the 1996 Addenda, must apply paragraphs (b)(2)(viii)(A), (b)(2)(viii)(D)(*3*), and (b)(2)(viii)(E) of this section. Applicants or licensees applying Subsection IWL, 1998 Edition through the 2000 Addenda, must apply paragraphs (b)(2)(viii)(E) and (F) of this section. Applicants or licensees applying Subsection IWL, 2001 Edition through the 2004 Edition, up to and including the 2006 Addenda, must apply paragraphs (b)(2)(viii)(E) through (G) of this section. Applicants or licensees applying Subsection IWL, 2007 Edition up to and including the 2008 Addenda must apply paragraph (b)(2)(viii)(E) of this section. Applicants or licensees applying Subsection IWL, 2007 Edition with the 2009 Addenda through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section, must apply paragraphs (b)(2)(viii)(H) and (I) of this section.		
§50.55a(b)(2)(viii)(A)	(A) Concrete containment examinations: First provision. Grease caps that are accessible must be visually examined to detect grease leakage or grease cap deformations. Grease caps must be removed for this examination when there is evidence of grease cap deformation that indicates deterioration of anchorage hardware.	N/A	This condition applies only when using the 1995 Edition with the 1996 Addenda and earlier editions/addenda of Section XI. *ASME recommends that the NRC consider removing this condition because there should be no U.S. plants still using the 1995 Edition with the 1996 Addenda or earlier editions/addenda of Section XI.*
§50.55a(b)(2)(viii)(B)	(B) Concrete containment examinations: Second provision. When evaluation of consecutive surveillances of pre-stressing forces for the same tendon or tendons in a group indicates a trend of pre-stress loss such that the tendon force(s) would be less than the minimum design pre-stress requirements before the next inspection interval, an evaluation must be performed and reported in the Engineering Evaluation Report as prescribed in IWL–3300.	N/A	This condition applies only when using the 1992 Edition with the 1992 Addenda of Section XI. *ASME recommends that the NRC consider removing this condition because there should be no U.S. plants still using the 1992 Edition with the 1992 Addenda of Section XI.*
§50.55a(b)(2)(viii)(C)	(C) Concrete containment examinations: Third provision. When the elongation corresponding to a specific load (adjusted for effective wires or strands) during re-tensioning of tendons differs by more than 10 percent from that recorded during the last measurement, an evaluation	N/A	This condition applies only when using the 1992 Edition with the 1992 Addenda of Section XI. *ASME recommends that the NRC consider removing this condition because there should be no U.S. plants still using the 1992 Edition with the 1992 Addenda of Section XI.*

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	must be performed to determine whether the difference is related to wire failures or slip of wires in anchorage. A difference of more than 10 percent must be identified in the ISI Summary Report required by IWA–6000.		
§50.55a(b)(2)(viii)(D)	(D) Concrete containment examinations: Fourth provision. The applicant or licensee must report the following conditions, if they occur, in the ISI Summary Report required by IWA–6000: (1) The sampled sheathing filler grease contains chemically combined water exceeding 10 percent by weight or the presence of free water; (2) The absolute difference between the amount removed and the amount replaced exceeds 10 percent of the tendon net duct volume; and (3) Grease leakage is detected during general visual examination of the containment surface.	N/A	This condition applies only when using the 1995 Edition with the 1996 Addenda and earlier editions/addenda of Section XI. *ASME recommends that the NRC consider removing this condition because there should be no U.S. plants still using the 1995 Edition with the 1996 Addenda or earlier editions/addenda of Section XI.*
§50.55a(b)(2)(ix)	(ix) Section XI condition: Metal containment examinations. Applicants or licensees applying Subsection IWE, 1992 Edition with the 1992 Addenda, or the 1995 Edition with the 1996 Addenda, must satisfy the requirements of paragraphs (b)(2)(ix)(A) through (E) of this section. Applicants or licensees applying Subsection IWE, 1998 Edition through the 2001 Edition with the 2003 Addenda, must satisfy the requirements of paragraphs (b)(2)(ix)(A) and (B) and (F) through (I) of this section. Applicants or licensees applying Subsection IWE, 2004 Edition, up to and including the 2005 Addenda, must satisfy the requirements of paragraphs (b)(2)(ix)(A) and (B) and (F) through (H) of this section. Applicants or licensees applying Subsection IWE, 2004 Edition with the 2006 Addenda, must satisfy the requirements of paragraphs (b)(2)(ix)(A)(2) and (b)(2)(ix)(B) of this section. Applicants or licensees applying Subsection IWE, 2007 Edition through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section, must satisfy the requirements of paragraphs (b)(2)(ix)(A)(2) and (b)(2)(ix)(B) and (J) of this section.	(ix) *Section XI condition: Metal containment examinations.* Applicants or licensees applying Subsection IWE, 1992 Edition with the 1992 Addenda, or the 1995 Edition with the 1996 Addenda, must satisfy the requirements of paragraphs (b)(2)(ix)(A) through (E) ***and (b)(2)(ix)(K)*** of this section. Applicants or licensees applying Subsection IWE, 1998 Edition through the 2001 Edition with the 2003 Addenda, must satisfy the requirements of paragraphs (b)(2)(ix)(A) and (B) and (F) through (I) ***and (b)(2)(ix)(K)*** of this section. Applicants or licensees applying Subsection IWE, 2004 Edition, up to and including the 2005 Addenda, must satisfy the requirements of paragraphs (b)(2)(ix)(A) and (B) and (F) through (H) ***and (b)(2)(ix)(K)*** of this section. Applicants or licensees applying Subsection IWE, 2004 Edition with the 2006 Addenda, must satisfy the requirements of paragraphs (b)(2)(ix)(A)(2) and (b)(2)(ix)(B) ***and (b)(2)(ix)(K)*** of this section. Applicants or licensees applying Subsection IWE, 2007 Edition through the ***2015 Edition must satisfy the requirements of paragraphs (b)(2)(ix)(A)(2) and (b)(2)(ix)(B) and (J) and (K) of this section. Applicants or licensees applying Subsection IWE 2017 Edition must satisfy the requirements of paragraph (b)(2)(ix)(A)(2) and (b)(2)(ix)(B) and (j) of this section.***	This condition applies to the several older editions and addenda of Section XI that, to the knowledge of ASME, are no longer in use in the United States. *ASME recommends that the NRC consider removing applicable conditions that apply to the 1992 Edition with the 1992 Addenda, and any later code editions and addenda that are no longer in use by any U.S. plants.*

§50.55a Paragraph	Existing §50.55a Regulations (as of 11/09/2018)	Proposed Changes to §50.55a Regulations (Changes denoted by Bold Italics)	ASME Comments on §50.55a Regulations - Existing and Proposed Changes
§50.55a(b)(2)(ix)(C)	(C) Metal containment examinations: Third provision. The examinations specified in Examination Category E–B, Pressure Retaining Welds, and Examination Category E–F, Pressure Retaining Dissimilar Metal Welds, are optional.	No changes proposed.	This condition applies only when using the 1995 Edition with the 1996 Addenda and earlier editions/addenda of Section XI. *ASME recommends that the NRC consider removing this condition because there should be no U.S. plants still using the 1995 Edition with the 1996 Addenda or earlier editions/addenda of Section XI.*
§50.55a(b)(2)(ix)(D)	(D) Metal containment examinations: Fourth provision. This paragraph (b)(2)(ix)(D) may be used as an alternative to the requirements of IWE– 2430. If the examinations reveal flaws or areas of degradation exceeding the acceptance standards of Table IWE– 3410–1, an evaluation must be performed to determine whether additional component examinations are required. For each flaw or area of degradation identified that exceeds acceptance standards, the applicant or licensee must provide the following in the ISI Summary Report required by IWA–6000: (1) A description of each flaw or area, including the extent of degradation, and the conditions that led to the degradation; (2) The acceptability of each flaw or area and the need for additional examinations to verify that similar degradation does not exist in similar components; (3) A description of necessary corrective actions; and (4) The number and type of additional examinations to ensure detection of similar degradation in similar components.	No changes proposed.	This condition applies only when using the 1995 Edition with the 1996 Addenda and earlier editions/addenda of Section XI. *ASME recommends that the NRC consider removing this condition because there should be no U.S. plants still using the 1995 Edition with the 1996 Addenda or earlier editions/addenda of Section XI.*
§50.55a(b)(2)(ix)(E)	(E) Metal containment examinations: Fifth provision. A general visual examination as required by Subsection IWE must be performed once each period.	No changes proposed.	This condition applies only when using the 1995 Edition with the 1996 Addenda and earlier editions/addenda of Section XI. *ASME recommends that the NRC consider removing this condition because there should be no U.S. plants still using the 1995 Edition with the 1996 Addenda or earlier editions/addenda of Section XI.*
§50.55a(b)(2)(xx)(B)	(B) System leakage tests: Second provision. The NDE provision in IWA–4540(a)(2) of the 2002 Addenda of Section XI must be applied when performing system leakage tests after repair and replacement activities performed by welding or brazing on a pressure retaining boundary using the 2003 Addenda through the	(B) System leakage tests: Second provision. ***The nondestructive examination method and acceptance criteria of the 1992 or later of Section III shall be met when performing system leakage test (in lieu of a hydrostatic test) in accordance with IWA-4520 after repair and replacement activities performed by welding or brazing on a***	ASME continues to believe that this condition is unnecessary for reasons documented in our letter dated November 30, 2015 to Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Subject: Comments on Incorporation by Reference of American Society of Mechanical Engineers Codes and Code Cases, 10 CFR Part 50, RIN 3150-AI97. *If the NRC retains this condition in the final rule, ASME recommends that the following editorial changes be incorporated:*

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	latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section.	***pressure retaining boundary using the 2003 Addenda through the latest edition and addenda of Section XI incorporated by reference in paragraph (a)(1)(ii) of this section. The nondestructive examination and pressure testing may be performed using procedures and personnel meeting the requirements of the licensee's/applicant's current ISI code of record.***	*1. Revise "1992 or later" to read "1992 Edition or later editions…"* *2. In the last sentence, insert "program" after "ISI".*
§50.55a(b)(2)(xxv)	(xxv) Section XI condition: Mitigation of defects by modification. The use of the provisions in IWA–4340, "Mitigation of Defects by Modification," Section XI, 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section are prohibited.	(xxv) Section XI condition: Mitigation of defects by modification. The use of the provisions in IWA–4340, ***shall be subject to the following conditions:*** ***(A) Mitigation of defects by modification: First provision. The use of the provisions for mitigation of defects by modification in IWA-4340 of Section XI 2001 Edition through the 2010 Addenda, is prohibited.*** ***(B) Mitigation of defects by modification: Second provision. The use of the provisions for mitigation of defects by modification in IWA-4340 of Section XI 2011 Edition through the 2017 Edition may be used subject to the following conditions:*** ***(1) The use of the provisions in IWA-4340 to mitigate crack-like defects or those associated with flow accelerated corrosion are prohibited.*** ***(2) The design of a modification that mitigates a defect shall incorporate a loss of material rate either 2 times the actual measured corrosion rate in that pipe location (established based on wall thickness measurements conducted at least twice in two prior consecutive or nonconsecutive refueling outage cycles in the 10 year period prior to installation of the modification , or 4 times the estimated maximum corrosion rate for the piping system.*** ***The Owner shall perform a wall thickness examination in the vicinity of the modification and relevant pipe base metal during each refueling outage cycle to detect propagation of the flaw into the material credited for structural integrity of the item unless the examinations in the two refueling outage cycles subsequent to the installation of the modification are capable of validating the projected flaw growth.***	ASME would like to thank the NRC for reevaluating the changes made to IWA-4340 published in the 2011 Addenda. ASME has no comments on the new paragraph (b)(2)(xxv)(A), which continues the prohibition of IWA-4340 in Editions and Addenda prior to 2011 Addenda. For new paragraph (b)(2)(xxv)(B), ASME has no comments on the first and second proposed conditions. Regarding the proposed third condition in (b)(2)(xxv)(B), ASME has no comments regarding performing wall thickness examinations every refueling outage for modifications installed in accessible locations. However, for modifications installed in inaccessible locations (e.g. buried piping, piping encased in concrete, etc.), ASME believes that requiring examinations to be performed every refueling outage is onerous. The excavation costs and the risk of damage to the piping system to perform these examinations far outweigh the small increase in safety as a result of examination at the modification. Instead, corrosion rates can be validated at accessible degraded locations, in the same piping system, to confirm the design corrosion rates for the inaccessible locations. Examinations performed to validate corrosion rates are prudent. However, ASME believes those examinations should be conducted at one half of the remaining expected life of the modification, or every ten years from the date of installation, whichever is more frequent. *ASME recommends that this condition be revised to read as follows:* *"For accessible locations, the Owner shall perform wall thickness examinations in the vicinity of the modification and relevant pipe base metal to detect propagation of the flaw into the material credited for structural integrity of the item. For inaccessible locations (e.g. buried, encased in concrete, etc.), the Owner may validate flaw growth by performing examinations at an accessible degraded location in the same system. Examinations shall be performed every refueling outage unless the actual flaw growth is validated by examination in two consecutive refueling outages.* *For inaccessible locations, the Owner shall also perform wall thickness examinations in the vicinity of the modification and relevant pipe base metal to detect propagation of the flaw into the material credited for structural integrity of the item. These examinations shall be performed prior to exceeding one half of the expected life of the repair, or at least once every ten years, whichever occurs first."*

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§50.55a(b)(2)(xxvi)	(xxvi) Section XI condition: Pressure testing Class 1, 2 and 3 mechanical joints. The repair and replacement activity provisions in IWA–4540(c) of the 1998 Edition of Section XI for pressure testing Class 1, 2, and 3 mechanical joints must be applied when using the 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section.	***(xxvi) Section XI condition: Pressure testing Class 1, 2 and 3 mechanical joints. When using the 2001 Edition through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section, licensees shall pressure test mechanical joints in Class 1, 2, and 3 piping and components greater than NPS-1 which are disassembled and reassembled during the performance of a Section XI activity (e.g., repair/replacement activity), in accordance with IWA-5211(a). The pressure test and examiners shall meet the requirements of the licensee's/applicant's current ISI code of record.***	ASME continues to believe that this condition is unnecessary and offers the following comments regarding this condition: 1. The revised system leakage test requirements in the 1999 Addenda and later editions and addenda are consistent with the construction requirements for mechanical joint leakage in Section III of the ASME Code. Section III does not prohibit leakage at mechanical connections, and requires only that mechanical connection leakage not mask other leakage. Operators and system engineers periodically monitor systems for leakage and evaluate if corrective action is warranted when leakage is identified. Post-maintenance test programs required by operating plants' current licensing bases specify requirements for leak testing mechanical connections following reassembly. Section XI does not provide any acceptance criteria for mechanical joint leakage following reassembly, and it has always been the responsibility of licensees to determine if corrective action is warranted. ASME does agree with the NRC that there is much confusion in the industry regarding this condition, and agree that the NRC should clarify, in detail, their position on what repair/replacement activities affecting mechanical joints require pressure testing. However, ASME does not believe the proposed amendment to 10 CFR 50.55a(b)(2)(xxvi) will accomplish that goal, and may actually cause additional confusion. The proposed amendment states in part "..all mechanical joints ... that are disassembled and reassembled during the performance of a Section XI activity ... shall be pressure tested..." This statement can be read to apply to a flanged piping spool removed simply to provide access to the portion of a component subject to a repair/replacement activity, to replace gasketing, or to apply to that same flanged spool piece removed to perform a repair/replacement activity on the piping between the flanges. In the 1998 Edition and earlier Editions, ASME would consider the flanges in both of these scenarios to be exempt from pressure testing. It is not clear what the NRC intends for this condition to accomplish because the NRC appears to take exception to some ASME interpretations, and those exceptions are not clearly identified. In the Analysis of Public Comments for the final rule incorporating the 2013 Edition (ML16130A531), the NRC indicates it disagrees with interpretation XI-1-10-20, which exempts bolting replacements from pressure testing. Other than some informal discussions and correspondence with the ASME, that is the only place where the NRC states that position. In the same document, the NRC indicates that items rotated from stock (IWA-4132) are also subject to pressure testing. This issue is further confused because Reg. Guide 1.147 approves Case N-508-4 with no limitation regarding pressure testing (N-508-4 takes exception to all of IWA-4000, including IWA-4540, and therefore 10 CFR 50.55a(b)(2)(xxvi) doesn't apply). 2. This condition takes exception to ASME Section in XI in that it mandates that a pressure test and VT-2 visual examination be performed following performance of a repair/replacement activity when the mechanical connection of an item is

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			disassembled and subsequently reassembled, even if the repair/replacement activity does not involve the repair or replacement of items within the mechanical joint. Moreover, as worded, this condition would require a pressure test and VT-2 visual examination if the repair/replacement activity involves only the replacement of a single fastener, regardless of the reason the fastener is replaced when the item is disassembled. ASME notes that mechanical joints that are disassembled and reassembled for a maintenance activity (e.g., gasket replacement) would not be affected by the proposed condition, provided the mechanical joint is reassembled using no replacement items. The ASME III and XI committees have determined that there is no need to perform a pressure test following a repair/replacement activity where the mechanical connection was disassembled and reassembled as bolts, studs, nuts, and washers are specifically exempted from pressure testing. For installation into a Code Class (1, 2, 3) system, plants use components that are procured as Quality Related in accordance with a QA program and require the items meet material standards, codes, etc. and are subject to additional NDE and testing before being utilized. This provides reasonable assurance that the materials are free of defects and will perform their function during operation. In the case of valves, pumps, manufactured piping assemblies (ASME III stamped), etc. designed and fabricated to a code or design specification provided by the owner, and pressure testing is already required of these items. Whenever maintenance is performed that requires an item to be disassembled, regardless if it includes an ASME XI repair/replacement activity, a leakage check is performed utilizing plant operators to inspect for leakage during post-maintenance testing / return to service (PMT/RTS) activities. Verifying no leakage is just one of the many observations they perform to assure the item is functioning as expected before considering it operable. Adding a requirement to include a VT-2 examiner, and in some cases an ANII, does not increase the level of public safety and it does not support ALARA goals in those areas of the plant where radiation is present. The proposed condition will cause expose additional personnel to unnecessary radiological dose with no added safety benefit because the mechanical connection is already being inspected by an operator whose training involves the ability to know how the equipment operates and to identify leakage or other abnormal conditions during their normal work duties. Additionally, the mechanical connection is disassembled and reassembled by personnel trained to perform the activity, including use of industry standard bolt torqueing guidance to assure proper integrity of the joint. While Reactor Coolant System leakage is always a concern and each utility has requirements to address this leakage, ASME is unaware of any precedence where a mechanical connection has catastrophically failed which would be cause for requiring additional visual scrutiny of the mechanical connection by a VT-2 examiner, including the need for use of an ANII. In cases where a condition of leakage has been identified during PMT/RTS activities (within or outside the ASME Section XI program boundaries), the mechanical connections had no catastrophic failure, and conditions were corrected to eliminate the

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			cause of unacceptable leakage. The leakage can be identified without the need for the added burden of using a VT-2 examiner and an ANII. As an additional consideration for removal of the condition, plants implementing 10 CFR 50.69 would be implementing an inspection and repair program that is in lieu of ASME XI and 10 CFR 50.55(a). Implementation of 50.69, would require pressure testing per construction code requirements and does not require a VT-2 pressure test following a welded or mechanical repair/replacement activity. The NRC has found this approach to be acceptable when implementing this alternative regulation and should remain consistent with requirements within 50.55(a). *ASME recommends that this condition be removed from the final rule. If this recommendation is not accepted, then ASME recommends that 10 CFR 50.55a(b)(2)(xxvi) be revised to specifically list the repair/replacement activities for which the NRC requires a pressure test following assembly or reassembly of a mechanical joint. That is, the NRC should clarify whether this condition specifically applies when only bolting is replaced, an item rotated from stock is installed in a mechanical joint, and when a mechanical joint is assembled or reassembled to perform a repair/replacement activity that does not affect pressure retaining parts of the mechanical joint (e.g. mechanically removing a valve bonnet to replace the valve disc), etc.*
§50.55a(g)(6)(ii)(D)(5)	N/A	***(5) Peening. In lieu of inspection requirements of Table 1, Items B4.50 and B4.60, and all other requirements in ASME BPV Code Case N-729-6 pertaining to peening, in order for a RPV upper head with nozzles and associated J-groove welds , mitigated by peening to obtain inspection relief from the requirements of Table 1 for unmitigated heads, peening must meet the performance criteria qualification and inspection requirements stated in MRP-335, Revision 3-A, with the exception that a plant-specific alternative request is not required and NRC condition 5.4 of MRP-335, Revision 3-A does not apply.***	ASME understands that the proposed condition will require that MRP-335-3A be followed (with the exception of NRC condition 5.4) in order for a licensee to avoid having to seek relief from the requirements of Table 1 for a RPV upper head with nozzles and associated J-groove welds that are mitigated by peening. *ASME recommends that the condition be clarified to specify that the Extent and Frequency of Examination for Items B4.50 and B4.60 shall comply with the requirements of Code Case N-729-6, Table1.* *ASME also recommends that the word "inspection" in the first sentence be changed to "examination".*
§50.55a(g)(6)(ii)(F)(15)	N/A	***(15) Cracked excavate and weld repair. In lieu of the examination requirements for cracked welds with 360 excavate and weld repairs, Inspection Item N-1 of Table 1, welds shall be examined during the first or second refueling outage following EWR. Examination volumes that show no indication of crack growth or new cracking shall be examined once each inspection interval thereafter.***	In the explanation section of the proposed rule the staff indicates there is insufficient technical basis to support the difference in inspection frequency between N-1 and M-2 welds. As is noted in the Case and technical basis for the EWR repair method, the N-1 repair is a full 360-degree repair with stress reversal, which should preclude flaw growth. Stress reversal does not occur for M-2 weld EWR. ASME believes that this key technical difference should allow the use of the sampling strategy as provided in the Case for N-1 EWR. *For this reason, ASME believes that the proposed condition is unnecessary and recommends that the proposed condition be removed from the final rule.*