



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 12, 2017

Mr. Bryan S. Ford
Senior Manager, Fleet Regulatory Assurance
Entergy Operation, Inc.
1340 Echelon Parkway
Jackson, MS 39213

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 2 AND INDIAN POINT NUCLEAR
GENERATING STATION, UNIT NO. 3 – RELIEF REQUEST EN-ISI-16-1
REGARDING USE OF LATER EDITION AND ADDENDA OF THE ASME CODE
(CAC NOS. MF8905 AND MF8906)

Dear Mr. Ford:

By letter dated December 1, 2016, Entergy Operations, Inc. and Entergy Nuclear Operations, Inc. (Entergy, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) to use requirements of subsequent editions and addenda of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, for activities associated with repair/replacement, pressure testing, and nondestructive examination (NDE). The request EN-ISI-16-1 is for the Arkansas Nuclear One, Unit 2 (ANO-2), and the Indian Point Nuclear Generating Station, Unit No. 3 (IP-3).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(g)(4)(iv), the licensee requested to use portions of the 2007 Edition through 2008 Addenda of the ASME Code, Section XI, for inservice inspection (ISI) items of the Class 1, 2, 3, MC, and CC components, component supports, and welds, subject to conditions listed in 10 CFR 50.55a(b).

The NRC staff determined that use of subsequent editions and addenda of the ASME Code, Section XI, requirements is acceptable. Accordingly, the NRC staff concluded that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(4)(iv). Therefore, the NRC staff approves use of the 2007 Edition through 2008 Addenda of the ASME Code, Section XI, for activities related to repair/replacement, pressure testing, and NDE of Class 1, 2, 3, MC, and CC components, component supports, and welds, for the remainder of the fourth 10-year ISI intervals at ANO-2, which is scheduled to end on March 25, 2020, and IP-3, which is scheduled to end on July 20, 2019.

B. Ford

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If you have any questions, please contact Margaret Watford at (301) 415-1233 or via e-mail at Margaret.Watford@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Pascarelli".

Robert J. Pascarelli, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-368 and 50-286

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST EN-ISI-16-1 REGARDING USE OF

LATER EDITION AND ADDENDA OF THE ASME CODE

ENTERGY OPERATIONS, INC.

ENTERGY NUCLEAR OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT 2

INDIAN POINT NUCLEAR GENERATING STATION, UNIT NO. 3

DOCKET NOS. 50-368 AND 50-286

1.0 INTRODUCTION

By letter dated December 1, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16337A368), Entergy Operations, Inc. and Entergy Nuclear Operations, Inc. (Entergy, the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC or the Commission) to use requirements of subsequent editions and addenda of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, for activities associated with repair/replacement, pressure testing, and nondestructive examination (NDE). The request EN-ISI-16-1 is for Arkansas Nuclear One, Unit 2 (ANO-2), and Indian Point Nuclear Generating Station, Unit No. 3 (IP-3).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(g)(4)(iv), "Applicable ISI Code: Use of subsequent Code editions and addenda," the licensee requested to use portions of the 2007 Edition through 2008 Addenda of the ASME Code, Section XI, for inservice inspection (ISI) items of the Class 1, 2, 3, MC, and CC components, component supports, and welds, subject to conditions listed in 10 CFR 50.55a(b).

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(a), "Documents approved for incorporation by reference," and 10 CFR 50.55a(a)(1)(ii), "ASME Boiler and Pressure Vessel Code, Section XI," the ASME Code, Section XI, from the 1970 Edition through the 1976 Winter Addenda, and the 1977 Edition through the 2007 Edition with the 2008 Addenda have been approved for incorporation by reference, but limited to those provisions identified in paragraph (b)(2) of 10 CFR 50.55a.

Pursuant to 10 CFR 50.55a(g)(4)(iv), inservice examination of components and system pressure tests may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (a) of 10 CFR 50.55a, subject to the conditions listed in paragraph (b) of 10 CFR 50.55a, and subject to Commission approval. Portions of

editions or addenda may be used, provided that all related requirements of the respective editions or addenda are met.

Based on the above, and subject to the following technical evaluation, the NRC staff determined that regulatory authority exists for the licensee to request and the NRC to approve the use of subsequent editions and addenda of the ASME Code requested by the licensee.

3.0 TECHNICAL EVALUATION

3.1 ASME Code Component Affected

The ASME Code components affected by the licensee's request are ASME Code Class 1, 2, 3, MC, and CC components, component supports, and welds, as delineated in a table titled "Proposed ASME Section XI Code of Record for ANO-2 and IP-3" in Enclosure 1, "Proposed ASME Section XI Codes of Record for ANO-2 and IP-3," of the application dated December 1, 2016.

3.2 Applicable Code Edition and Addenda

For both ANO-2 and IP-3, the Code of Record for the fourth 10-year ISI interval is the 2001 Edition through 2003 Addenda of the ASME Code.

3.3 Duration of the Request

The licensee submitted this request for the remainder of the fourth 10-year ISI interval at ANO-2, which commenced on March 26, 2010, and is scheduled to end on March 25, 2020, and IP-3, which commenced on July 21, 2009, and is scheduled to end on July 20, 2019.

The licensee stated that an extension of up to 1 year could be applied to the duration of the fourth 10-year ISI interval of ANO-2, and IP-3, in accordance with the applicable requirements of IWA-2430, "Inspection Intervals."

3.4 Licensee's Request

In its submittal, the licensee requested to use the requirements of the 2007 Edition through 2008 Addenda of the ASME Code, Section XI, for the repair/replacement activities, pressure testing, and NDE in lieu of the current Code of record of ANO-2, and IP-3.

The licensee stated that it will comply with all related requirements in the 2007 Edition through 2008 Addenda. In Section 4, "Related Requirements," in the attachment of its submittal, the licensee stated that it will comply with the following ASME Code, Section XI requirements:

- The licensee stated that it will utilize all "Articles" (e.g., IWA-4000, "Repair/Replacement Activities," IWA-5000, "System Pressure Tests") from every "Subsection" (e.g., IWA, IWB) of the 2007 Edition through 2008 Addenda that could be used or referenced for the performance of repair/replacement, pressure testing, and NDE activities.
- The licensee stated that it will utilize all mandatory appendices, and non-mandatory Appendices A through Q, of the 2007 Edition through 2008 Addenda, since these appendices provide related and supplemental requirements to the articles and paragraphs that are being used from the 2007 Edition through 2008 Addenda.

- For performance of the ISI examinations and tests, the licensee stated that it will continue to select, plan, and schedule the ISI activities (e.g., IWA-, IWB-, IWC-, IWD-, IWE-, and IWF-2500, and/or the NRC approved ISI alternatives) in accordance with the current ISI program plans for ANO-2 and IP-3 (i.e., the 2001 Edition through 2003 Addenda of Section XI).

In the table provided in Enclosure 1 of its submittal, the licensee listed all applicable Code provisions (e.g., subsections and articles, and appendices) that will be used during implementation of two different editions and addenda of the ASME Code (dual ASME Code). In addition, Enclosure 1 included 11 footnotes that contain specific details to support this request. The content of these footnotes is summarized below.

1. The licensee stated that it will comply with all applicable requirements and conditions mandated by 10 CFR 50.55a.
2. The licensee stated that it will use IWA-2100, "General," IWA-2200, "Examination Methods," and IWA-2300, "Qualifications of Nondestructive Examination Personnel," from the 2007 Edition through 2008 Addenda for requirements applicable to authorized inspection, examination methods, and qualification of NDE personnel. However, the 2001 Edition through 2003 Addenda requirements will be used for IWA-2400, "Inspection Program," IWA-2500, "Extent of Examination," and IWA-2600, "Weld Reference System," for the selection, planning, and scheduling of ISI activities.
3. For pressure testing, the licensee stated that:
 - The NDE provision in IWA-4540, "Pressure Testing of Classes 1, 2, and 3 Items," paragraph (a)(2) of the 2002 Addenda will be applied when performing system leakage tests after repair/replacement activities involving welding or brazing to comply with 10 CFR 50.55a(b)(2)(xx)(B).
 - Pressure testing of Class 1, 2, and 3 mechanical joints will be performed in accordance with IWA-4540(c) of the 1998 Edition and no addenda to comply with 10 CFR 50.55a(b)(2)(xxvi).
4. The licensee stated that selection, planning, and scheduling of the ISI will comply with the ASME Code, Section XI, articles (e.g., IWB-1000, "Scope and Responsibility," and IWB-2000, "Examination and Inspection,") from the 2001 Edition through 2003 Addenda, or applicable NRC-approved alternatives.
5. The licensee stated that IWB-3514, "Standards for Examination Category B-F, Pressure Retaining Dissimilar Metal Welds in Vessel Nozzles, and Examination Category B-J, Pressure Retaining Welds in Piping," of Section XI (the 2007 Edition through 2008 Addenda) requires that the acceptance standards for IWB-3514 be applied to planar surface connected flaws in UNS N06600, N06082, or W86182 materials in a pressurized water reactor subject to stress corrosion cracking. Therefore, if a planar flaw is found in these nickel alloy materials, the licensee will either evaluate the acceptability of the flaw in accordance with IWB-3600, "Analytical Evaluation of Flaws," or correct the

flawed condition by performing an approved ASME Code, Section XI, repair/replacement activity.

6. The licensee stated that the preservice and inservice examination and testing of snubbers will be performed in accordance with Subsection ISTD of the ASME Code for Operation and Maintenance of Nuclear Power Plants to comply with the requirements of 10 CFR 50.55a(b)(3)(v)(A).
7. The licensee stated that Article IWF-5000, "Inservice Inspection Requirements for Snubbers," was deleted from subsection IWF in the 2006 Addenda and later editions and addenda. Therefore, it will not be used.
8. The licensee stated that it will comply with the requirements and conditions for reactor vessel head inspections mandated by 10 CFR 50.55a(g)(6)(ii)(D)(4). The regulation requires that ultrasonic examinations performed in accordance with ASME Code Case N-729-1, "Alternative Examination Requirements for PWR [Pressurized Water Reactor] Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds Section XI, Division 1," comply with Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," of the 2004 Edition with no addenda.
9. The licensee stated that non-mandatory Appendices F and I do not exist in the 2001 Edition through 2003 Addenda and the 2007 Edition through 2008 Addenda of ASME Code, Section XI. Therefore, non-mandatory Appendices F and I will not be used.
10. The licensee stated that non-mandatory Appendix R, "Risk-Informed Inspection Requirements for Piping," has been added into Section XI since the 2005 Addenda of the ASME Code. Non-mandatory Appendix R is referenced in IWB-2500 and IWC-2500, "Examination and Pressure Test Requirements," paragraph (c). The licensee will continue to use the 2001 Edition through 2003 Addenda for IWB-2000, IWC-2000 and IWD-2000, "Examination and Inspection." Therefore, non-mandatory Appendix R will not be used.
11. The licensee stated that the system leakage test of the Class 1 pressure retaining components (as required by Table IWB-2500-1, "Examination Categories") will comply with the boundary requirements of IWB-5222, "Boundaries," of the 2007 Edition through 2008 Addenda. The IWB-5222 requirements are as follows:
 - The boundary of the system leakage test performed each refueling outage prior to plant start-up shall comply with IWB-5222(a).
 - The boundary of the system leakage test performed at or near the end of the inspection interval shall comply with IWB-5222(b).

3.5 Licensee's Basis for Request

In its submittal, the licensee stated that while the ISI program plans are controlled in site-specific documents, the ISI program activities specific to repair/replacement, pressure testing, and NDE are controlled in common corporate program procedures and implemented across the entire Entergy nuclear fleet.

The licensee stated that all Entergy's plants including ANO-2, and IP-3, perform the ISI program activities specific to repair/replacement, pressure testing, and NDE in accordance with Entergy's standardized fleet program. This standardized program is based on a common edition and addenda of the ASME Code, Section XI, which is currently the 2001 Edition through 2003 Addenda.

The licensee also stated that on December 1, 2017, it plans to update Entergy's nuclear fleet Code of Record for the activities related to repair/replacement, pressure testing, and NDE programs from the 2001 Edition through 2003 Addenda to the 2007 Edition through 2008 Addenda. If ANO-2 and IP-3 would continue performing the repair/replacement activities, pressure testing, and NDE in accordance with their current Code of record after December 1, 2017, then the licensee would be required to maintain two separate sets of programs. This would mean one set of programs for ANO-2 and IP-3, and another set of programs for the balance of the Entergy nuclear fleet.

The licensee stated that it has process controls in place to track and monitor the implementation of the dual Code, to properly manage dual Code editions and addenda. These process controls are documented in site-specific ISI plans and administrative and program procedures. The licensee summarized these process controls in its application dated December 1, 2016:

Site-specific Inservice Inspection Plans: These documents implement the ASME Section XI Inservice inspection programs at ANO-2 and IP-3. They ensure the selection, planning and scheduling of ISI examinations and tests are performed in accordance with 2001 Edition/2003 Addenda of ASME Section XI as delineated in Enclosure 1 [of this request].

Administrative and Program Procedures: These procedures establish requirements for implementing the ASME Section XI NDE, PT [pressure testing], and R&R [repair/replacement] programs. These procedures also ensure program requirements comply with applicable requirements in the 2007 Edition/2008 Addenda of ASME Section XI as described in Enclosure 1 [of this request].

The licensee stated that the above process controls will ensure the use of dual Code editions and addenda at ANO-2 and IP-3 are appropriately managed, tracked, and controlled.

3.6 NRC Staff Evaluation

The NRC staff has evaluated this request pursuant to 10 CFR 50.55a(g)(4)(iv). The NRC staff's evaluation focuses on whether: 1) the subsequent editions and addenda of the ASME Code as requested for use are incorporated by reference in 50.55a(a); 2) the Code requirements subject to the conditions listed in 50.55a(b) are met; 3) a request is submitted to the NRC for approval; and 4) all related requirements of the respective editions and addenda are met. If these four criteria are met, the NRC staff will conclude that the requirements of 10 CFR 50.55a(g)(4)(iv)

will also be met.

In evaluating the licensee's request EN-ISI-16-1, the NRC staff confirms that,

1. The 2007 Edition through 2008 Addenda of Section XI to the ASME Code, as requested for use, is incorporated by reference in 10 CFR 50.55a, and subject to the conditions in paragraph (b)(2) of 10 CFR 50.55a. Therefore, the NRC staff determines that the 2007 Edition through 2008 Addenda is acceptable provided that the conditions in paragraph (b)(2) of 10 CFR 50.55a be also met.
2. The licensee has identified and acknowledged that it will comply with all applicable provisions of 10 CFR 50.55a.
3. This submittal (request EN-ISI-16-1) serves as the licensee's request for NRC approval of the use of the 2007 Edition through 2008 Addenda of Section XI for performance of repair/replacement activities, pressure testing, and NDE of Class 1, 2, 3, MC, and CC components, component supports, and welds;
4. The licensee has identified and acknowledged that it will comply with all related requirements of the 2007 Edition through 2008 Addenda of Section XI.

Based on the above, the NRC staff determines that each of the four required regulatory requirements for the use of a later edition of the Code have been met and that the use of the 2007 Edition through 2008 Addenda of Section XI to the ASME Code for performance of repair/replacement activities, pressure testing, and NDE of Class 1, 2, 3, MC, and CC components is acceptable.

4.0 CONCLUSION

As set forth above, the NRC staff determines that use of subsequent editions and addenda of the ASME Code, Section XI, requirements is acceptable. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(4)(iv). Therefore, the NRC staff approves the use of the 2007 Edition through 2008 Addenda of the ASME Code, Section XI, for activities related to repair/replacement, pressure testing, and NDE of Class 1, 2, 3, MC, and CC components, component supports, and welds, for the remainder of the fourth 10-year ISI interval at ANO-2, which is scheduled to end on March 25, 2020, and IP-3, which is scheduled to end on July 20, 2019.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved remain applicable, including the third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Ali Rezai

Date: July 12, 2017

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 2 AND INDIAN POINT NUCLEAR
 GENERATING STATION, UNIT NO. 3 – RELIEF REQUEST EN-ISI-16-1
 REGARDING USE OF LATER EDITION AND ADDENDA OF THE ASME CODE
 (CAC NOS. MF8905 AND MF8906) DATED JULY 12, 2017

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