



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

March 3, 2016

Vice President, Operations
Entergy Nuclear Operations, Inc.
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 - RELIEF FROM THE
REQUIREMENTS OF THE ASME CODE (CAC NO. MF6319)

Dear Sir or Madam:

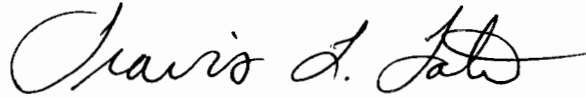
By letter dated June 1, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15182A287), Entergy Nuclear Operations, Inc. (Entergy, the licensee), submitted relief request IP2-ISI-RR-18 for the Indian Point Nuclear Generating Unit No. 2. Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), Entergy requested relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) to use the 2001 Edition/2003 Addenda of ASME Section XI for the performance of inservice inspection (ISI)-related activities associated with repair/replacements, pressure testing, and nondestructive testing during the fifth 10-year ISI interval that is scheduled to begin on June 1, 2016.

As set forth in the enclosed safety evaluation, the U.S. Nuclear Regulatory Commission staff has determined that the proposed alternative, IP2-ISI-RR-18, provides an acceptable level of quality and safety. Accordingly, the staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the staff authorizes the use of IP2-ISI-RR-18 at Indian Point Nuclear Generating Unit No. 2 during the fifth 10-year ISI interval until December 31, 2017.

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All other requirements of the ASME Code for which relief has not been specifically requested and authorized remain applicable, including a third-party review by the Authorized Nuclear Inservice Inspector.

Sincerely,

A handwritten signature in black ink, appearing to read "Travis L. Tate". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Travis L. Tate, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FIFTH 10-YEAR INSERVICE INSPECTION INTERVAL

REQUEST FOR ALTERNATIVE IP2-ISI-RR-18

INDIAN POINT UNIT NUCLEAR GENERATING UNIT NO. 2

ENTERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-247

1.0 INTRODUCTION

By letter dated June 1, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15182A287), Entergy Nuclear Operations, Inc. (Entergy, the licensee), requested use of an alternative to the requirements of 10 CFR 50.55a(g)(4)(ii) for performance of repair/replacement activities (R&R), pressure testing (PT), and non-destructive testing (NDE) during the fifth 10-year inservice inspection (ISI) interval for Indian Point Nuclear Generating Unit No. 2 (IP2).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested an alternative on the basis that the alternative provides an acceptable level of quality and safety. Relief Request IP2-ISI-RR-18 proposes an alternative for IP2 to continue the use of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, 2001 Edition through the 2003 Addenda requirements for the performance of R&R, PT, and NDE activities until standardized corporate procedures for these activities are updated in December 2017 in lieu of updating these activities to the Section XI 2007 Edition through the 2008 Addenda.

This request is associated with the requirements of the ASME Code, Section XI, for the fifth 10-year ISI interval at IP2.

2.0 REGULATORY EVALUATION

Paragraph 10 CFR 50.55a(g)(4)(ii) states, in part, that inservice examination of components conducted during 120-month intervals must comply with the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(a) 12 months before the start of the 120-month inspection interval or the optional ASME Code cases listed in Nuclear Regulatory Commission (NRC) Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1."

Enclosure

The regulations in 10 CFR 50.55a(z) state, in part, that alternatives to the requirements of paragraphs (b) through (h) may be used, when authorized by the NRC, if the licensee demonstrates that (1) the proposed alternatives would provide an acceptable level of quality and safety or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Based on analysis of the regulatory requirements, the NRC staff concludes that regulatory authority exists to authorize the proposed alternative IP2-ISI-RR-18 pursuant to 10 CFR 50.55a(z)(1).

3.0 TECHNICAL EVALUATION

3.1 The License's Request for Alternative – Relief Request IP2-ISI-RR-18

Components Affected

The affected components are ASME Code Class 1, 2, 3, and MC and CC components and component supports.

Requirement

In accordance with 50.55a(g)(4)(ii), the licensee is required to update the IP2 120-month ISI program to the latest Edition and Addenda of the ASME Code, Section XI, as approved by the NRC in 10 CFR 50.55a(a), for the fifth interval.

Proposed Alternative

The licensee proposes to continue use of the 2001 Edition through the 2003 Addenda of ASME Code, Section XI, for performance of R&R, PT, and NDE activities until standardized corporate procedures for these activities are updated. Specifically, the licensee asked to maintain and perform ISI-related activities such as R&R, PT, and NDE to the current ASME Code, Section XI 2001 Edition through the 2003 Addenda requirements rather than updating these portions of the IP2 ISI program to the 2007 edition through the 2008 Addenda. As required by 10 CFR 50.55a(g)(4)(ii), the licensee will be updating to articles IWA-2400, -2500, and -2600; articles 1000 and 2000 of IWB, IWC, IWD, IWE, and IWF; and Mandatory Appendix IX of Section XI, 2007 Edition through the 2008 Addenda. The relief request identifies specific articles to be used from each set of edition and addenda.

Additionally, the licensee requested that the use of four alternatives be extended until such time that the standardized corporate procedures for these activities are updated in December 2017. These alternatives are listed below:

- Request RR-04 allows the use of the dissimilar metal weld qualification criteria administered by the Electric Power Research Institute's PDI in lieu of selected ASME Code Section XI Appendix VIII, Supplement 10 requirements. This alternative was approved by the NRC in a safety evaluation dated September 26, 2007 (ADAMS Accession No. ML072220295), as providing an acceptable level of quality and safety.

- Request RR-07 allows the use of an embedded flaw repair process as described in the Westinghouse Topical Report WCAP-15987-P-A, Revision 2, "Technical Basis for Embedded Flaw Process for Repair of Reactor Vessel Head Penetrations," in lieu of the ASME Code requirements. This alternative was approved by the NRC in a safety evaluation dated February 14, 2008 (ADAMS Accession No. ML080280033), as providing an acceptable level of quality and safety.
- Request IP2-ISI-RR-12 allows ASME Code, Section XI, Appendix VIII, Supplements 4 and 6 (as amended by 10 CFR 50.55a) to be used for examination of the reactor pressure vessel shell-to-flange weld in lieu of the requirements of IWA-2232, which requires Ultrasonic Testing examination to be in accordance with ASME Code, Article 4 of Section V, as supplemented by Appendix I of Section XI. This alternative was approved by the NRC in a safety evaluation dated April 25, 2011 (ADAMS Accession No. ML11109A016), as providing an acceptable level of quality and safety.
- Request IP2-ISI-RR-15 allows an alternate method of marking welds and areas subject to surface and/or volumetric examinations. This alternative was approved by the NRC in a safety evaluation dated December 3, 2012 (ADAMS Accession No. ML12334A317), as providing an acceptable level of quality and safety. Furthermore, this method of marking the welds subject to examination has been utilized for all four inspection intervals at IP2 and has been proven to provide an adequate level of quality and safety.

Basis for Use

On June 1, 2016, the licensee will update the IP2 ISI Program to the fifth 10-year interval in accordance with 10 CFR 50.55a(g)(4)(ii). While the ISI-related activities such as R&R, PT, and NDE would normally be included as part of the update to the 2007 Edition and 2008 Addenda of ASME Code, Section XI, the proposed alternative is to maintain these ISI-related activities in compliance with ASME Code, Section XI, 2001 Edition through the 2003 Addenda, while conforming to all conditions of 10 CFR 50.55a.

The licensee has standardized the performance of ISI-related activities such as R&R, PT, and NDE across its entire nuclear fleet to the ASME Code, Section XI, 2001 Edition through the 2003 Addenda. The licensee stated that while ISI Program plans are controlled on a site-by-site basis, the R&R, PT, and NDE programs are administered under a corporate set of procedures. The licensee noted that updating the IP2 ISI, R&R, PT, and NDE program activities to the 2007 Edition through the 2008 Addenda would require establishing and maintaining two different programs; one for IP2 and one for the other ten Entergy nuclear stations.

The licensee explained that maintaining the IP2 ISI-related activities to the 2001 Edition through the 2003 Addenda standard with the other plants in its fleet will improve the level of quality and safety at IP2. The licensee further explained that this allows leveraging the knowledge from the ten other nuclear stations of ISI-related activities to provide IP2 with a wealth of experience to draw on and minimizing the time spent on developing and maintaining procedures that are different from the rest of the fleet.

Duration of Proposed Alternative

The IP2 fifth 10-year ISI interval begins on June 1, 2016, and ends on May 31, 2026. However, with eight of its nuclear plants starting new 10-year ISI intervals between June 2015 and December 2017, the licensee proposed to standardize its corporate administered R&R, PT, and NDE programs across its entire nuclear fleet using the 2001 Edition through 2003 Addenda through December 2017. Prior to the expiration of the proposed relief request on December 31, 2017, the licensee will request NRC approval to update these ASME Code, Section XI activities to the latest ASME Code edition incorporated by reference in 10 CFR 50.55a for the entire fleet. Therefore, the duration of Relief Request IP2-ISI-RR-18 is from June 1, 2016, through December 31, 2017.

3.2 NRC Staff Evaluation

The NRC staff review considered four areas of interest: (1) the proposed alternative, (2) differences between the two ASME Section XI Codes, (3) the application of two separate Codes of record, and (4) the extension of four previously approved alternatives.

Table 1, "Proposed ASME Section XI Code of Record for IP2," of Relief Request IP2-ISI-RR-18 as documented in the licensee's letter dated June 1, 2015, identifies the applicable subsections and articles that will be applied at IP2 in the dual ASME Codes.

The table includes six footnotes which are significant because they provide clarifications. Footnote number 1 states that IP2 will follow all conditions mandated in 10 CFR 50.55a as they apply to the specific Section XI editions and addenda. Footnote number 3 states that IP2 will follow the conditions imposed on the use of IWA-4540 when performing system leakage tests pursuant to 10 CFR 50.55a. Footnote number 5 clarifies that IP2 will not use the acceptance standards of IWB-3514 of the 2001 edition through the 2003 Addenda to disposition flaws detected in Alloy 600/82/182 metal or austenitic stainless steels.

The NRC staff noted that under the proposed alternative, if a flaw is detected in an ASME Class 1 austenitic stainless steel or nickel-based alloy weld at IP2, the flaw may remain in service using the acceptance standards in IWB-3514 of the 2001 Edition. However, under the 2007 Edition, the flaw needs to be dispositioned by an IWB-3600 analytical evaluation, which may result in a shorter inspection interval because the acceptance standards of IWB-3514 cannot be used to disposition the flaw. In this scenario, the 2001 Edition would be less conservative than the 2007 Edition. For example, the 2007 Edition of the ASME Code, Section XI prohibits the use of IWB-3514 to disposition planar surface flaws in nickel-based Alloy 600, 82, or 182 material in boiling-water reactor (BWR) (or pressurized water reactor) environment, or austenitic stainless steels and associated welds in BWR environments because of the stress corrosion cracking concerns. The 2001 Edition through the 2003 Addenda of the ASME Code, Section XI, does not have this limitation for IWB-3514. The licensee stated that if a flaw is found in an ASME Class 1 austenitic stainless steel or nickel-based alloy weld, it would either evaluate the acceptability of the flaw in accordance with IWB-3600 or correct the flawed condition by performing an approved ASME Section XI repair/replacement activity. The NRC staff concludes that because the licensee will perform an analytical evaluation of flaws in Class 1 austenitic stainless steel welds in accordance with IWB-3600 or correct the flawed condition by performing an ASME Code, Section XI repair/replacement activity, the proposed alternative is, therefore, acceptable.

Footnote numbers 2 and 4 clarify the articles (e.g., IWA-2000) and subarticles (e.g., IWA-2100) of the editions and addenda that will be used. Footnote 6 of Table 1, as shown in IP2-ISI-RR-18, states that as required by 10 CFR 50.55a(b)(3)(v), snubber pre-service and ISI and testing requirements are implemented in subsection ISTD of the ASME OM Code, 2004 Edition through 2006 Addenda, in its entirety. The NRC staff finds that the deletion of IWF-5000 in the 2006 Addenda through the 2007 Edition does not affect the licensee's ISI of the snubbers, which will be performed in accordance with the OM Code. The staff concludes that the licensee's snubber inspection and testing program satisfies 10 CFR 50.55a(b)(3)(v) and is, therefore, acceptable.

For mandatory appendices, the NRC staff finds that the licensee appropriately identified that when applying Appendix VIII to perform performance-demonstrated based ultrasonic examinations, the 2001 Edition, no addenda, in lieu of the 2001 Edition through the 2003 Addenda, should be used. This is because 10 CFR 50.55a(b)(2)(xv) requires the use of the 2001 Edition, no addenda for the performance demonstration of ultrasonic examinations, when the Code of record is later than the 2001 Edition.

The NRC staff has determined that the table and associated footnotes provide clear descriptions and commitments as to which subsections, articles, and subarticles of the editions and addenda of the ASME Code, Section XI that will be applicable for the duration period. The staff concludes that the table and associated footnotes satisfy 10 CFR 50.55a.

The NRC staff noted that the licensee is already accustomed to the use of dual ASME Code editions and addenda for the ISI programs. Entergy's dual use of Code editions and addenda was approved by the NRC in a safety evaluation for Vermont Yankee Power Station Relief Request ISI-2008-1 dated April 30, 2009 (ADAMS Accession No. ML091130456). The dual Code editions and/or addenda proposed in Relief Request IP2-ISI-RR-18 are identical to those previously approved by the NRC in a safety evaluation for Pilgrim Nuclear Power Station Request for Alternative PRR-26 dated June 19, 2015 (ADAMS Accession No. ML15166A401). Therefore, a process for tracking and monitoring the implementation of dual Code editions and addenda of ASME Section XI already exists at Entergy. Based on the above, the staff concludes that the licensee has acceptable process controls to manage, track, and control two sets of the ASME Code appropriately at IP2.

The NRC staff examined the proposed extension of the use of four previously authorized alternatives through December 2017 (i.e., Relief Requests RR-04, RR-07, IP2-ISI-RR-12, and IP2-ISI-RR-15). Each of these requests addresses one element of the licensee's NDE or R&R programs. Since the NDE and R&R programs are aspects of the Section XI program that will remain unchanged until December 2017, it is logical that use of these alternatives should also be extended. In reviewing the proposed extended use of each of these four alternatives, the staff did not identify any issues that would adversely impact the safety and quality provided by the licensee's ISI program should their use be continued until December 2017. Therefore the staff finds it acceptable to extend the use of Requests RR-04, RR-07, IP2-ISI-RR-12 and IP2-ISI-RR-15 through December 2017.

In summary, the NRC staff finds that Relief Request IP2-ISI-RR-18, as documented in the licensee's request, provides necessary information as to which article, in which edition and addenda of the ASME Code, will be applicable to the ASME Code Class 1, 2, 3, and MC and

CC components and component supports. The staff determined that approval of later editions and addenda of the ASME Code, Section XI in 10 CFR 50.55a does not make earlier editions and addenda of the ASME Code unacceptable because the staff has approved the earlier edition and addenda with conditions in 10 CFR 50.55a. Furthermore, the staff did not find it necessary to mandate that plants following earlier editions and addenda of ASME Code, Section XI implement any of the changes incorporated into the 2007 Edition through the 2008 Addenda of Section XI. The staff concludes that the proposed alternative is acceptable because the licensee will follow the requirements in the 2001 Edition through the 2003 Addenda for R&R, PT, and NDE activities and the 2007 Edition through the 2008 Addenda of the ASME Code for ISI Program selection, planning and scheduling of ISI examinations and tests.

4.0 CONCLUSION

As set forth above, the NRC staff determines that the proposed alternative, IP2-ISI-RR-18, provides an acceptable level of quality and safety. Accordingly, the staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the staff authorizes the use of IP2-ISI-RR-18 at IP2 during the fifth 10-year ISI interval until December 31, 2017.

All other requirements of the ASME Code for which relief has not been specifically requested and authorized remain applicable, including a third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Keith M. Hoffman

Date: March 3, 2016

All other requirements of the ASME Code for which relief has not been specifically requested and authorized remain applicable, including a third-party review by the Authorized Nuclear Inservice Inspector.

Sincerely,

/RA/

Travis L. Tate, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-247

Enclosure:
Safety Evaluation

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***By email**

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