



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

July 15, 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 – SAFETY EVALUATION
FOR RELIEF REQUEST IP2-ISI-RR-03 ALTERNATIVE TO WELD REFERENCE
SYSTEM EXAMINATION REQUIRED BY SUBARTICLE IWA-2600 (CAC
NO. MF7150)

Dear Sir or Madam:

By letter dated December 10, 2015, Entergy Nuclear Operations, Inc., the licensee, submitted Request for Alternative IP2-ISI-RR-3 to the U.S. Nuclear Regulatory Commission (NRC) for the fifth 10-year inservice inspection (ISI) interval at Indian Point Nuclear Generating Unit No. 2 (Indian Point, Unit 2). Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(z)(1), the licensee requested an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," Subarticle IWA-2600, "Weld Reference System," pertaining to the requirements for marking welds and areas subject to surface and/or volumetric examinations.

The NRC staff has reviewed IP2-ISI-RR-3 regarding the licensee's use of the proposed alternative weld reference system in reporting recordable indications and for revisiting these locations in the future. Based on the enclosed safety evaluation, the staff determined that the licensee's proposed alternative 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 NRC authorizes the licensee's use of the proposed alternative weld reference system during the fifth 10-year ISI interval for Indian Point, Unit 2.

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The NRC staff's safety evaluation is enclosed. Please feel free to contact Douglas V. Pickett at (301) 415-1364 if you have any questions on this issue.

Sincerely,

A handwritten signature in black ink that reads "Travis L. Tate" with a stylized flourish at the end.

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

REQUEST FOR ALTERNATIVE IP2-ISI-RR-3

ENTERGY NUCLEAR OPERATIONS, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

1.0 INTRODUCTION

By letter dated December 10, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15349B010), Entergy Nuclear Operations, Inc., Entergy or the licensee, submitted Request for Alternative IP2-ISI-RR-3 to the U.S. Nuclear Regulatory Commission (NRC) for the fifth 10-year inservice inspection (ISI) interval at Indian Point Nuclear Generating Unit No. 2 (Indian Point, Unit 2). Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(z)(1), the licensee proposed an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," Subarticle IWA-2600, "Weld Reference System," pertaining to the requirements for marking welds and areas subject to surface and/or volumetric examinations. This safety evaluation (SE) addresses the merits of the request for alternative to the ASME Code requirements proposed by the licensee.

2.0 REGULATORY EVALUATION

Inservice inspection of ASME Code Class 1, 2, and 3 components is performed in accordance with Section XI of the ASME Code and applicable addenda as a way to detect anomalies and degradation indications so that structural integrity of these components can be maintained. This is required by 50.55a(g), except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). The regulations at 10 CFR 50.55a(z) state that alternatives to the requirements of paragraphs (b) through (h) of 10 CFR 50.55a or portions thereof may be used when authorized by the Director, Office of Nuclear Reactor Regulation. A proposed alternative must be submitted and authorized prior to implementation. The applicant or licensee must demonstrate that: (1) the proposed alternative would provide an acceptable level of quality and safety; or (2) compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), components (including supports) that are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of editions and addenda of the ASME Code, that become effective subsequent to editions specified in

Enclosure

paragraphs (g)(2) and (3) of this section, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during successive 120-month inspection intervals (following the initial 120-month inspection interval) must comply with the requirements in the latest edition and addenda of the ASME Code, which was incorporated by reference in 10 CFR 50.55a(a) 12 months before the start of the 120-month interval (or the optional ASME Code Cases listed in NRC Regulatory Guide 1.147, Revision 17, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," August 2014; ADAMS Accession No. ML13339A689), subject to the conditions listed in 50.55a(b).

The applicable ASME Code of record for the fifth 10-year interval ISI program at Indian Point, Unit 2 is the 2007 Edition through the 2008 Addenda of the ASME Code, Section XI. The fifth 10-year interval ISI program at Indian Point, Unit 2 extends from June 1, 2016, until May 31, 2026.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Evaluation

3.1.1 Component Identification

Request for Alternative IP2-ISI-RR-3 addresses all ASME Code Class 1 and 2 welds and areas that are subject to surface or volumetric examination.

3.1.2 Applicable ASME Code Requirement (as stated by the licensee)

The 2007 edition with the 2008 Addenda of ASME Section XI, Subarticle IWA-2600, requires the establishment of a weld reference system for all welds and areas subject to surface or volumetric examination. Each such weld area shall be located and identified by a system of reference points.

Appendix III, Subarticle III-4300 requires the identification of examination areas. Weld identification and location shall be shown on a weld identification plan. Welds shall be marked once before or during the preservice examination to establish a reference point.

3.1.3 Licensee's Proposed Alternative and Basis (as stated by the licensee)

Datum reference markings will be established in the event that recordable indications are to be reported. Such datum points shall either be marked on the component or have their locations adequately described in the inspection documentation so that subsequent relocation can be achieved. The method proposed for the identification of indication locations is identical to the one employed at IP2 [Indian Point, Unit 2] during the previous inspection intervals.

A reference system for controlling the selection and documentation of datum points has been in effect at IP2 since pre-service inspections were performed in the early 1970's. The datum and conventions established at that time have been

retained to promote consistency in the recording of data. The general conventions used at IP2 for establishing weld reference datum points include:

Reference system for pipe:

- The datum point for a circumferential weld on a horizontal pipe is the intersection of the top centerline of the pipe and the weld centerline. Dimensions are taken in a clockwise direction when viewing along the direction of system flow, which is marked on the line isometric drawing.
- The datum point for a circumferential weld on a vertical pipe is the intersection of the weld centerline and the centerline through the outside (extrados) of the elbow or bend that is in the direction of the lower weld number.
- The datum for a longitudinal weld is the weld centerline and the intersecting circumferential weld.

Reference system for vessels:

- The datum for circumferential welds is the intersection of the weld centerline and the centerline of the adjacent longitudinal weld. Dimensions are taken in a clockwise direction when viewed from the top.
- Where there is no intersecting weld, the datum point is drawn from an existing structural point (i.e., the centerline of hot leg manway). This is identified on the data sheet for the weld examination.
- The datum for longitudinal welds is the intersection of the weld centerline and the centerline of the intersecting upper circumferential weld.

The weld reference system currently in use at IP2 has been performing satisfactorily in all previous intervals. The locations of indications have been positively identified using the conventions identified above. Therefore, the marking of weld joints is not necessary considering this alternative proposal.

3.2 NRC Staff Evaluation

The ASME Code requires that a reference system be established for all welds and areas subject to surface or volumetric examinations. Each such weld and area shall be located and identified by a system of reference points. The system shall permit identification of each weld, location of each weld centerline, and designation of regular intervals along the length of the weld.

The licensee proposed to utilize the method of identification identical to that used at Indian Point, Unit 2 during the previous inspection intervals. The weld reference system described by the licensee in its submittal (repeated in Section 3.1.3 of this SE) will be used for locating welds on existing piping and components and new installations. In the event that recordable

indications are to be reported, datum reference markings will be established such that datum points are either marked on the component or have their locations adequately described in the inspection documentation for future re-identification of these locations.

At the time of construction of Indian Point, Unit 2, the ASME Code did not require application of a reference system which included marking of welds before or during the preservice examination. Consequently, the relevant welds were not marked. As an alternative, the licensee established the current reference system for controlling the selection and documentation of datum points. This reference system has been in effect at Indian Point, Unit 2 since the early 1970s for consistency in the recording of data.

The NRC staff notes that similar requests for alternative were submitted in the past for prior ISI intervals for Indian Point, Units 2 and 3 pursuant to 10 CFR 50.55a(a)(3)(i) [now 50.55a(z)(1)] (i.e., the proposed alternatives provide an acceptable level of quality and safety). However, except for the request for alternative that was approved in an SE dated December 3, 2012 (ADAMS Accession No. ML12334A317), all prior similar requests for alternative were authorized pursuant to 10 CFR 50.55a(a)(3)(ii) [now 50.55a(z)(2)] (i.e., 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 the current review, the staff found that, consistent with the conclusion of the December 3, 2012, SE, determining datum for welds in the alternative reference system through clearly defined lines, such as weld centerlines, is clear, simple, and unlikely to cause misinterpretation. Further, considering that the selection of datum points are well documented and future re-identification of these locations is not a problem, the staff determined that using the alternative reference system with derived datum points to report locations of indications is equivalent to using the reference system of marked datum points. Successful use of the alternative reference system is fully demonstrated by the operating experience of Indian Point, Units 2 and 3 since the 1970s.

Based on the above, the NRC staff determined that using the alternative weld reference system is equivalent to using the ASME Code, Section XI required weld reference system, and the proposed alternative provides an acceptable level of quality and safety. Therefore, the proposed alternative shall be authorized pursuant to 10 CFR 50.55a(z)(1) as requested.

4.0 CONCLUSION

The NRC staff has reviewed the submittal regarding the licensee's use of the proposed alternative weld reference system in reporting recordable indications and for revisiting these locations in the future. Based on the evaluation in Section 3.2 of this SE, the staff determined that the licensee's proposed alternative 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 NRC authorizes the licensee's use of the proposed alternative weld reference system during the fifth 10-year ISI interval for Indian Point, Unit 2.

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

Principal Contributor: S. Sheng, NRR/DE/EVIB

Date: July 15, 2016

The NRC staff's safety evaluation is enclosed. Please feel free to contact Douglas V. Pickett at (301) 415-1364 if you have any questions on this issue.

Sincerely,

/RA/ Doug A. Broaddus for

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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