



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

December 3, 2012

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

SUBJECT: RELIEF REQUEST IP2-ISI-RR-15 – PROPOSED ALTERNATIVE TO THE USE
OF A WELD REFERENCE SYSTEM - INDIAN POINT NUCLEAR GENERATING
UNIT NO. 2 (TAC NO. ME8753)

Dear Sir or Madam:

By letter dated May 23, 2012, Entergy Nuclear Operations, Inc., the licensee, submitted Relief Request IP2-ISI-RR-15 to the Nuclear Regulatory Commission (NRC) for the fourth 10-year inservice inspection (ISI) interval at Indian Point Nuclear Generating Unit No. 2 (Indian Point, Unit 2). The licensee requested 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," pertaining to the requirements for marking welds and areas subject to surface and/or volumetric examinations.

The NRC staff has completed its review and has 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 Title 10 of the *Code of Federal Regulations* Section 50.55a(a)(3)(i). Therefore, the NRC authorizes the licensee's use of the proposed alternative weld reference system during the fourth 10-year ISI interval for Indian Point, Unit 2.

Please contact Douglas Pickett at 301-415-1364 if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "George A. Wilson".

George A. Wilson, 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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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST IP2-ISI-RR-15

ENTERGY NUCLEAR OPERATIONS, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

1.0 INTRODUCTION

By letter dated May 23, 2012 (Agencywide Documents Access and Management System Accession No. ML12165A262), Entergy Nuclear Operations, Inc. (Entergy or the licensee) submitted Relief Request IP2-ISI-RR-15 to the Nuclear Regulatory Commission (NRC) for the fourth 10-year inservice inspection (ISI) interval at Indian Point Nuclear Generating, Unit No. 2 (IP2). The licensee requested 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," 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 relief from ASME Code requirements proposed by the licensee. The licensee requested relief pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i).

2.0 REGULATORY EVALUATION

The ISI of ASME Code Class 1, 2, and 3 components is to be performed in accordance with the requirements of Section XI of the ASME Code and applicable editions and addenda as required by 10 CFR 50.55a(g), except where specific relief has been granted by the NRC.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components and their integral attachments must meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI to the extent practical within the limitation of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed in 10 CFR 50.55a(b). The applicable ASME Code of record for the fourth 10-year interval ISI program at IP2 is the 2001 Edition

Enclosure

through the 2003 Addenda of the ASME Code, Section XI. The fourth 10-year interval ISI program at IP2 extends from March 2007 until May 2016.

Pursuant to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraphs (c), (d), (e), (f), (g), and (h) of 10 CFR 50.55a may be authorized by the NRC if the licensee demonstrates that: (i) the proposed alternatives provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee submitted Relief Request IP2-ISI-RR-15 pursuant to 10 CFR 50.55a(3)(i) as an alternative to the requirements of Paragraph IWA-2600 of the ASME Code, Section XI.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Evaluation

3.1.1 Component Identification

Relief Request IP2-ISI-RR-15 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)

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 111-4300 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 during the first, second, and third inspection intervals.

The current code requirements include the establishment of a weld reference system which includes the initial marking of weld joints. At the time of construction of IP2, the application of a reference system which included the marking of welds before or during the preservice examination was not required by the code and, accordingly welds were not marked.

A reference system for controlling the selection and documentation of datum points has been in effect since preservice 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 for the first, second, and third 10-Year Intervals. The locations of indications have been positively identified using the conventions identified above. Therefore, the marking of weld joints is not necessary.

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 used during the first three 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 IP2, the application of a reference system which included the marking of welds before or during the preservice examination was not required by the ASME Code and, accordingly, 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 from one ISI interval to the next since the early 1970's for consistency in the recording of data.

The NRC staff notes that similar relief requests for previous ISI intervals at IP2 were submitted pursuant to 10 CFR 50.55a(a)(3)(i), i.e., the proposed alternatives provide an acceptable level of quality and safety. However, they were authorized via 10 CFR 50.55a(a)(3)(ii), 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. During the current review, the staff finds that 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. Therefore, as long as the selection of datum points are documented, 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. Further, successful use of the alternative reference system is fully demonstrated by the operating experience of Indian Point, Units 2 and 3 since the 1970's. Based on the above, the 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 approval shall be granted pursuant to 10 CFR 50.55a(a)(3)(i) 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(a)(3)(i). Therefore, the staff authorizes the licensee's use of the proposed alternative weld reference system during the fourth 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: Simon Sheng

Date: December 3, 2012

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Sincerely,

/RA/

George A. Wilson, Chief
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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Safety Evaluation

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ADAMS ACCESSION NO.: ML12334A317 *Via email dated November 21, 2012

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