



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

August 22, 2013

Site Vice President  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
P.O. Box 250  
Governor Hunt Road  
Vernon, VT 05354

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION – RELIEF REQUEST ISI-05:  
FIFTH 10-YEAR INSERVICE INSPECTION (ISI) INTERVAL – MAINTAINING  
CERTAIN ISI RELATED ACTIVITIES ON CURRENT 2001 EDITION THROUGH  
2003 ADDENDA OF ASME CODE SECTION XI (TAC NO. MF1194)

Dear Sir or Madam:

By letter dated March 27, 2013 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML13092A204), as supplemented by letters dated June 12 (ADAMS Accession No. ML13169A057) and August 7, 2013 (ADAMS Accession No. ML13224A243), Entergy Nuclear Operations, Inc. (Entergy or the licensee) submitted a request for an alternative for the fifth 10-year inservice inspection (ISI) interval for the Vermont Yankee Nuclear Power Station (VY) to use the current 2001 edition through the 2003 addenda in combination with the 2007 edition through the 2008 addenda of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code for certain ISI activities such as the performance of repair, replacement, pressure testing and nondestructive examination from September 1, 2013, to December 31, 2017.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(i), the licensee requested to use the alternative in Relief Request ISI-05 on the basis that the proposed alternative provides an acceptable level of quality and safety.

The details of the NRC staff review are included in the enclosed safety evaluation. The NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i) and, therefore, is in compliance with the ASME Code requirements. Therefore, the licensee's proposed alternative is authorized in accordance with 10 CFR 50.55a(a)(3)(ii) at VY.

Sincerely,

A handwritten signature in black ink that reads "Douglas V. Beall for".

Robert H. Beall, Acting Branch Chief  
Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure: Safety Evaluation

cc w/enclosure: Distribution via ListServ



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST ISI-05

USE OF ALTERNATIVE EDITION AND ADDENDA OF THE ASME CODE

FIFTH 10-YEAR INSERVICE INSPECTION INTERVAL

VERMONT YANKEE NUCLEAR POWER STATION

ENTERGY NUCLEAR OPERATIONS, INC

DOCKET NO. 50-271

1.0 INTRODUCTION

By letter dated March 27, 2013 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML13092A204), as supplemented by letters dated June 12 (ADAMS Accession No. ML13169A057) and August 7, 2013 (ADAMS Accession No. ML13224A243), Entergy Nuclear Operations, Inc. (Entergy or the licensee) submitted the fifth 10-year inservice inspection (ISI) program for the Vermont Yankee Nuclear Power Station (VY). Included in the submittal is Relief Request ISI-05 which proposes to use the current 2001 edition through the 2003 addenda in combination with the 2007 edition through the 2008 addenda of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for certain ISI activities such as the performance of repair/replacement (R&R), pressure testing (PT) and nondestructive examination (NDE) from September 1, 2013, to December 31, 2017.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(i), the licensee requested to use the proposed alternative in Relief Request ISI-05 on the basis that the alternative provides an acceptable level of quality and safety.

As a result of the NRC staff's request for additional information (RAI), the licensee revised Relief Request ISI-05 as documented in its June 12, 2013 and August 7, 2013, letters.

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(g)(4) states, in part, that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which 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 (or ASME Operation and Maintenance of Nuclear Power Plants Code for snubber examination and testing) that become effective

Enclosure

subsequent to editions specified in paragraphs (g)(2) and (g)(3) of this section and that are incorporated by reference in paragraph (b) of this section [10 CFR 50.55a], to the extent practical within the limitations of design, geometry and materials of construction of the components.

The regulations in 10 CFR 50.55a(g)(4)(ii) require that: "Inservice examination of components and system pressure tests conducted during successive 120-month inspection intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section [10 CFR 50.55a] 12 months before the start of the 120-month inspection interval (or the optional ASME Code cases listed in NRC Regulatory Guide 1.147, Revision 16, when using Section XI; or Regulatory Guide 1.192 when using the OM Code, that are incorporated by reference in paragraph (b) of this section), subject to the conditions listed in paragraph (b) of this section. However, a licensee whose inservice inspection interval commences during the 12 through 18-month period after July 21, 2011 may delay the update of their Appendix VIII program by up to 18 months after July 21, 2011."

Paragraph 10 CFR 50.55a(b)(2) states, in part, that references to Section XI refer to Section XI, Division 1, of the ASME Boiler and Pressure Vessel Code, and include the 1970 Edition through the 1976 Winter Addenda and the 1977 Edition through the 2007 Edition with the 2008 Addenda.

Paragraph 10 CFR 50.55a(a)(3) states, in part, that proposed alternatives to the requirements of 10 CFR 50.55a(g) may be used when authorized by the NRC if the applicant demonstrates that: (i) the proposed alternatives would 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.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request and the NRC staff to authorize the alternative requested by the licensee.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Licensee's Request for Alternative – Relief Request ISI-05

##### 3.1.1 Components Affected

The affected components are ASME Code Class 1, 2, 3, and MC components and component supports. The licensee is required to update the VY 10-year ISI Program to the latest edition and addenda of the ASME Code, Section XI, as specified in 10 CFR 50.55a(b)(2), for the fifth 10-year ISI interval.

##### 3.1.2 Reason for Request and Applicable Code Edition and Addenda

The licensee asked relief from the requirements of 10 CFR 50.55a(b)(2), 10 CFR 50.55a(g)(4), and 10 CFR 50.55a(g)(4)(ii). Specifically, the licensee asked relief from updating the VY ISI program to certain sections of the 2007 edition through the 2008 addenda while maintaining and

performing ISI related activities such as R&R, PT, and NDE to the current ASME Section XI 2001 edition through the 2003 addenda requirements. For the 2007 edition through the 2008 addenda, the licensee will be using articles IWA-2400, -2500, and -2600; articles 1000 and 2000 of IWB, IWC, IWD, IWE, and IWF; and Mandatory Appendix IX. The relief request identifies specific articles to be used from each set of edition and addenda.

Paragraph 10 CFR 50.55a(b)(2) specifies the latest edition and addenda of the ASME Code in the following statement: "...references to Section XI refer to Section XI, Division 1, of the ASME Code, and include the 1970 Edition through the 1976 Winter Addenda, and the 1977 Edition through the 2007 Edition with the 2008 Addenda, subject to the following conditions..."

### 3.1.3 Proposed Alternative and Basis for Use

On September 1, 2013, the licensee will update the VY ISI Program to the fifth ten-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 Section XI, the proposed alternative is to maintain the ISI related activities in compliance with ASME 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 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 VY 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 VY and one for the other ten Entergy nuclear stations.

The licensee explained that maintaining the VY 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 VY. The licensee further explained that this allows leveraging the knowledge from the ten other nuclear stations of ISI related activities to provide VY 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.

### 3.1.4 Duration of Proposed Alternative

The fifth 10-year ISI interval begins on September 1, 2013 and ends on August 31, 2023. However, with eight of its nuclear plants starting new 10-year inservice inspection 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 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 ISI-05 is from September 1, 2013 through December 31, 2017.

The licensee noted that the proposed alternative will affect VY refueling outages 31, 32, and 33 which are scheduled for October 2014, April 2016 and October 2017, respectively.

### 3.2 NRC Staff Evaluation

The NRC staff reviewed three issues of interest: (a) the proposed alternative, (b) the difference in both ASME Codes, and (c) management of two separate Codes of record.

Table, "Proposed ASME Section XI Code of Record for VY," in Enclosure 2 to Relief Request ISI-05 as documented in the licensee's letter dated August 7, 2013, lists the applicable subsections and articles in the dual ASME Codes.

The table includes seven footnotes which are significant because they provide clarifications. Footnote number 1 states that VY will follow all conditions mandated in 10 CFR 50.55a. Footnote number 3 states that VY will follow the conditions imposed on the use of IWA-4540 when performing system leakage tests pursuant to 10 CFR 50.55a. Footnote number 6 clarifies that VY 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. This issue is further discussed below.

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 number 5 clarifies that VY does not have Class CC concrete components; therefore, the requirements of subsection IWL do not apply.

The NRC staff notes that IWF-5000 of the 2001 edition requires that the ISI of snubbers be performed in accordance with the ASME Operation and Maintenance (OM) Code, Part 4. The NRC staff notes that IWF-5000 was initially removed from the 2006 addenda and subsequently the 2007 edition does not contain IWF-5000. Footnote 7 of the table as shown in Enclosure 2 to the August 7, 2013 letter states that as required by 10 CFR 50.55a(b)(3)(v), snubber pre-service and in-service inspection 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 NRC staff finds 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.

In its RAI letter dated April 29, 2013 (ADAMS Accession No. ML13119A246), the NRC staff questioned which edition and addenda of the ASME Code, Section XI, will the non-mandatory appendices be used. In the June 12, 2013, letter, the licensee explained that the use of the

non-mandatory appendices will be based on the applicable articles of the edition and addenda of the Code (Code of Record) indicated in the table in Attachment 1 to Relief Request ISI-05. For example, if one wanted to obtain guidance for preparing a surface or nondestructive examination, IWA-2200 refers non-mandatory Appendix D for that guidance. The table in the relief request directs use of IWA-2200 from the 2001 edition through the 2003 addenda for requirements applicable to, in this case, examination methods. Therefore, Appendix D from the 2001 edition through 2003 addenda would be used as opposed to Appendix D from the 2007 edition through 2008 addenda.

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 NRC staff finds that the table and associated footnotes satisfy 10 CFR 50.55a.

The NRC staff noted that when two sets of ASME Code editions (including addenda) are available for use, a licensee may selectively apply the less conservative requirements from one of the two NRC-approved Code editions. 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 (PWR)) 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 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 in VY, 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 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.

In the June 12, 2013 letter, the licensee explained that it does not intend to apply the IWB-3514 acceptance standards of the 2001 edition through 2003 addenda to planar surface flaws in UNS N06600 (Alloy 600), N06682 (Alloy 82), or W86182 (Alloy 182) materials or austenitic stainless steels which are subject to stress corrosion cracking. 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 licensee noted that this position is consistent with its existing commitments in the VY Intergranular Stress Corrosion Cracking Program for implementing NRC Generic Letter 88-01. The licensee has added footnote number 6 to the table in Relief Request ISI-05. The NRC staff finds footnote number 6 is acceptable because the proposed approach to disposition flaws detected in nickel-based Alloy 600/82/182 and austenitic stainless steel metal is more conservative than the provisions in the 2001 edition.

In its RAI, the NRC staff also questioned how the dual ASME Code editions and addenda for the ISI program is tracked in terms of the plant documents such as Technical Specifications,

Updated Final Safety Analysis, administrative controls, and plant procedures. In the June 12, 2013 letter, the licensee responded that VY presently selects, plans, and schedules the performance of ISI examinations and tests in accordance with the 1998 edition through 2000 addenda of ASME Section XI. While this is the case, ASME Section XI repair/replacement, pressure testing, and NDE activities are performed in accordance with the 2001 edition through 2003 addenda. This dual use of Code editions and addenda was approved by the NRC in a safety evaluation dated April 30, 2009 (ADAMS Accession number ML091170111). The dual Code editions and/or addenda proposed in Relief Request ISI-05 are identical to those previously approved by the NRC in April 2009 and presently implemented at VY with one exception. The selection, planning, and scheduling of ISI examinations/tests will be performed in accordance with the 2007 edition through the 2008 addenda instead of the 1998 edition through the 2000 addenda of ASME Section XI. Therefore, a process for tracking and monitoring the implementation of dual Code editions and addenda of ASME Section XI already exists at VY.

Based on above, the NRC staff finds that the licensee has acceptable process controls to manage, track and control two sets of the ASME Code appropriately at VY.

In summary, the NRC staff finds that Relief Request ISI-05 as documented in the licensee's letter dated August 7, 2013 provides necessary information as to which article in which edition and addenda of the ASME Code that will be applicable to the ASME Code Class 1, 2, 3 and MC components and component supports. The NRC staff determines that approval of later editions and addenda of the ASME Section XI Code in 10 CFR 50.55a does not make earlier editions and addenda of the ASME Code unsafe because the NRC staff has also approved the earlier edition and addenda with conditions in 10 CFR 50.55a. The NRC staff finds that the proposed alternative are acceptable because the licensee will follow the requirements in the 2001 edition through the 2003 addenda and the 2007 edition through the 2008 addenda of the ASME Code to maintain the plant safety.

### 3.3 NRC Staff Conclusion

As set forth above, the NRC staff has determined that Relief Request ISI-05 as documented in the licensee's letter dated March 27, 2013, as supplemented on June 12, 2013, and August 7, 2013, provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i), and is in compliance with the requirements of the ASME Code, Section XI, for which the relief was not requested. Therefore, the NRC staff authorizes the use of Relief Request ISI-05 for the Vermont Yankee Nuclear Power Station from September 30, 2013, to December 31, 2017.

All other requirements of 10 CFR 50.55a and ASME Code, Section XI, for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: John Tsao

Date: August 22, 2013

August 22, 2013

Site Vice President  
Entergy Nuclear Operations, Inc.  
Vermont Yankee Nuclear Power Station  
P.O. Box 250  
Governor Hunt Road  
Vernon, VT 05354

**SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION – RELIEF REQUEST ISI-05:  
FIFTH 10-YEAR INSERVICE INSPECTION (ISI) INTERVAL – MAINTAINING  
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The details of the NRC staff review are included in the enclosed safety evaluation. The NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i) and, therefore, is in compliance with the ASME Code requirements. Therefore, the licensee's proposed alternative is authorized in accordance with 10 CFR 50.55a(a)(3)(ii) at VY.

Sincerely,

Robert H. Beall, Acting Branch Chief  
Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure: Safety Evaluation

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**\*Memo Dated 8/13/2013**

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