



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

July 14, 2009

Mr. Charles Pardee  
President and Chief Nuclear Officer  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1, REQUEST TO USE  
LATER ADDENDA TO AMERICAN SOCIETY OF MECHANICAL ENGINEERS  
BOILER AND PRESSURE VESSEL CODE, SECTION XI (TAC NO. ME0807)

Dear Mr. Pardee:

By letter dated March 6, 2009 (Agencywide Documents Access and Management System Accession No. ML090680140), Exelon Generation Company, LLC (the licensee) submitted a request to use a provision of a later addenda to the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI, requirements for Three Mile Island, Unit No. 1 (TMI-1). Specifically, the licensee requested to use the ASME Code, Section XI, 1995 edition including addenda through 1997, paragraph IWA-4461 for a planned modification involving a pressurizer thermowell. The current ASME Section XI code of record for TMI-1 is the 1995 edition, including the 1996 addenda. Paragraph IWA-4461, contains provisions for alternatives to mechanical metal removal subsequent to the application of a thermal metal removal process. The licensee submitted the request to use a later code addenda in accordance with Title 10 of the *Code of the Federal Regulations*, Part 50, paragraph 50.55a(g)(4)(iv). The Nuclear Regulatory Commission staff found the request to be acceptable and approves the use of the ASME Code, Section XI, 1995 edition, including addenda through 1997, paragraph IWA-4461, for the proposed project.

If you have any questions, please contact the TMI-1 Project Manager, Mr. Peter J. Bamford, at 301-415-2833.

Sincerely,

A handwritten signature in black ink, appearing to read "Harold K. Chernoff", written over a white background.

Harold K. Chernoff, Chief  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure: As stated

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

USE OF LATER ASME CODE SECTION XI ADDENDA

FOR THERMAL REMOVAL PROCESSES

EXELON GENERATION COMPANY, LLC

THREE MILE ISLAND NUCLEAR STATION, UNIT 1

DOCKET NO. 50-289

1.0 INTRODUCTION

By letter dated March 6, 2009 (Agencywide Documents Access and Management System Accession No. ML090680140) Exelon Generation Company, LLC (the licensee) requested to use a provision of a later addenda than the current code of record for the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI, at Three Mile Island, Unit No. 1 (TMI-1). Specifically, the licensee requested to use the ASME Code, Section XI, 1995 edition including addenda through 1997, paragraph IWA-4461 for a planned modification involving a pressurizer thermowell. This request relates to a project to modify the current Alloy 600/82/182 thermowell and install a new equivalent thermowell at another location on the TMI-1 pressurizer. Paragraph IWA-4461 in the ASME Code, Section XI, 1997 addenda contains provisions for alternatives to mechanical metal removal subsequent to thermal metal removal processes. In particular, subparagraph IWA-4461.4 provides requirements for qualification of thermal removal processes as an alternative to mechanical processing of thermally cut surfaces.

The licensee submitted the request to use a portion of a later ASME Code addenda, to support the modification activity described above, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(g)(4)(iv), which governs requirements for the use of later ASME code editions and addenda. The Nuclear Regulatory Commission (NRC or Commission) clarified the scope of 10 CFR 50.55a(g)(4)(iv) in Regulatory Issue Summary (RIS) 2004-12, *Use of Later Editions and Addenda to the ASME OM Code and Section XI*, dated July 28, 2004 and in RIS 2004-16, *Use of Later Editions and Addenda to ASME Code Section XI for Repair/Replacement Activities*, dated October 19, 2004. These two documents state that licensees who wish to use provisions of subsequent editions and addenda of the ASME Code, Section XI, for inservice inspection activities, including repairs, replacements and modifications, must receive prior NRC approval as required by 10 CFR 50.55a(g)(4)(iv).

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, *Rules for Inservice Inspection of Nuclear Power Plant Components*, to the extent practical within the limitations of design, geometry, and materials of construction of the components. Paragraph 50.55a(g)(4)(ii) of 10 CFR requires that inservice examination of components and system pressure tests conducted

during successive 120-month inspection intervals must comply with the requirements in the latest edition and addenda of the ASME Code, Section XI 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 therein.

The repair, replacement, and modification of plant components are not explicitly mentioned in 10 CFR 50.55a(g)(4) and associated subparagraphs. However, these activities are specifically mentioned in the ASME Code, Section XI. The NRC staff maintains that these activities are not separate and distinct from, but are included under, inservice examinations, as described in RIS 2004-16. Therefore, the requirements of 10 CFR 50.55a(g)(4)(iv) are applicable to repair, replacement and modification activities.

Paragraph 50.55a(g)(4)(iv) of 10 CFR states that inservice examination of components and system pressure tests may meet the requirements set forth in subsequent editions and addenda of the ASME Code provided that they are incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed in 10 CFR 50.55a(b), and subject to Commission approval. Further, 10 CFR 50.55a(g)(4)(iv) requires that portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met. Currently, 10 CFR 50.55a(b)(2) incorporates, by reference, the ASME Code, Section XI from the 1970 edition through the 1976 winter addenda, and the 1977 edition through the 2004 edition.

### 3.0 TECHNICAL EVALUATION

#### 3.1 ASME Code Component Affected

ASME Code Class 1, Pressurizer Thermowell

#### 3.2 Applicable Code Edition and Addenda

Repair, replacement and modification activities at TMI-1 are currently performed in accordance with the 1995 edition through 1996 addenda of the ASME Code, Section XI. The third 120-month inservice inspection interval at TMI-1 commenced on April 20, 2001, and will end on April 19, 2011.

#### 3.3 Description of Proposed Request

##### 3.3.1 Background

The licensee currently performs repair, replacement, and modification activities in accordance with the 1995 edition through 1996 addenda of ASME Code, Section XI. However, article IWA-4000 in the 1995 edition through 1996 addenda does not contain rules for qualifying thermal removal processes, such as electrodischarge machining (EDM) that can be used without mechanical processing of thermally cut surfaces. Subparagraph IWA-4611.2 (predecessor to IWA-4461) of the 1995 edition through 1996 addenda of ASME Code, Section XI requires mechanical removal of metal subsequent to thermal metal removal for repair, replacement and modification processes, including EDM. The 1997 addenda to the 1995 edition of the ASME Code, Section XI contains the rules applicable to thermal removal processes for all repair, replacement and modification activities. The 1997 addenda also contains rules that exempt mechanical processing of thermally cut surfaces provided the thermal removal process is qualified in accordance with subparagraph IWA-4461.4 of the ASME Code, Section XI.

### 3.3.2 Proposed Subsequent Code Edition and Addenda

Pursuant to 10 CFR 50.55a(g)(4)(iv), the licensee requested permission to use paragraph IWA-4461 in the 1997 addenda to the 1995 edition of ASME Code, Section XI. Subparagraph IWA-4461.4 provides rules for qualifying thermal removal processes as an alternative to mechanical processing of thermally cut surfaces. The NRC approved the use of the 1997 addenda to the 1995 edition as documented in 10 CFR 50.55a(b)(2) with no limitations, conditions, or modifications on paragraph IWA-4461.

### 3.3.3 Related Requirements

Subparagraph IWA-4461.4 of the 1997 addenda to the 1995 edition specifies rules for qualification of a thermal removal process as an alternative to mechanical processing of thermally cut surfaces. Subparagraph IWA-4461.4 states that "Mechanical processing of thermally cut surfaces for materials identified in IWA-4461.2 and IWA-4461.3 is not required when using a thermal removal process qualified as follows..."

Because subparagraph IWA-4461.4 is an alternative to mechanical processing of thermally cut surfaces for the materials identified in subparagraphs IWA 4461.2 and IWA 4461.3, it is only applicable to P-number 3, 4, 5, 6, 7, 8, 9, 10, 11A, and 43 materials; it cannot be applied to P-number 1 materials of subparagraph IWA-4461.1. Any thermal processing of P-number 1 materials is subject to the requirements of subparagraph IWA-4461.1. This is a related requirement.

Since the licensee has identified that it will invoke the entire paragraph IWA-4461 in the 1997 addenda to the 1995 edition of the ASME Code, the licensee must also apply this related requirement.

The NRC prohibition on "evaluation of thermally cut surfaces" in 10 CFR 50.55a(b)(2)(xxiii) does not apply to the qualification alternative of IWA-4461.4. Rather, this NRC prohibition applies to subparagraph IWA-4461.4.2, "Evaluation of Thermally Cut Surfaces," which was not included in the ASME Code, Section XI until the 2001 edition.

### 3.4 Duration of Proposed Request

This request will remain in effect for the duration of the project to modify the existing pressurizer thermowell and install a new pressurizer thermowell that is planned for the fall 2009 refueling outage at TMI-1.

### 3.5 NRC Staff Evaluation Summary

The NRC staff evaluated the licensee's request to use a later ASME Code edition and addenda using the criteria contained in 10 CFR 50.55a(g)(4)(iv), which states that inservice examination of components and system pressure tests may meet the requirements set forth in subsequent editions and addenda of the ASME Code provided certain criteria are satisfied.

The first criterion is that the edition and addenda of the ASME Code, Section XI that will be used in the proposed request is incorporated by reference in 10 CFR 50.55a(b). Currently, 10 CFR 50.55a(b)(2) incorporates by reference the ASME Code, Section XI from the 1970 edition through the 1976 winter addenda, and the 1977 edition (Division 1) through the 2004 edition (Division 1), which includes the 1997 addenda to the 1995 edition of the ASME Code, Section XI

that was proposed by the licensee. Therefore, the NRC staff finds that the first criterion has been satisfied.

The second criterion is that the limitations and modifications listed in 10 CFR 50.55a(b) are satisfied for the specific use of the proposed subsequent edition and addenda of the ASME Code, Section XI. Paragraph 50.55a(b) of 10 CFR sets no limitations and modifications on paragraph IWA 4461 of the 1997 addenda to the 1995 edition of the ASME Code, Section XI. Therefore, the NRC staff finds that the second criterion has been satisfied.

The third criterion is that if portions of subsequent editions or addenda of the ASME Code, Section XI are used, all related requirements of the respective editions or addenda must be met. The NRC staff is satisfied that the licensee has listed and will follow all related requirements in paragraph IWA-4461 of the 1997 addenda to the 1995 edition of the ASME Code, Section XI that are relevant to the stated activities, as described in Section 3.3.3 of this safety evaluation. Therefore, the NRC staff finds that the third criterion has been satisfied.

Based on the above, the NRC staff finds that the criteria of 10 CFR 50.55a(g)(4)(iv) are satisfied and that the licensee's request to use the 1997 addenda to the 1995 edition of the ASME Code, Section XI for the specified activities is acceptable.

#### 4.0 CONCLUSION

On the basis of evaluating the information submitted, the NRC staff concludes that the proposed request to use a portion of a later ASME Code edition and addenda is acceptable and authorizes the use of paragraph IWA-4461 of the 1997 addenda to the 1995 edition of the ASME Code, Section XI for the duration of the project to modify the existing pressurizer thermowell and install a new thermowell on the pressurizer. This installation is planned for the fall 2009 refueling outage at TMI-1.

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

Principal Contributors:           E. Andruszkiewicz  
  P. Bamford

Date: July 14, 2009

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Mr. Charles Pardee  
President and Chief Nuclear Officer  
Exelon Nuclear  
4300 Winfield Road  
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If you have any questions, please contact the TMI-1 Project Manager, Mr. Peter J. Bamford, at 301-415-2833.

Sincerely,  
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Harold K. Chernoff, Chief  
Plant Licensing Branch I-2  
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