



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

November 1, 2017

Mr. Peter P. Sena, III  
President and Chief Nuclear Officer  
PSEG Nuclear LLC - N09  
P.O. Box 236  
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NO. 1 – USE OF A  
LATER EDITION OF THE ASME BOILER AND PRESSURE VESSEL  
CODE, SECTION XI, FOR INSERVICE INSPECTION ACTIVITIES  
(EPID L-2017-LRO-0048)

Dear Mr. Sena:

By letter dated October 27, 2017 (Agencywide Documents Access and Management System Accession No. ML17300B457), PSEG Nuclear LLC (the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for use of the American Society of Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 2007 Edition with the 2008 Addenda, in lieu of the 2004 Edition, no addenda, for the inspection of primary containment structures at Salem Nuclear Generating Station (Salem), Unit No. 1.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, 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(g)(4)(iv). Therefore, the NRC staff approves the licensee's request to use ASME Code, Section XI, 2007 Edition through the 2008 Addenda for paragraph IWE-2200(c) and Article IWE-5000, at Salem, Unit No. 1, for the remainder of the second 10-year containment inservice inspection interval (scheduled to be completed on April 21, 2020).

If you have any questions, please contact the Salem Project Manager, Carleen Parker, at 301-415-1603 or by e-mail to [Carleen.Parker@nrc.gov](mailto:Carleen.Parker@nrc.gov).

Sincerely,

A handwritten signature in cursive script that reads "James G. Danna".

James G. Danna, Chief  
Plant Licensing Branch I  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-272

Enclosure:  
Safety Evaluation

cc w/Enclosure: Distribution via Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
REQUEST FOR APPROVAL TO USE A LATER EDITION OF THE ASME CODE SECTION XI  
FOR INSERVICE INSPECTION ACTIVITIES  
PSEG NUCLEAR LLC  
EXELON GENERATION COMPANY, LLC  
SALEM NUCLEAR GENERATING STATION, UNIT NO. 1  
DOCKET NO. 50-272

1.0 INTRODUCTION

By letter dated October 27, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17300B457), PSEG Nuclear LLC (PSEG or the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC or the Commission) for use of the American Society of Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code), Section XI, 2007 Edition with the 2008 Addenda, in lieu of the 2004 Edition, no addenda, for the inspection of primary containment structures at Salem Nuclear Generating Station (Salem), Unit No. 1. Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(4)(iv), PSEG requested to use the later edition of paragraph IWE-2200(c) and Article IWE-5000 for the remainder of the current containment inservice inspection (CISI) interval.

The current ASME Code of record for the second 10-year CISI interval at Salem, Unit No. 1, is the 2004 Edition, no addenda. The second CISI interval for Salem, Unit No. 1, began on April 22, 2010, and is currently scheduled to end on April 21, 2020.

As noted in NRC Regulatory Issue Summary 2004-12, "Clarification on Use of Later Editions and Addenda to the ASME OM Code and Section XI" (ADAMS Accession No. ML042090436), licensees seeking to use later approved editions and addenda of the ASME Code, Section XI, pursuant to 10 CFR 50.55a(f)(4)(iv) or 10 CFR 50.55a(g)(4)(iv), are not required to request an alternative pursuant to 10 CFR 50.55a(a)(3) (now 10 CFR 50.55a(z)), or to request relief pursuant to 10 CFR 50.55a(f)(5)(iv) or 10 CFR 50.55a(g)(5)(iv).

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(a) and 10 CFR 50.55a(a)(1)(ii), the ASME Code, Section XI, from the 1970 Edition through the 1976 Winter Addenda, and the 1977 Edition through the 2007 Edition with the 2008 Addenda, have been approved for incorporation by reference, but limited to those provisions identified in paragraph (b)(2) of 10 CFR 50.55a.

Enclosure

Pursuant to 10 CFR 50.55a(g)(4)(iv), inservice examination of components and system pressure tests may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (a) of 10 CFR 50.55a, subject to the conditions listed in paragraph (b) of 10 CFR 50.55a, and subject to Commission approval. Portions of editions or addenda may be used, provided that all related requirements of the respective editions or addenda are met.

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 to approve the use of subsequent editions and addenda of the ASME Code as requested by the licensee.

### 3.0 TECHNICAL EVALUATION

#### 3.1 PSEG's Request

PSEG identified four containment liner locations that require repair or evaluation for continued operation during the ongoing Salem, Unit No. 1, 25<sup>th</sup> refueling outage (S1R25). Additional containment liner examinations are currently in progress. PSEG states that the examinations conducted to date identified areas of wall thickness degradation as a result of corrosion on the inside of the containment liner plates (outside of the liner is concrete). PSEG further states that the current repair plans consist of weld repairs followed by required non-destructive examination (NDE) in accordance with the ASME Code, Section XI.

Paragraph IWE-5221 of the 2004 Edition of ASME Section XI requires a pneumatic leakage test for repair/replacement activities performed on the pressure retaining boundary of Class MC or Class CC components. Subarticle IWE-5240 states, "During the pressure test required by IWE-5220, a detailed visual examination (IWE-2310) shall be performed on areas affected by the repair/replacement activities."

PSEG further states that if a pneumatic leakage test is performed on the repaired areas, the test rig will make the containment liner internal surface areas affected by the repair activities inaccessible for direct visual examination during the pneumatic leakage test. Therefore, the requirements of IWE-5240 from the 2004 Edition of ASME Section XI cannot be met.

Paragraph IWE-2200(c) and subarticle IWE-5240 of the 2007 Edition with the 2008 Addenda of ASME Section XI allow performance of the visual examinations upon completion of the pneumatic leakage test. PSEG states that following completion of any pneumatic leakage tests, the test rig will be removed, allowing visual examination of the repaired containment liner surfaces. Therefore, PSEG could meet the requirements of the 2007 Edition with the 2008 Addenda of Section XI.

As a result, PSEG proposed to use Article IWE-5000 and paragraph IWE-2200(c) of the ASME Code, Section XI, 2007 Edition with the 2008 Addenda, subject to the conditions in 10 CFR 50.55a(b)(2), in lieu of the requirements of Article IWE-5000 of the ASME Code, Section XI 2004 Edition, for system pressure tests of the primary containment structures. PSEG plans on using the proposed later Code edition and addenda during the current Salem, Unit No. 1, refueling outage (S1R25).

PSEG also notes that IWE-5224 of the 2007 Edition with the 2008 Addenda of Section XI allows a bubble test–vacuum box technique to be performed as an alternative to the requirements for a pneumatic leakage test for repair/replacement activities performed by welding on metallic shell

and penetration liners of Class CC components and on non-structural pressure-retaining metallic liners of Class MC components embedded in concrete. PSEG states that the vacuum box test can be performed with lower potential for damage to the containment liner associated with attaching and removing a pneumatic leakage test rig.

PSEG states in its October 27, 2017, letter that it will meet all the requirements referenced in the 2007 Edition with the 2008 Addenda of Section XI of Article IWE-5000 and paragraph IWE-2200(c).

### 3.2 NRC Staff Evaluation

The NRC staff evaluated PSEG's request 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 that:

1. The proposed edition/addendum of the ASME Code is incorporated by reference in 10 CFR 50.55a(a).
2. The proposed edition/addendum of the ASME Code is subject to the conditions listed in 10 CFR 50.55a(b).
3. The licensee shall request Commission approval to use the proposed edition/addendum of the ASME Code.
4. If only portions of editions or addenda are to be used, all related requirements of the respective editions or addenda must be met.

In evaluating the first criterion, the NRC staff notes that 10 CFR 50.55a(a) incorporates by reference ASME Code, Section XI, 2007 Edition through 2008, as published in the *Federal Register* on June 21, 2011 (76 FR 36232), and which became effective July 21, 2011. Therefore, the NRC finds that the first criterion has been satisfied.

In evaluating the second criterion, the NRC staff notes that 10 CFR 50.55a(b)(2) sets a condition on a repair/replacement activity in lieu of the requirements of ASME Section XI, 2004 Edition, Article IWE-5000, for system pressure tests of the primary containment structures. PSEG plans on using the proposed later Code edition and addenda for the remainder of the second 10-year CISI interval. PSEG has acknowledged that it will comply with all applicable provisions of 10 CFR 50.55a(b). Therefore, the NRC staff finds that the second criterion has been satisfied.

In evaluating the third criterion, the NRC staff notes that PSEG's October 27, 2017, submittal constitutes a request to the Commission for approval to use a subsequent edition/addendum of the ASME Code. Therefore, the NRC staff finds that the third criterion has been satisfied.

In evaluating the fourth criterion, PSEG acknowledges that it will comply with all related requirements of the 2007 Edition through 2008 Addenda of Section XI. The NRC staff is satisfied that PSEG will meet the requirements of ASME Code, Section XI, 2007 Edition, with the 2008 Addenda, paragraph IWE-2200(c), and Article IWE-5000. Therefore, the NRC staff finds that the fourth criterion has been satisfied.

Based on the above, the NRC staff finds that PSEG has satisfied each of the four criteria of 10 CFR 50.55a(g)(4)(iv) in its request to use Article IWE-5000 and paragraph IWE-2200(c) of the ASME Code, Section XI, 2007 Edition with 2008 Addenda, in lieu of the 2004 Edition, no addenda for the inspection of primary containment structures.

The NRC staff also notes that PSEG proposed to use paragraph IWE-2200(c) and subarticle IWE-5240 of the 2007 Edition with the 2008 Addenda of the ASME Code, Section XI, to perform a pressure test after repairing the containment liner during the current outage. The NRC staff finds that the licensee would not be able to perform the required visual examination during the pressure test as required by subarticle IWE-5240 of the 2004 Edition of the ASME Code, Section XI.

The NRC staff recognizes that paragraph IWE-2200(c) and subarticle IWE-5240 of the 2007 Edition with the 2008 Addenda of the ASME Code, Section XI, would permit a visual examination following the pressure test and the PSEG has stated that they can meet this requirement.

In addition, PSEG may utilize paragraph IWE-5224 of the 2007 Edition with the 2008 Addenda of the ASME Code, Section XI, for this outage. This paragraph allows a bubble test–vacuum box technique to be performed as an alternative to the requirements for a pneumatic leakage test for repair/replacement activities as specified in the 2004 Edition of the Code.

The NRC staff finds that the proposed pressure test and associated visual examination are acceptable for the ongoing containment liner repair work.

#### 4.0 CONCLUSION

As set forth above, the NRC staff determines that the use of ASME Code, Section XI, 2007 Edition with the 2008 Addenda, for the inspection of primary containment structures is acceptable. Accordingly, the NRC staff concludes that PSEG has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(4)(iv) and is in compliance with the requirements of the ASME Code, Section XI. Therefore, the NRC staff approves the use of Article IWE-5000 and paragraph IWE-2200(c) of the 2007 Edition with the 2008 Addenda of the ASME Code, Section XI, for the inspection of primary containment structures for the remainder of the second CISI interval at Salem, Unit No 1, which is scheduled to end on April 21, 2020.

Principal Contributor: Dan Hoang

Date: November 1, 2017

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NO. 1 – USE OF A LATER EDITION OF THE ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI, FOR INSERVICE INSPECTION ACTIVITIES (EPID L-2017-LRO-0048) DATED NOVEMBER 1, 2017

**DISTRIBUTION:**

Public	RidsRgn1MailCenter Resource
RidsACRS_MailCTR Resource	RidsNrrDmlrMphb Resource
RidsNrrDorlLpl1 Resource	RidsNrrLALRonewicz Resource
RidsNrrDeEseb Resource	RidsNrrPMSalem Resource
RidsNrrLALRonewicz Resource	DHoang, NRR
JTsao, NRR	

**ADAMS Accession No.: ML17304A943**

\*via email

OFFICE	DORL/LPL1/PM	DORL/LPL1/LA	DE/ESEB/BC*	DMLR/MPHB/BC	DORL/LPL1/BC
NAME	CParker	LRonewicz	BWittick	DAlley (JTSAO for)	JDanna
DATE	11/01/2017	10/31/2017	11/01/2017	11/01/2017	11/01/2017

**OFFICIAL RECORD COPY**