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

June 28, 2012

Mr. Kevin Walsh
Site Vice President
c/o Michael O'Keefe
Seabrook Station
NextEra Energy Seabrook, LLC
P.O. Box 300
Seabrook, NH 03874

SUBJECT: SEABROOK STATION, UNIT 1 - REQUEST FOR RELIEF 3IR-2 FOR PRESSURIZER SUPPORTS (TAC NO. ME7258)

Dear Mr. Walsh:

By letter dated September 26, 2011, NextEra Energy Seabrook, LLC (NextEra or licensee) submitted request for relief 3IR-2 for the third 10-year inservice inspection (ISI) interval program at the Seabrook Station, Unit 1 (Seabrook) from certain examination requirements of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code). Specifically, the licensee requested relief from the ASME Code, Section XI requirements for the pressurizer vessel welded attachments and component supports. The request is for the remainder of the third 10-year ISI interval.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided by the licensee in support of the request for relief. The NRC staff concludes that the ASME Code requirements result in a hardship without a compensating increase in quality and safety and the proposed alternatives provide reasonable assurance of structural integrity. The licensee's proposed alternatives are authorized pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(a)(3)(ii) for the remainder of the third 10-year ISI interval.

The NRC staff's evaluation and conclusions are contained in the enclosed safety evaluation. This completes the NRC staff's efforts on TAC No. ME7258.

If you have any questions, please contact John G. Lamb at 301-415-3100 or via e-mail at John.Lamb@nrc.gov.

Sincerely,

Meena Khanna, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF 3IR-2

NEXTERA ENERGY SEABROOK, LLC

SEABROOK STATION, UNIT 1

DOCKET NO. 50-443

1.0 INTRODUCTION

By letter dated September 26, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11277A269), NextEra Energy Seabrook, LLC (NextEra or licensee), pursuant to paragraph 50.55a(a)(3)(ii) of Title 10 of the *Code of Federal Regulations* (10 CFR), submitted request for alternative 3IR-2 at Seabrook Station, Unit 1 (Seabrook). The licensee submitted a relief request from certain examination requirements of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code) at Seabrook. Specifically, the licensee requested relief from the ASME Code, Section XI requirements for the pressure vessel welded attachments and component supports. The request is for the remainder of the third 10-year inservice inspection (ISI) interval which began August 19, 2010, and is scheduled to end on August 18, 2020.

2.0 REGULATORY EVALUATION

10 CFR 50.55a(g), "Inservice inspection requirements," requires, in part, that ASME Class 1, 2, and 3 components must meet the inspection examination requirements set forth in the applicable editions and addenda of the ASME Code, except where alternatives have been authorized by the U.S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(a)(3)(i) or (a)(3)(ii).

10 CFR 50.55a(a)(3) states, in part, that alternatives to the requirements of paragraph (g) may be 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. The Code of Record for the third 10-year ISI interval at Seabrook is the 2004 Edition of the ASME Code, Section XI.

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 Commission to grant the relief requested by the licensee.

Enclosure

3.0 TECHNICAL EVALUATION

3.1 Affected Components

System: Reactor Coolant (RC)

ISI Component ID:
RC-E-10-A-LUG and associated support
RC-E-10-B-LUG and associated support
RC-E-10-C-LUG and associated support
RC-E-10-D-LUG and associated support

The components covered under this relief request are Category FA, Item number F 1.40 Class 1 pressurizer support lugs. The support lugs are designated RC E-10 A-LUG Support, RC E-10 B-LUG Support, RC E-10 C-LUG Support, and RC E-10 D-LUG Support by the licensee.

3.2 Applicable Code

The ISI Code of Record for Seabrook Unit 1 for the third 10-year ISI interval is the 2004 Edition. This relief request covers the third 10-year inspection interval which began on August 19, 2010, and is scheduled to end on August 18, 2020.

ASME Code, Section XI, 2004 Edition, Table IWF-2500-1, Category F-A, Item F1.40, *Supports other than Piping,* requires a VT-3 visual examination of mechanical connections back to the building structure.

3.3 Licensee Proposed Alternatives (as stated)

No alternate examinations for the pressurizer supports are proposed.

The unusually difficult normal and emergency access/egress needed inside this highly restricted enclosure to remove insulation to perform the VT-3 visual examinations would result in unusual difficulty without a compensating increase in quality and safety.

A likely failure mechanism of these supports would involve a transient or seismic activity, which could impose rotational forces on the pressurizer. Attached lugs that exist between these supports could impart forces on the supports from a transient or seismic event. There has been no documented seismic event or transient affecting the pressurizer. Therefore, the most probable failure mechanism that could occur to the subject supports would be corrosion of the supports. Visual examinations (VT-3) of other accessible components within the pressurizer cubicle have shown no evidence of corrosion.

These supports are subject to VT-2 visual examination as part of the system leakage test on the pressurizer vessel conducted each refueling outage, as specified in Table IWB-2500-1, Examination Category B-P of the 2004 Edition of

ASME Section XI. As part of the visual examination, VT-2 examiners physically enter the elevation just below the pressurizer ventilation ductwork (0'), and observe the area for evidence of leakage, corrosion and boric acid that may be indicative of corrosion and wear of the subject supports. Based on acceptable results of the VT-2 visual examinations performed during system leakage tests, there is reasonable assurance of continued structural integrity of the subject supports.

3.4 Licensee Basis for the Alternative (as stated)

Pursuant to 10 CFR 50.55a(a)(3)(ii), relief is requested from performing the VT-3 visual examination of the four pressurizer supports on the basis that meeting the Code requirement presents unusual difficulty.

A 15" thick concrete shield wall weighing approximately 85,000 pounds surrounds the NextEra pressurizer approximately three quarters of the way around. The clearance between the shield wall and the pressurizer vessel with insulation is approximately 12", with less clearance at the top cubicle opening due to structural steel. The north end of the cubicle has greater vessel to shield wall clearance, but this is where safety valve piping and spray piping run. Ladders or platforms do not exist to make the examination area accessible nor can any ladders be placed due to restrictions by piping, conduit and other attachments.

The pressurizer lugs are located on the pressurizer at elevation 23'-6". Potential access is gained from either above the lugs or from below. Potential access from above is gained by climbing a ladder on the outside of the shield wall at elevation 25' and entering the cubicle at the top of the pressurizer at elevation 50'. At the top of the pressurizer, safety valve structural steel is used for footing as no platform exists in the cubicle. Access from the top must be made from the north side of the cubicle where the pressurizer to shield wall distance is greatest (see Section A-A of Figure 31R-2-2). From this location it is approximately 26'-6" to the lug elevation. There is no installed ladder within the pressurizer cubicle to allow for normal access and egress to the lug elevation from the top (see Figure 31R-2-2). The elevation distance, amount of obstructions and attachments, and insulation renders remote visual equipment unusable. From below, lug access is not achievable due to a permanent ventilation duct that encircles the pressurizer (See Figure 31R-2-1) [See NextEra's letter dated September 26, 2012].

3.5 NRC Staff Evaluation

The licensee requested relief pursuant to 10 CFR 50.55a(a)(3)(ii) for ASME Code, Section XI, Examination Category F-A, *Supports.*

Addressing the requirements in ASME Code, Section XI, Examination Category B-K, *Integral Welded Attachments,* the licensee noted that it is a hardship to access RC-E-1 0-A-LUG, RC-E10-B-LUG, RC-E-10-C-LUG, and RC-E-10-D-LUG based on the design of the pressurizer

cubicle. As shown in the drawings provided in the licensee's application, the pressurizer cubicle is designed with a concrete shield wall that is 15 inches thick that surrounds the pressurizer vessel with only a 12-inch clearance between the shield wall and the pressurizer vessel and insulation. Although there is a larger clearance on the north end of the pressurizer cubicle, there is safety and spray valve piping blocking access to the subject integral attachment welds. In addition, there are no ladders or platforms in the area for the licensee to gain access to the subject welded attachments and associated supports located at the elevation of 23 feet-6 inches. A permanent ventilation duct that encircles the pressurizer below the attachments and associated supports blocks access from below. The licensee considered using remote visual equipment; however, due to the lack of space and interferences, remote verification could not be performed. Therefore, based on the provided drawings of the pressurizer cubicle area and the description of the pressurizer cubicle access difficulties, the NRC staff has determined that requiring the licensee to perform the ASME Code-required examinations would be a hardship without a compensating increase in quality and safety.

As an alternative to the ASME Code-required surface examinations, the licensee proposed that they take credit for the VT-2 visual examination performed as part of the system leakage test on the pressurizer vessel conducted each refueling outage, as specified in Table IWB-2500-1, Examination Category B-P, to ensure the integrity of the subject welded attachments. The NRC staff has determined that since the subject welded attachments are not under load during normal operation, but are designed only to limit radial movement during a seismic event, the VT-2 visual examinations provide reasonable assurance of structural integrity of welded attachments RC-E10-A-LUG, RC-E-10-B-LUG, RC-E-10-C-LUG, and RC-E-10-D-LUG.

As discussed above, the licensee is also unable to perform the ASME Code, Section XI, Examination Category F-A required VT-3 visual examination of the associated supports for the identified welded attachments. The NRC staff determined that, based on the drawings and description of the access difficulties associated with the pressurizer cubicle, implementation of the ASME Code requirement of a VT-3 visual examination of the subject supports would also be a hardship without a compensating increase in quality and safety.

The licensee-proposed alternative for the VT-3 examinations is to have VT-2 examiners physically enter the elevation just below the pressurizer ventilation ductwork (0'), and observe the area for evidence of leakage, corrosion and boric acid during conduct of the Class 1 leak test previously discussed.

The most possible failure mechanism that could occur to the subject passive supports would be corrosion of the support. The licensee stated that during normal power operation, the pressurizer cubicle area is a heated, dry environment which is not conducive to corrosion. The licensee's VT-3 visual examinations of other accessible components within the pressurizer cubicle have shown no evidence of corrosion.

Although the licensee was unable to perform the ASME Code-required VT-3 examination of the subject supports, its examination of the bottom of the pressurizer cubicle for signs of leakage, damage, corrosion, and boric acid, and its examinations of the area below the ductwork along with the VT-3 examinations of accessible passive supports provide reasonable assurance of structural integrity.

Meeting the code requirements for the inspections of RC E-10 A-Lug, RC E-10 B-Lug, RC E-10 C-Lug, and RC E-10 D-Lug would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Based on the VT-2 visual examination associated with the system pressure test performed on the subject welds each refueling outage and no known or published adverse examination results within the nuclear industry on the subject attachments, reasonable assurance of continued structural integrity of the subject welds is provided.

4.0 CONCLUSION

The NRC staff has reviewed the licensee's request for relief for ASME Code, Section XI, Examination Category F-A, *Supports,* and concludes that the ASME Code requirements are a hardship without a compensating increase in quality and safety. The NRC staff also has reviewed relief for ASME Code, Section XI, Examination Category B-K, *Integral Welded Attachments,* and concludes that the ASME Code requirements are a hardship without a compensating increase in quality and safety. In addition, the NRC staff concludes that the licensee's proposed alternatives for the subject welded attachments and associated supports and other discussed examinations provide reasonable assurance of structural integrity of welded attachments RC-E-10-A-LUG, RC-E-10-B-LUG, RC-E-10-C-LUG, and RC-E-10-D-LUG and their associated supports.

As set forth above, the NRC staff determines that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the 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(3)(ii). Therefore, the NRC staff authorizes the items in relief requests 3-IR2 at Seabrook Station Unit 1 for the duration of the third 10-year ISI interval.

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: Steve Cumblidge

Date: June 28, 2012

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Mr. Kevin Walsh
Site Vice President
c/o Michael O'Keefe
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Sincerely,
/ra/
Meena Khanna, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:
Safety Evaluation

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