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

July 20, 2009

Mr. Gene F. St. Pierre
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 NO. 1 - SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN REQUEST FOR RELIEF NO. 2IR-12, REVISON 1: PRESSURIZER WELDED ATTACHMENTS AND SUPPORTS (TAC NO. MD9781)

Dear Mr. St. Pierre:

By letter dated September 30, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082760469), as supplemented by letters dated February 24, 2009, and May 27, 2009 (ADAMS Accession Nos. ML090580194 and ML091520033, respectively), the licensee, FPL Energy Seabrook, LLC, submitted a relief request from certain examination requirements of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code) at the Seabrook Station, Unit No. 1. Specifically, the licensee requested relief from the ASME Code, Section XI requirements for pressurizer vessel welded attachments and component supports. The request is for the remainder of the second 10-year inservice inspection interval.

The Nuclear Regulatory Commission (NRC) staff has reviewed the information provided by the licensee in support of the request for relief. The 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 second 10-year inservice inspection 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. MD9781.

If you have any questions, please contact the Seabrook Project Manager, Mr. Dennis Egan, at 301-415-2443.

Sincerely,

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

Docket No. 50-443

Enclosure: As stated

cc w/encl: Distribution via Listserv

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

RELIEF REQUEST ASSOCIATED WITH THE PRESSURIZER WELDED ATTACHMENTS AND SUPPORTS FOR THE SECOND INSERVICE INSPECTION INTERVAL

FPL ENERGY SEABROOK, LLC

SEABROOK STATION, UNIT NO. 1

DOCKET NO. 50-443

1.0 INTRODUCTION

By letter dated September 30, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082760469, as supplemented by letters dated February 24, 2009, and May 27, 2009 (ADAMS Accession Nos. ML090580194 and ML091520033, respectively), the licensee, FPL Energy Seabrook, LLC, submitted a relief request from certain examination requirements of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code) at the Seabrook Station, Unit No. 1. Specifically, the licensee requested relief from the ASME Code, Section XI requirements for pressure vessel welded attachments and component supports. The request is for the remainder of the second 10-year inservice inspection (ISI) interval which began August 18, 2000, and is scheduled to end on August 17, 2010.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 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 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 second 10-year ISI interval at the Seabrook Station, Unit No. 1 is the 1995 Edition through 1996 Addenda of the ASME Code, Section XI.

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

3.2 Applicable Code

ASME Code, Section XI, 1995 Edition, Table IWB-2500-1, Category B-K, Item B10.10, *Welded Attachments for Vessels, Piping, Pumps and Valves*, requires a surface examination of 100 percent of the weld length, and ASME Code, Section XI, 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

ASME Code, Section XI, Examination Category B-K and Examination Category F-A

The welded attachments 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 the 1995 Edition through the 1996 Addenda of ASME Code, Section XI, Table IWB-2500-1, Examination Category B-P. Additionally, as part of that visual examination, VT-2 examiners will 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 associated supports.

Performance of Code required examinations

The licensee has no plans to make substantial physical changes to the pressurizer cubicle. Should some transient or unforeseen condition require access to the subject lugs and supports, the licensee intends to meet ASME Code examination requirements on these components. Action Request #00007007-02 tracks incorporation of this note in the ISI Program (SIIR Manual).

3.4 Licensee Basis for the Alternative

> Pursuant to 10 CFR 50.55a(a)(3)(ii), relief is requested from performing the surface examination on the four pressurizer welded attachments and the visual examination of the associated supports on the basis that the Code requirements are impractical to achieve . . . A 15 [inch] thick concrete shield wall weighing approximately 85,000 pounds surrounds the Seabrook pressurizer approximately three quarters of the way around. The clearance between the shield wall and the pressurizer vessel with insulation is approximately 12 [inches], 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; however, that is where safety valve and spray piping run. Ladders and platforms do not exist to make the examination area accessible nor can ladders be placed in the area due to restrictions from piping, conduit, ventilation and other attachments.

The pressurizer lugs are located on the pressurizer at elevation 23 [feet] - 6 [inches]. 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 [feet] and entering the cubicle at the top of the pressurizer at elevation 50 [feet]. 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 [licensee's figure not included]. From this location it is approximately 26 [feet] - 6 [inches] 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 [licensee's figure not included]. The elevation distance, [quantity] of obstructions, 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 [licensee's figure not included].

Current access to the pressurizer lugs and supports does not allow for examination of the required weld surfaces and supports. To achieve access, a complete redesign of the pressurizer cubicle and the surrounding floor at elevation 25 [feet] would be required. The implementation of this redesign would require substantial engineering and construction resources as well as significant dose to plant personnel without a compensating increase in quality and safety.

3.5 NRC Staff Evaluation

The licensee requested relief pursuant to 10 CFR 50.55a(a)(3)(ii) for both ASME Code, Section XI, Examination Category B-K, *Integral Welded Attachments,* and the associated 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-10-A-LUG, RC-E-10-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 in. thick that surrounds the pressurizer vessel with only a 12 in. 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 ft-6 in. 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 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 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-E-10-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 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 licensee has not experienced any functional failures of the ASME Code Category F-A pipe supports other than a water hammer event in the Steam Blowdown System that caused minor damage to a component support in that system. In addition, the VT-3 visual examinations performed on other passive supports in the plant have not identified any functional failures due to operational, environmental, or transient conditions. 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.

Additionally, in its letter dated May 27, 2009, the licensee noted that although it did not have plans to make substantial modifications to the pressurizer cubicle to gain access to the subject lugs and associated supports, it intends to meet the ASME Code requirements if some transient or unforeseen condition should require access to the subject lugs and supports.

4.0 CONCLUSION

The NRC staff has reviewed the licensee's request for relief for ASME Code, Section XI, Examination Category B-K, *Integral Welded Attachments* and F-A, S*upports,* and concludes that the ASME Code requirements are a hardship without a compensating increase in quality and safety. In addition, the 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. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii) the licensee's proposed alternatives are authorized for the second 10-year ISI interval for the Seabrook Station, Unit 1.

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: T. K. McLellan

Date: July 20, 2009

If you have any questions, please contact the Seabrook Project Manager, Mr. Dennis Egan, at 301-415-2443.

Sincerely,

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

Docket No. 50-443

Enclosure: As stated

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