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

March 22, 2016

Mr. Eric McCartney
Site Vice President
NextEra Energy Point Beach, LLC
6610 Nuclear Road
Two Rivers, WI 54241

SUBJECT: POINT BEACH NUCLEAR PLANT, UNIT 2 – APPROVAL OF RELIEF REQUEST 2-RR-11; STEAM GENERATOR NOZZLE TO SAFE-END DISSIMILAR METAL (DM) WELD INSPECTION RE: (CAC NO. MF6615)

Dear Mr. McCartney:

By letter dated August 13, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15225A104), as supplemented by letter dated November 19, 2015 (ADAMS Accession No. ML15324A152), NextEra Energy Point Beach, LLC (the licensee) submitted relief request 2-RR-11 to the U.S. Nuclear Regulatory Commission (NRC) for a relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (B&PV Code) at the Point Beach Nuclear Plant (PBNP), Unit 2. The licensee has proposed an alternative to Section XI Code Case N-770-1 of the ASME B&PV Code for a Class 1 component.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested relief on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee has requested a one-time extension for the examination of steam generator inlet and outlet nozzle welds.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that the proposed alternative 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(z)(1). Therefore, the NRC staff authorizes the proposed alternative at PBNP, Unit 2 until the end of the spring 2020 scheduled refueling outage.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact Mac Chawla of my staff at (301) 415-8371.

Sincerely,

David J. Wrona, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-301

Enclosure:
Safety Evaluation

cc w/encl: Distribution via ListServ

UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF 2-RR-11

POINT BEACH NUCLEAR PLANT, UNIT 2

NEXTERA ENERGY POINT BEACH, LLC

DOCKET NUMBER 50-301

1.0 INTRODUCTION

By letter dated August 13, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15225A104), as supplemented by letter dated November 19, 2015 (ADAMS Accession No. ML15324A152), NextEra Energy Point Beach, LLC (the licensee) requested relief 2-RR-11, from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (B&PV Code) at the Point Beach Nuclear Plant (PBNP), Unit 2. The licensee has proposed an alternative to Section XI Code Case N-770-1 of the ASME B&PV Code for a Class 1 component.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested relief on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee has requested a one-time extension for the examination of steam generator inlet and outlet nozzle welds.

2.0 REGULATORY EVALUATION

Persuant to 10 CFR 50.55a(g)(4), ASME B&PV Code class 1, 2, and 3 components (including supports) must meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in Section XI of the ASME B&PV Code, "Rules for In-service Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components.

Persuant to 10 CFR 50.55a(z), alternatives to the ASME B&PV Code requirements may be authorized by the U.S. Nuclear Regulatory Commission (NRC) if the licensee demonstrates that: (1) the proposed alternative provides an acceptable level of quality and safety, or (2) 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 the regulations permit the licensee to request the use of an alternative and that the NRC has the regulatory authority to authorize the alternative proposed by the licensee.

Enclosure

3.0 LICENSEE'S PROPOSED ALTERNATIVE

3.1 Applicable Code Edition and Addenda – The Code of Record for the fifth ISI interval is the ASME Section XI, 2007 Edition with Addenda through 2008.

3.2 Regulatory Requirement – 10 CFR 50.55a(g)(6)(ii)(F) requires that licensees implement the requirements of ASME Code Case N-770-1. Inspection Item A-2 of Code Case N-770-1 requires unmitigated butt welds at Hot Leg temperatures of less than or equal to 625 °F to be volumetrically examined every 5 years. Inspection Item B requires unmitigated butt welds at Cold Leg temperatures to be volumetrically examined every second inspection period not to exceed 7 years.

3.3 Components for Which Relief is Requested –

Examination Category	Code Case Inspection Item	Description
N-770-1	A-2	RC-34-MRCL-AI-05 Safe-End to "A" Inlet Nozzle
N-770-1	B	RC-36-MRCL-AII-01A "A" Outlet Nozzle to Safe-End
N-770-1	A-2	RC-34-MRCL-BI-05 Safe-End to "B" Inlet Nozzle
N-770-1	B	RC-36-MRCL-BII-01A "B" Outlet Nozzle to Safe-End

3.4 Duration of Relief – This request is applicable until the spring 2020 refueling outage.

3.5 Reason for Request – The next required examination for the Unit 2 Steam Generator Hot Leg nozzle to safe-end dissimilar metal (DM) welds will be during the end of the spring 2017 refueling outage. Relief is being requested to extend the Hot Leg inspection by approximately 3 years to the spring 2020 refueling outage. This is to allow for a coordinated examination schedule between the Hot Leg and Cold Leg DM welds. This will allow the licensee to only drain the reactor coolant system to low levels and open the steam generator manways once instead of twice in 7 years, thus minimizing the impact to nuclear, radiological, and industrial safety.

3.6 Proposed Alternative – Pursuant to 10 CFR 50.55a(z)(1), the licensee proposes a one-time extension to the Code Case N-770-1, Table 1, Inspection Item A-2, volumetric examination from every 5 years and for Inspection Item B, volumetric examination not to exceed 7 years. The extension requested is for a period not to exceed one ASME Section XI ISI interval. The examination will be performed no later than the spring 2020 refueling outage, approximately 7.5 years from the previous examination in November 2012.

The PBNP Unit 2 has four steam generator nozzle to safe-end welds that are composed of Alloy 82/182 buttering and Alloy 82 weld material. The inside surface of the weld and adjacent base material was clad with Alloy 52 at the factory during fabrication. These welds received ASME Section III examinations (liquid penetrant and radiography) prior to installation. In addition, the Section XI pre-service examinations (liquid penetrant and ultrasonic examinations) were performed prior to installation.

The subject welds received both ultrasonic examinations and eddy current examinations in November 2012 with no indication on any of the four DM welds. The use of both techniques ensured that neither surface-breaking flaws nor sub-surface flaws were located within the lower 1/3t (Thinkness) of the weld which could propagate through the Alloy 52 cladding materials into the Alloy 82 weld material.

The welds will continue to have direct bare-metal examinations performed in accordance with Code Case N-722-1 as modified by 10 CFR 50.55a(g)(6)(ii)(E) and are subject to VT-2 examinations during the reactor coolant system pressure test at the end of each refueling outage.

The overall basis used to demonstrate the acceptability of extending the examination interval is contained in the site-specific weld crack growth analysis performed for PBNP Unit 2. The licensee states that the weld crack growth analysis demonstrates that the welds possess adequate thickness to protect against failure due to primary water stress-corrosion cracking (PWSCC). Crack growth was calculated based on the PWSCC growth mechanism through both the inlay and the Alloy 82 DM weld and was calculated to the maximum allowable end-of-evaluation period flaw size per ASME Section XI.

The results, included in the August 13 submittal, conclude that an examination interval of up to 7.5 EFPY is acceptable for the nozzle welds and as such, that the re-examination interval can be extended while maintaining an acceptable level of quality and safety.

4.0 NRC TECHNICAL EVALUATION

As previously stated in Section 2.0 of this safety evaluation, prior to authorizing the proposed alternative under 10 CFR 50.55a(z)(1), the NRC staff must find that the technical information provided in support of the proposed alternative is sufficient to provide reasonable assurance of structural integrity and leak tightness. If met, the NRC staff will find that the proposed alternatives to ASME B&PV Code requirements will provide an acceptable level of quality and safety.

The licensee has requested a one-time extension of the current UT requirement of every 5 years (inlet) and 7 years (outlet) to an inspection to be performed no later than the spring 2020 refueling outage, approximately 7.5 years from the previous examination in November 2012. The NRC considered the following points when reviewing this request:

1. The flaw analysis provided by the licensee,
2. A confirmatory flaw analysis performed by NRC staff determined that sufficient margin existed to allow for an extension,

3. Alloy 52/Alloy 152 applied weld material is highly resistant to PWSCC, with no crack initiations in over 18 years of service history,
4. The susceptible 82/182 material has never been exposed to a PWR primary water environment, and
5. Ultrasonic volumetric and eddy current surface examinations performed in 2012 did not result in any recordable indications

Based on the NRC staff's evaluation of the above issues, the staff finds there is sufficient evidence to allow a one-time extension of the current UT requirement of every 5 years (inlet) and 7 years (outlet) to an inspection frequency 7.5 EPFY, as it provides an acceptable level of quality and safety.

Based on the above analysis, the NRC staff finds that the technical requirements of 10 CFR 50.55a(z)(1) have been met and, therefore, that the licensee's proposal provides an acceptable level of quality and safety. The staff, therefore, finds no technical basis that would preclude the authorization of the alternative to Code Case N-770-1 of the ASME B&PV Code, as requested by the licensee.

5.0 CONCLUSION

As set forth above, the NRC staff determines that the proposed alternative provides an acceptable level of quality and safety. Accordingly, the staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the proposed alternative at PBNP, Unit 2 until the end of the spring 2020 scheduled refueling outage.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributors: M. Audrain, NRR
J. Collins, NRR

Date: March 22, 2016

If you have any questions, please contact Mac Chawla of my staff at (301) 415-8371.

Sincerely,

/RA/

David J. Wrona, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-301

Enclosure:
Safety Evaluation

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