UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

May 18, 2022

The Honorable Christopher T. Hanson
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: REPORT ON THE SAFETY ASPECTS OF THE SUBSEQUENT LICENSE RENEWAL APPLICATION REVIEW OF POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Dear Chairman Hanson:

During the 694th and 695th meetings of the Advisory Committee on Reactor Safeguards (ACRS), April 6-8, and May 4-5, 2022, we completed our review of the subsequent license renewal (SLR) application for the Point Beach Nuclear Plant, Units 1 and 2 (Point Beach), and the associated safety evaluation report prepared by the staff. Our review considered actions by NextEra Energy Point Beach, LLC (NextEra), to extend the license of each unit by 20 years beyond the currently approved 60 years of licensed operation.

During this review, we had the benefit of discussions with representatives of the staff and NextEra. We also had the benefit of the referenced documents. This report fulfills the requirement of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 54.25 that the ACRS review and report on all license renewal applications.

CONCLUSION AND RECOMMENDATION

1. The established programs and the commitments made by NextEra to manage age-related degradation provide reasonable assurance that Point Beach can be operated in accordance with its current licensing basis for the subsequent period of extended operation (SPEO) without undue risk to the health and safety of the public.

2. The NextEra application for the subsequent license renewal of the operating license for Point Beach should be approved.

BACKGROUND

Point Beach is located in Manitowoc County, WI. Each unit consists of a Westinghouse two-loop pressurized water reactor with a licensed output of 1,800 megawatts thermal (MWt). The Nuclear Regulatory Commission (NRC) issued the initial operating licenses on October 5, 1970, for Unit 1, and March 8, 1973, for Unit 2. The NRC issued the first 20 year renewed operating licenses on December 22, 2005, establishing the periods of operation until October 5, 2030, for Unit 1, and March 8, 2033, for Unit 2.

In this application, NextEra requests renewal of the operating licenses for an additional 20 years beyond the expiration of their current renewed licenses. The licenses would be extended to October 5, 2050, for Unit 1, and March 8, 2053, for Unit 2.

DISCUSSION

The staff reviewed the NextEra application for SLR in accordance with the Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) and the Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants (SRP-SLR) guidance documents. Conformance with this guidance provides the bases for a conclusion that an applicant for a license renewal of 20 additional years beyond its current approved license for 60 years will assure adequate protection of the public through the SPEO.

Significant generic issues challenging the industry for plant operation beyond 60 years are: reactor pressure vessel embrittlement; irradiation-assisted stress corrosion cracking of reactor internals; concrete structures and containment degradation; and electrical cable environmental qualification, condition monitoring, and assessment. The staff also considered site-specific performance issues related to buried grey cast iron piping. Each of these items has been addressed by NextEra and evaluated by the staff through the review process. We concur with the staff's safety evaluation report regarding these issues.

NextEra applied lessons learned from previous applicants' SLR applications to the preparation of the Point Beach SLR application. NextEra assembled a multidisciplined team of employees and engineering contractors with license renewal licensing and implementation experience from the Turkey Point Nuclear Generating Units 3 and 4, and St. Lucie Nuclear Plant Units 1 and 2. They also followed the industry accepted guidance for SLR found in NEI 17-01 and EPRI TR-110089.

Prior to requesting SLR, NextEra has been making improvements in the Point Beach facility based on equipment performance monitoring of each unit. Significant primary system modifications for both units included reactor vessel head replacement and charging pump motor replacement with variable frequency drives installed. Secondary system modifications for each unit were implemented, including: adding new motor-driven auxiliary feedwater system pumps while keeping the existing steam generator feedwater pumps for standby use; adding a new air-cooled service air compressor (also acts as a backup to instrument air); replacing all feedwater heaters; replacing the heater drain pumps with the associated motors either refurbished or replaced; and replacing the service water pumps. Electrical modifications included replacement of crane motors with variable speed control drives in the Turbine Building, Primary Auxiliary Building, and Containment; and installation of new main generator output breakers on each unit. Modifications are continuing with ongoing replacement of the component cooling water pumps. Additionally, as part of the extended power uprate project, several key components were replaced, modified, or upgraded with some of the more notable items being higher capacity main feedwater pumps; improved isolated phase bus duct cooling; new main transformers; main generator rewind and associated modifications (including exciter upgrade); and replacement of the steam generator feed pumps, condensate pumps, and circulating water pumps. These improvements extend the life of existing components, providing additional operational margin and flexibility. These investments by NextEra demonstrate a commitment to maintain the units in good material condition in support of safe operation.

NextEra will implement 48 GALL-Aging Management Programs (AMPs) for SLR, comprised of 39 existing programs and nine new programs. All nine of the new programs are consistent with the GALL-SLR Report. Of the 39 existing programs, two are consistent with the GALL-SLR Report, and 37 are consistent with enhancements and allowed exceptions. We observed that the number of programs with enhancements and exceptions is larger for Point Beach than recent applications we have reviewed. NextEra chose not to expend the resources now to bring the programs into consistency with the GALL-SLR but committed to doing so prior to the SPEO. The staff found the programs with enhancements and exceptions to be acceptable. No plant-specific enhancements were identified for Point Beach that are required to be evaluated against the SRP-SLR.

NextEra has demonstrated the effectiveness of their programs to maintain material condition, sustain system and equipment performance, and identify and implement improvements to ensure facility safety and reliability. Commitments in the SLR application and in NextEra responses to the staff audits and inspections provide assurance that these programs will continue throughout the SPEO. These items are managed through the NextEra commitment tracking program and documented in the Updated Final Safety Analysis Report supplement.

In the safety evaluation report, staff documented its review of the SLR application and other information submitted by NextEra and obtained through staff audits, related inspections, and requests for additional information. The staff conducted a regulatory audit on the technical details of the SLR application from January 19, 2021, through March 26, 2021. This audit was used to evaluate the completeness of the identified structures, systems, and components within the scope of the license renewal program, the suitability and adequacy of the aging management review, and the acceptability of the plant-specific time-limited aging analyses. The staff audit report confirms that the Point Beach AMPs are comprehensive and effective.

Four license renewal inspections for the initial period of extended operation were conducted at Point Beach between 2010 and 2019. These inspections verified that the current license renewal requirements are being implemented appropriately. The staff also examined Reactor Oversight Process baseline inspections for issues related to AMP implementation. The corresponding inspection and audit reports were thorough with no findings identified.

Based on the audits, inspections, and the staff reviews, the staff concluded that NextEra will continue to adequately manage the effects of aging. It is reasonable to conclude that safety functions will be maintained consistent with the Point Beach licensing basis for the SPEO, as required by 10 CFR 54.21(a)(3). The staff's extensive and detailed review of the SLR application, documented in the safety evaluation report, identified no open or confirmatory items.

We conclude that NextEra’s application for the Point Beach SLR meets the requirements described in 10 CFR 54.29(a)(1) and (a)(2).

SUMMARY

The established programs and the commitments made by NextEra to manage age-related degradation provide reasonable assurance that Point Beach can be operated in accordance with its licensing basis for the SPEO without undue risk to the health and safety of the public. The NextEra application for the SLR of the operating license for Point Beach should be approved.

Member Sunseri did not deliberate in portions of the meeting related to metal and environmental fatigue or irradiation embrittlement of the reactor pressure vessel.

We are not requesting a formal response from the staff to this letter report.

Sincerely,

Signed by Rempe, Joy on 05/18/22

Joy L. Rempe
Chair

REFERENCES

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4. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 – Report for the Aging Management Audit Regarding the Subsequent License Renewal Application Review (EPID No. L-2020-SLR-0002)," August 16, 2021 (ML21208A447).

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6. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Unit 1 NRC Post-Approval Site Inspection for License Renewal Inspection Report 05000266/2010-011," October 8, 2010 (ML102850469).

7. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Unit 2 NRC Post-Approval Site Inspection for License Renewal Inspection Report 05000301/2012008," December 19, 2012 (ML12355A774).

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9. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 Post-Approval Site Inspection for License Renewal - Phase 4 Report 05000266/2019010 and 05000301/2019010," October 2, 2019 (ML19275J231).

10. U.S. Nuclear Regulatory Commission, NRC NUREG-2192, “Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants,” July 2017 (ML17188A158).

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16. U.S. Nuclear Regulatory Commission, NRC NUREG-2221, “Technical Bases for Changes in the Subsequent License Renewal Guidance Documents NUREG–2191 and NUREG–2192,” December 2017 (ML17362A126).

17. U.S. Nuclear Regulatory Commission, NRC NUREG-2222, “Disposition of Public Comments on the Draft Subsequent License Renewal Guidance Documents NUREG–2191 and NUREG–2192,” December 2017 (ML17362A143).

18. U.S. Nuclear Regulatory Commission, NRC Regulatory Guide 1.99, Revision 2, “Radiation Embrittlement of Reactor Vessel Materials,” May 1988 (ML003740284).

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