



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

ACRSR-2165

November 18, 2005

The Honorable Nils J. Diaz
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

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

Dear Chairman Diaz:

During the 527th meeting of the Advisory Committee on Reactor Safeguards, November 3-5, 2005, we completed our review of the license renewal application for the Point Beach Nuclear Plant (PBNP) Units 1 and 2, and the final Safety Evaluation Report (SER) prepared by the NRC staff. We issued an interim report on the safety aspects of this application and the draft SER on June 9, 2005. Our Plant License Renewal Subcommittee also reviewed this matter during a meeting on May 31, 2005. During these reviews, we had the benefit of discussions with representatives of the NRC staff and the Nuclear Management Company, LLC (NMC). We also had the benefit of the documents referenced. This report fulfills the requirements of 10 CFR 54.25 that the ACRS review and report on all license renewal applications.

RECOMMENDATIONS

1. With the inclusion of the conditions in Recommendation 2, the NMC application for license renewal of PBNP Units 1 and 2 should be approved.
2. The staff should expand the scope of its post-approval site inspection to verify that all license renewal programs have been implemented and commitments have been met. In addition, the staff should review the effectiveness of the PBNP corrective action program (CAP) before PBNP enters the period of extended operation.

BACKGROUND AND DISCUSSION

The PBNP Units 1 and 2 are two-loop Westinghouse pressurized water reactors housed in dry ambient containments. Originally, each unit was licensed at a power level of 1519 MWt. Each unit has undergone a low-pressure turbine modification and a measurement uncertainty recapture power uprate to increase the power level to 1540 MWt. NMC has requested renewal of the operating licenses of Units 1 and 2 for 20 years beyond their current license terms, which expire on October 5, 2010, and March 8, 2013, respectively.

In the final SER, the staff documents its review of the license renewal application and other information submitted by the applicant and obtained through the audits and inspections at the plant site. The staff reviewed the completeness of the applicant's identification of structures, systems, and components (SSCs) that are within the scope of license renewal; the integrated plant assessment process; the applicant's identification of the plausible aging mechanisms associated with passive, long-lived components; the adequacy of the applicant's aging management programs; and the identification and assessment of time-limited aging analyses (TLAAs).

The PBNP application demonstrates consistency with, or documents deviations from, the approaches specified in the Generic Aging Lessons Learned Report. The staff questioned the applicant's approach to identifying nonsafety-related components whose failure could affect safety-related components. The applicant modified its scoping methodology to address the staff's questions. An inspection completed on August 17, 2005 confirmed that this methodology has been appropriately implemented. In the final SER, the staff concludes that the scoping and screening processes implemented by the applicant have successfully identified SSCs within the scope of license renewal and subject to an aging management review. We agree with this conclusion.

The applicant performed a comprehensive aging management review of all SSCs within the scope of license renewal. In the application, the applicant describes 26 aging management programs for license renewal, including existing, enhanced, and new programs. The draft SER identified 5 open items and 15 confirmatory items. The final SER describes the resolution of these items. We agree with the resolution of these items and with the staff's conclusion that the applicant's proposed aging management programs are adequate.

One of the open items relates to plant-specific operating experience of the two units. Containment liner corrosion due to borated water leakage has been identified in both units. The applicant has committed to performing augmented inspections in accordance with ASME Section XI Subsection IWE to monitor the extent of corrosion. The Boric Acid Corrosion Program is also credited with assessing and managing loss of material in the containment liner. The augmented inspection program does not include specific criteria for evaluation, repair, or replacement. At the staff's request, the applicant has agreed to include in the acceptance criteria element of the aging management program, "ASME Section XI, Subsections IWE and IWL Inservice Inspection Program," an appropriate discussion of the evaluation, repair or replacement criteria, and reexamination requirements necessary to ensure leak-tightness and structural integrity of the liner.

The applicant identified and reevaluated systems and components requiring TLAA's for 20 more years of operation. The upper shelf energy for both vessels and the reference temperature for pressurized thermal shock (PTS) for the Unit 2 vessel failed to meet the screening criteria.

To address the low upper shelf energy, the applicant performed equivalent margin analyses allowed by 10 CFR Part 50, Appendix G. These analyses yielded acceptable results through the end of the period of extended operation. The staff performed independent analyses to confirm the applicant's conclusion.

The intermediate-to-lower shell circumferential weld of the Unit 2 vessel is projected to exceed the PTS screening criterion in 2017. Consistent with the requirements of 10 CFR 54.21(c)(1)(iii), the applicant has chosen to manage the effects of aging of this weld during the period of extended operation. The applicant's commitments for PTS include implementing a low-low leakage fuel management pattern, using hafnium absorber assemblies, and documenting a flux reduction plan. This documentation will include any required safety analyses supporting continued operation. Other options the applicant may pursue include a more refined analysis of PTS or thermal annealing of the reactor pressure vessel.

In our June 9, 2005 interim report on the PBNP application, we expressed concern with the effectiveness of the PBNP CAP and the applicant's ability to effectively implement license renewal programs and meet commitments. We were concerned that the resources needed to address the staff's April 21, 2004 Confirmatory Action Letter to PBNP would compete with the effective development, tracking, and implementation of license renewal programs and commitments. We recommended that, prior to the units entering the period of extended operation, the staff take additional actions to increase confidence that the requirements of the license renewal rule have been met. We suggested, for example, an expanded inspection of license renewal commitments and a focused review of the effectiveness of the CAP. The PBNP remains in the Multiple/Repetitive Degraded Cornerstone column of the Reactor Oversight Process Action Matrix, and there are still weaknesses in the CAP.

In its July 15, 2005 response to the Committee, the staff described the inspections being conducted at PBNP to verify that license renewal programs and commitments are appropriate and consistent with the rule. However, detailed development and implementation of many of these programs and commitments will occur after the license is renewed and prior to the license renewal period. The staff plans to perform a post-approval site inspection in accordance with Inspection Procedure 71003 before the period of extended operation begins.

Inspection Procedure 71003 is the standard inspection that the staff performs prior to the period of extended operation. This inspection evaluates only a sample of the license renewal commitments and programs. In light of the applicant's weakness in managing commitments, as discussed in our interim report, the staff should expand the scope of the post-approval site inspection to verify that all license renewal programs have been implemented and commitments have been met. In addition, before PBNP enters the period of extended operation, the staff should review the effectiveness of the CAP. These actions are necessary to ensure that there is reasonable assurance that aging degradation can be adequately managed.

With a commitment to perform the expanded inspections described above, the application for renewal of the operating licenses of the PBNP Units 1 and 2 should be approved.

Sincerely,

/RA/

Graham B. Wallis
Chairman

References:

1. Nuclear Management Company, LLC, "Application for Renewed Operating Licenses Point Beach Nuclear Plant Units 1 & 2," February 2004.
2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of the Point Beach Nuclear Plant, Units 1 and 2," May 2005.
3. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of the Point Beach Nuclear Plant, Units 1 and 2," October 2005.
4. Letter from Graham B. Wallis, Chairman, ACRS, to Luis A. Reyes, Executive Director for Operations, NRC, "Interim Report on the Safety Aspects of the License Renewal Application for the Point Beach Nuclear Plant, Units 1 and 2," June 9, 2005.
5. Pacific Northwest National Laboratory, "Audit and Review Report for Plant Aging Management Reviews and Programs, Point Beach Nuclear Plant Units 1 and 2," April 11, 2005.
6. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 NRC License Renewal Scoping, Screening, and Aging Management Inspection Report 05000266/2005005 (DRS); 05000301/2005005 (DRS)," May 2, 2005.
7. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 NRC License Renewal Followup Inspection Report 05000266/2005015 (DRS); 05000301/2005015 (DRS)," September 9, 2005.
8. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 NRC Special Inspection Report 05000266/2005011; 05000301/2005011," September 23, 2005.
9. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 NRC Special Emergency Preparedness Inspection Report 05000266/2005009 (DRS); 05000301/2005009 (DRS)," August 2, 2005.

10. Letter from J. Dyer, Regional Administrator, to M. Warner, Site Vice President, Kewaunee and Point Beach Nuclear Plants, Nuclear Management Company, LLC, "Point Beach Special Inspection - NRC Inspection Report 50-266/01-17(DRS); 50-301/01-17(DRS), Preliminary Red Finding," April 3, 2002.
11. Letter from J. Dyer, Regional Administrator, to M. Warner, Site Vice President, Kewaunee and Point Beach Nuclear Plants, Nuclear Management Company, LLC, "Point Beach Nuclear Plant Final Significance Determination for a Red Finding and Notice of Violation NRC Special Inspection Report No. 50-266/01-17(DRS; 50-301/01-17(DRS)," July 12, 2002.
12. Letter from J. Dyer, Regional Administrator, to A. Cayia, Site Vice President, Point Beach Nuclear Power Plant, Nuclear Management Company, LLC, "Point Beach Nuclear Plant Special Inspections: Resolution of Auxiliary Feedwater Old Design Issue and Preliminary Red Finding - Auxiliary Feedwater Orifice Plugging Issue; NRC Inspection Report 50-266/02-15(DRP); 50-301/02-15(DRP)," April 2, 2003.
13. Letter from J. Caldwell, Regional Administrator, to A. Cayia, Site Vice President, Point Beach Nuclear Plant, Nuclear Management Company, LLC, "Point Beach Nuclear Plant, Units 1 and 2 Final Significance Determination for a Red Finding and Notice of Violation (NRC Inspection Report No. 50-266/02-15(DRP); 50-301/02-15(DRP))," December 11, 2003.
14. Letter from G. Van Middlesworth, Site Vice President, Point Beach Nuclear Plant, Nuclear Management Company, LLC, to U.S. Nuclear Regulatory Commission Document Control Desk, "Commitments in Response to 95003 Supplemental Inspection," March 22, 2004.
15. Letter from J. Caldwell, Regional Administrator, to G. Van Middlesworth, Site Vice President, Point Beach Nuclear Plant, Nuclear Management Company, LLC, "Confirmatory Action Letter," April 21, 2004.
16. Letter from J. Caldwell, Regional Administrator, to D. Koehl, Site Vice President, Point Beach Nuclear Plant, Nuclear Management Company, LLC, "Annual Assessment Letter - Point Beach Nuclear Plant (Report 05000266/200501; 05000301/200501)," March 2, 2005.
17. Letter from D. Koehl, Site Vice-President, Point Beach Nuclear Plant, Nuclear Management Company, LLC, to U.S. Nuclear Regulatory Commission Document Control Desk, "License Renewal Application Revised Information," September 10, 2004.
18. Memorandum from L. Reyes, EDO, to Chairman Diaz, Commissioner McGaffican, and Commissioner Merrifield, "Pressurized Thermal Shock Analyses for Renewal of Certain Nuclear Power Plant Operating Licenses," May 27, 2004.

In its July 15, 2005 response to the Committee, the staff described the inspections being conducted at PBNP to verify that license renewal programs and commitments are appropriate and consistent with the rule. However, detailed development and implementation of many of these programs and commitments will occur after the license is renewed and prior to the license renewal period. The staff plans to perform a post-approval site inspection in accordance with Inspection Procedure 71003 before the period of extended operation begins.

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With a commitment to perform the expanded inspections described above, the application for renewal of the operating licenses of the PBNP Units 1 and 2 should be approved.

Sincerely,

Graham B. Wallis
Chairman

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2. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of the Point Beach Nuclear Plant, Units 1 and 2," May 2005.
3. U.S. Nuclear Regulatory Commission, "Safety Evaluation Report Related to the License Renewal of the Point Beach Nuclear Plant, Units 1 and 2," October 2005.
4. Letter from Graham B. Wallis, Chairman, ACRS, to Luis A. Reyes, Executive Director for Operations, NRC, "Interim Report on the Safety Aspects of the License Renewal Application for the Point Beach Nuclear Plant, Units 1 and 2," June 9, 2005.
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7. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 NRC License Renewal Followup Inspection Report 05000266/2005015 (DRS); 05000301/2005015 (DRS)," September 9, 2005.
8. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 NRC Special Inspection Report 05000266/2005011; 05000301/2005011," September 23, 2005.
9. U.S. Nuclear Regulatory Commission, "Point Beach Nuclear Plant, Units 1 and 2 NRC Special Emergency Preparedness Inspection Report 05000266/2005009 (DRS); 05000301/2005009 (DRS)," August 2, 2005.

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