



Nuclear Management Company, LLC
Point Beach Nuclear Plant
6610 Nuclear Road
Two Rivers, WI 54241

NRC 2002-0090

10 CFR 50.90

October 3, 2002

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Dockets 50-266 and 50-301
Point Beach Nuclear Plant, Units 1 and 2
Responses To Requests For Additional Information License Amendment Request 226
Measurement Uncertainty Recapture Power Uprate

References:

- 1) Letter to Document Control Desk from Mark E. Warner, NRC 2002-0030, dated April 30, 2002.
- 2) Letter to Document Control Desk from Mark E. Warner, NRC 2002-0053, dated June 6, 2002.
- 3) Letter to Document Control Desk from A.J. Cayia, NRC 2002-0075, dated August 29, 2002.

In reference 1, Nuclear Management Company, LLC (NMC), submitted a request for an amendment to the Operating Licenses and Technical Specifications (TS) for Point Beach Nuclear Plant (PBNP), Units 1 and 2. The purpose of the proposed amendment was to increase licensed rated thermal power (RTP) based on a measurement uncertainty recapture (MUR) power uprate.

In a June 6, 2002, teleconference between the Nuclear Regulatory Commission (NRC) staff and PBNP plant staff, the NRC staff requested additional information in support of the proposed amendment. The NMC response to the staff's questions was submitted in reference 2.

During conference calls between NRC staff and the NMC on June 27, July 9, August 6, and August 19, 2002, the NRC staff requested additional information to aid in the review of the reference 1 submittal. The NMC submitted responses to the NRC staff's requests for additional information (RAIs) in reference 3.

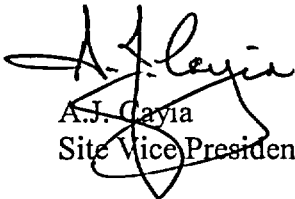
Additional conference calls between the NRC and NMC staff occurred on September 19 and September 27, 2002. The September 19 conference call focused on resubmittal of a plant specific topical report. This report will be sent to the NRC at a later date. The September 27 conference call resulted in the NRC staff requesting clarification of two RAI responses in the reference 3 submittal pertaining to reactor vessel integrity. Attachment 1 of this letter provides revised responses to the two questions with the requested clarifications.

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No changes to the initially proposed amendment result from this additional information. Furthermore, NMC has determined that this supplement does not involve a significant hazards consideration, authorize a significant change in the types or total amounts of effluent release, or result in any significant increase in individual or cumulative occupational radiation exposure. Therefore, NMC concludes that the proposed supplement meets the categorical exclusion requirements of 10 CFR 51.22(c)(9) and that an environmental impact appraisal need not be prepared.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Wisconsin Official.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on October 3, 2002.


A.J. Cayia
Site Vice President

Attachment 1. Revised Responses to Requests for Additional Information

cc: NRC Regional Administrator
NRC Resident Inspector

NRC Project Manager
PSCW

bcc: R. A. Anderson J. Freels A. J. Cayia
 K. M. Duescher (3) J. Gadzala R. R. Grigg (P460)
 E. J. Weinkam III K. E. Peveler D. A. Weaver (P129)
 L. Schofield (JOSRC) L. M. Gunderson T. H. Taylor
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 File

ATTACHMENT 1

REVISED RESPONSES TO REQUESTS FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST 226

MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

The following information is provided in response to the Nuclear Regulatory Commission (NRC) staff's requests for additional information (RAIs) communicated during a telephone conference with the Nuclear Management Company, LLC (NMC) staff on September 27, 2002. The purpose of the conference call was to clarify responses to two previous RAIs. The two RAIs had previously been discussed during a conference call on August 19, 2002, and responses were subsequently submitted to the NRC in reference 1. The two RAI responses to be clarified were questions 1 and 2 on page 36 in Attachment 1 of reference 1. The original RAIs and responses are repeated below with the requested clarification incorporated. The responses below replace the two responses from the reference 1 submittal in their entirety.

NRC Question 1:

Heatup and Cooldown Curves: Provide estimated Peak Neutron Fluence values at the ID surface and 1/4T for limiting components at EOL for uprated conditions.

Clarification from 09/27/02 conference call:

Clarify that the EOL fluence values provided were based on a 10.5 percent uprate, not just a 1.4 percent MUR uprate being requested now.

NMC Response 1:

The fluence values, and the corresponding EFPY applicability dates, referenced in reference 5 are for the current PBNP P-T Limits. The limiting fluence values for the current P-T curves are again listed in the following table. In addition, this table contains the projected fluence values for the End of Life (EOL) and the EOL one-quarter thickness (1/4T) locations assuming a 10.5 percent power uprate to 1678 MWt core thermal power.

Table: Fluence Values

| | Current P-T Curves | EOL (34 EFPY) ^{Note 1} | EOL (1/4T) ^{Note 2} |
|---------------|---------------------------------------|--|---------------------------------------|
| Unit 1 | $2.25 \times 10^{19} \text{ n/cm}^2$ | $2.73 \times 10^{19} \text{ n/cm}^2$ | $1.848 \times 10^{19} \text{ n/cm}^2$ |
| Unit 2 | $2.606 \times 10^{19} \text{ n/cm}^2$ | $2.72 \times 10^{19} \text{ n/cm}^2$ | $1.842 \times 10^{19} \text{ n/cm}^2$ |

Note 1- The values correspond to the fluence at the inside surface of the limiting RPV component.

Note 2- The 1/4T fluence values are determined using equation (3) of Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials": $f = f_{\text{surf}} (e^{-0.24x})$ where f_{surf} is expressed in units of $\text{E}19\text{n/cm}^2$ ($\text{E}>1\text{MeV}$) and x is the desired depth in inches into the vessel wall. 6.5 inches used as vessel wall thickness.

NRC Question 2:

Upper Shelf Energies: Provide the predicted USE values for both Units at EOL using uprated conditions. If the predicted values are less than 50 ft-lbs and the fracture mechanics evaluation was used to demonstrate acceptable equivalent margins against fracture, indicated whether the evaluation has been reviewed and approved by the NRC staff.

Clarification from 09/27/02 conference call:

- a. Correct the typo on "50 lb/ft" versus 50 ft-lbs in the third sentence,
- b. Clarify the values provided as lower bounding J-R values,
- c. Include additional information on the acceptance values and ratios for these values,
- d. Report the limiting welds for which those values apply, and
- e. Clarify the power uprate to which these EOL values were calculated.

NMC Response 2:

A fracture mechanics evaluation has been performed to examine the PBNP upper shelf energy (USE) values in limiting welds at an uprated power condition of 1650 MWt. This evaluation examined the USE values for both EOL as well as end of life extension (EOLE) conditions. The upper shelf energy data in the PBNP fracture mechanics evaluation is reported in J-R (J-Resistance) values with units of lb/in. Acceptability of these J-R values in satisfying the upper-shelf energy requirement is demonstrated by examining J-R ratios. This ratio is defined as the ratio of the lower bound J-R value divided by the applied J. If this ratio is greater than or equal to one, the acceptance criteria are met. The J-R ratio methodology is described in B&W Owners Reactor Vessel Working Group reports BAW-2178PA (reference 2), "Low Upper-Shelf Toughness Fracture Mechanics Analysis of Reactor Vessels of B&W Owners Reactor Vessel Working Group for Level C & D Service Loads," and BAW-2192PA (reference 3), "Low Upper-Shelf Toughness Fracture Mechanics Analysis of Reactor Vessels of B&W Owners Reactor Vessel Working Group for Level A & B Service Loads," both dated April 1994. The NRC staff reviewed and approved both of these reports for referencing in licensing applications in separate safety evaluations on March 29, 1994.

The plant specific fracture mechanics evaluation that demonstrates acceptable equivalent margins of safety against fracture is documented in report BAW-2255 (reference 4), "Effect of Power Upgrade on Low Upper-Shelf Toughness Issue," dated May 1995. Although the staff has not reviewed this plant specific evaluation, it uses the same methodologies described in references 2 and 3. The lower bounding J-R values and all acceptance ratios are listed in Table 3-2 of reference 4 and are listed in the following table.

Summary of Table 3-2 from BAW-2255

| Plant | Weld Number | Weld Orientation ⁽¹⁾ | Lower Bounding J-R (lb/in) | Acceptance Criterion 1 | | Acceptance Criterion 2 | |
|--------|-------------|---------------------------------|----------------------------|--------------------------|-----------------------------------|--------------------------|-----------------------------------|
| | | | | J _{app} (lb/in) | J ₀₁ /J _{app} | J _{app} (lb/in) | J ₀₁ /J _{app} |
| Unit 1 | SA-1426 | C | 695 | 105 | 6.62 | 121 | 5.74 |
| | SA-1101 | C | 593 | 105 | 5.65 | 121 | 4.90 |
| | SA-812 | L | 687 | 319 | 2.15 | 372 | 1.85 |
| | SA-847 | L | 613 | 319 | 1.92 | 372 | 1.65 |
| Unit 2 | SA-1092 | C | 635 | 105 | 6.05 | 121 | 5.25 |
| | SA-1484 | C | 609 | 105 | 5.80 | 121 | 5.03 |

(1) C – Circumferential
L – Longitudinal

The limiting weld for Unit 1 is SA-847, which had a minimum ratio for acceptance criterion 1 and 2 of 1.92 and 1.65, respectively. The limiting weld for Unit 2 is SA-1484, which had a minimum ratio of material J-R to applied J for acceptance criterion 1 and 2 of 5.80 and 5.03, respectively. Since the values of the J-R ratios are greater than one, the acceptance criteria for the equivalent margins analysis have been met.

References:

- 1) Letter to Document Control Desk from A.J. Cayia, NRC 2002-0075, dated August 29, 2002.
- 2) BAW-2178PA, "Low Upper-Shelf Toughness Fracture Mechanics Analysis of Reactor Vessels of B&W Owners Reactor Vessel Working Group for Level C & D Service Loads," April 1994.
- 3) BAW-2192PA, "Low Upper-Shelf Toughness Fracture Mechanics Analysis of Reactor Vessels of B&W Owners Reactor Vessel Working Group for Level A & B Service Loads," April 1994.
- 4) BAW-2255, "Effect of Power Upgrade on Low Upper-Shelf Toughness Issue," May 1995.
- 5) Letter to Document Control Desk from Mark E. Warner, NRC 2002-0030, dated April 30, 2002.