March 29, 2004

Mr. Gary D. Van Middlesworth
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: TECHNICAL SPECIFICATION (TS) SURVEILLANCE REQUIREMENT (SR) 3.1.4.1, ROD GROUP ALIGNMENT LIMITS (TAC NOS. MB8183 AND MB8184)

Dear Mr. Van Middlesworth:

The Commission has issued the enclosed Amendment No. 212 to Facility Operating License No. DPR-24 and Amendment No. 217 to Facility Operating License No. DPR-27 for the Point Beach Nuclear Plant, Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated March 27, 2003, as supplemented on November 3, 2003, and January 28, 2004.

These amendments revise TS Surveillance Requirement 3.1.4.1, “Rod Group Alignment Limits.” The revision expands the alignment limits on allowable rod cluster control assembly, or rod deviation from demanded position. The change applies in Mode 1, when operating at greater than 85 percent of rated thermal power.

A copy of our related safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Deirdre W. Spaulding, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosures: 1. Amendment No. 212 to DPR-24
2. Amendment No. 217 to DPR-27
3. Safety Evaluation

cc w/encls: See next page

March 29, 2004

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Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC
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Two Rivers, WI 54241

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: TECHNICAL SPECIFICATION (TS) SURVEILLANCE REQUIREMENT (SR) 3.1.4.1, ROD GROUP ALIGNMENT LIMITS (TAC NOS. MB8183 AND MB8184)

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Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

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cc w/encls: See next page

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Point Beach Nuclear Plant, Units 1 and 2

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NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-266

POINT BEACH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 212
License No. DPR-24

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nuclear Management Company, LLC (the licensee), dated March 27, 2003, as supplemented on November 3, 2003, and January 28, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-24 is hereby amended to read as follows:

   B. Technical Specifications

      The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 212, are hereby incorporated in the license. The licensee shall operate the facility in accordance with Technical Specifications.

3. This license amendment is effective as of the date of issuance and shall be implemented within 45 days of the date of issuance. The licensee is to implement the commitments with the implementation of the license amendment.

   A. Table 3.1 of WCAP-15432, Revision 2, lists the characteristics of the two fuel cycles used in performing the rod misalignment analyses. These include Unit 1, Cycle 26 and a future or bounding cycle core design. The licensee has committed to comparing the design parameters in Table 3.1 to those of actual future reload designs. This will take place as part of the standard reload design process via the Reload Safety and Licensing Checklist (RS&LC), which is completed and reviewed by the licensee prior to the start of each reload. If it is determined that the current reload design parameters fall outside those listed in Table 3.1 of WCAP-15432, Revision 2, the licensee will review the results and conclusions of WCAP-15432 to determine if they remain applicable to the current design, or if a reanalysis based on the current design is required.

   B. The licensee's analyses identified that increases in rod ejection $F_Q(z)$ and ejected rod worth must be included in the safety analyses to bound the projected effects when a cycle specific analysis is not performed. The actual calculated values of the increases are given in Section 4.0 of WCAP-15432, Revision 2, and are proprietary. The values are the same as identified in Point Beach Nuclear Plant License Amendment Request Nos. 200 and 205. The licensee will include this requirement in the standard reload design process via the RS&LC, which is completed and reviewed by the licensee prior to the start of each reload.

   C. The Westinghouse (WCAP-15432, Revision 2) analysis assumes that the PBNP units would continue to operate with the +9 percent/-8 percent relaxed axial offset control (RAOC) bands as described in Section 3.1 of WCAP-15432. Should the

licensee modify these RAOC bands for any reason, then the analyses of WCAP-15432 would have to be evaluated to determine if they remain applicable or whether reanalysis is required.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of issuance: March 29, 2004

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-301

POINT BEACH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 217
License No. DPR-27

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nuclear Management Company, LLC (the licensee), dated March 27, 2003, as supplemented on November 3, 2003, and January 28, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-27 is hereby amended to read as follows:

   B. Technical Specifications

      The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 217, are hereby incorporated in the license. The licensee shall operate the facility in accordance with Technical Specifications.

3. This license amendment is effective as of the date of issuance and shall be implemented within 45 days of the date of issuance. The licensee is to implement the commitments with the implementation of the license amendment.

   A. Table 3.1 of WCAP-15432, Revision 2, lists the characteristics of the two fuel cycles used in performing the rod misalignment analyses. These include Unit 1, Cycle 26 and a future or bounding cycle core design. The licensee has committed to comparing the design parameters in Table 3.1 to those of actual future reload designs. This will take place as part of the standard reload design process via the Reload Safety and Licensing Checklist (RS&LC), which is completed and reviewed by the licensee prior to the start of each reload. If it is determined that the current reload design parameters fall outside those listed in Table 3.1 of WCAP-15432, Revision 2, the licensee will review the results and conclusions of WCAP-15432 to determine if they remain applicable to the current design, or if a reanalysis based on the current design is required.

   B. The licensee's analyses identified that increases in rod ejection $F_Q(z)$ and ejected rod worth must be included in the safety analyses to bound the projected effects when a cycle specific analysis is not performed. The actual calculated values of the increases are given in Section 4.0 of WCAP-15432, Revision 2 and are proprietary. The values are the same as identified in Point Beach Nuclear Plant License Amendment Request Nos. 200 and 205. The licensee will include this requirement in the standard reload design process via the RS&LC, which is completed and reviewed by the licensee prior to the start of each reload.

   C. The Westinghouse (WCAP-15432, Revision 2) analysis assumes that the PBNP units would continue to operate with the +9 percent/ -8 percent relaxed axial offset control (RAOC) bands as described in Section 3.1 of WCAP-15432. Should the

licensee modify these RAOC bands for any reason, then the analyses of WCAP-15432 would have to be evaluated to determine if they remain applicable or whether reanalysis is required.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of issuance: March 29, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 212

TO FACILITY OPERATING LICENSE NO. DPR-24

AND LICENSE AMENDMENT NO. 217

TO FACILITY OPERATING LICENSE NO. DPR-27

DOCKET NOS. 50-266 AND 50-301

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
3.1.4-4	3.1.4-4
	3.1.4-5

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 212 TO FACILITY OPERATING LICENSE NO. DPR-24

AND AMENDMENT NO. 217 TO FACILITY OPERATING LICENSE NO. DPR-27

NUCLEAR MANAGEMENT COMPANY, LLC

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-266 AND 50-301

1.0 INTRODUCTION

By application dated March 27, 2003 (Reference 1), as supplemented on November 3, 2003 (Reference 2), and January 28, 2004 (Reference 3), Nuclear Management Company (NMC), LLC (the licensee), requested changes to the Technical Specifications (TS) for the Point Beach Nuclear Plant, (PBNP), Units 1 and 2. The proposed changes would revise TS Surveillance Requirement (SR) 3.1.4.1, "Rod Group Alignment Limits." The proposed TS revision would expand the alignment limits on allowable rod cluster control assembly (RCCA), or rod, deviation from demanded position. The proposed change would apply in Mode 1, when operating at greater than 85 percent of rated thermal power (RTP).

The staff previously issued license amendment requests (LARs) 200 and 205 for PBNP, Units 1 and 2, respectively, on May 8, 2001 (Reference 4). These related amendments increased the allowable alignment limits of individual rods during operation at less than or equal to 85 percent of RTP.

The supplemental letters contained clarifying information and did not change the initial no significant hazards consideration determination and did not expand the scope of the original *Federal Register* notice.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations*, Part 50 (10 CFR 50), Appendix A, "General Design Criteria for Nuclear Power Plants," establishes the minimum requirements for the principal design criteria for water-cooled nuclear power plants. PBNP was licensed prior to the 1971 publication of 10 CFR 50, Appendix A, and as such, is not licensed to the General Design Criteria (GDC) listed in Appendix A. However, PBNP complies with a set of plant-specific GDC which are similar in content to the draft GDC proposed for public comment in 1967. The PBNP Final Safety Analysis Report (FSAR), Section 1.3, lists the plant-specific GDC to which the plant was licensed.

The PBNP plant-specific GDC affecting rod group alignment limits and reactivity and power distribution design requirements are PBNP GDC 6, 7, and 27 through 32. GDC 6, "Reactor

Core Design," and GDC 7, "Suppression of Power Oscillations," require, in part, that reactor core and protection systems be designed to function without exceeding acceptable fuel damage limits and that excessive power oscillations can be readily suppressed. PBNP GDC 27, "Redundancy of Reactivity Control Capability," GDC 28, "Reactivity Hot Shutdown Capability," GDC 29, "Reactivity Shutdown Capability," GDC 30, "Reactivity Hold-down Capability," GDC 31, "Reactivity Control Systems Malfunction," and GDC 32, "Maximum Reactivity Worth of Control Rods," require, in part, that two independent reactivity control systems be provided; that the control system be capable of making and holding the reactor subcritical sufficiently fast, and under credible accident conditions, such as to prevent exceeding acceptable fuel damage limits; that shutdown margin assure subcriticality with the most reactive control rod fully withdrawn; that the system be capable of protecting against any single malfunction; and that the maximum control rod reactivity worth and the rates at which reactivity can be increased be limited to preclude rupture of the reactor coolant pressure boundary or reactor vessel internals to ensure core coolability.

The staff will review the proposed changes to TS SR 3.1.4.1 with respect to maintaining acceptable fuel damage limits and the ability to suppress excessive power oscillations. The proposed changes to TS SR 3.1.4.1 will not affect the other requirements of these criteria.

3.0 TECHNICAL EVALUATION

3.1 Background

For all Westinghouse designed pressurized water reactors, RCCAs, or rods, are moved by their respective control rod drive mechanisms (CRDMs). Each CRDM moves its associated RCCA one step (approximately 5/8 inch) at a time, but at varying rates (steps per minute) depending on the signal output from the Rod Control System. The RCCAs are divided among control banks and shutdown banks. Each bank may be further subdivided into two groups to provide for precise reactivity control. The shutdown banks are maintained either in the fully inserted or fully withdrawn position. The four control banks (A, B, C and D) are moved in and out of the core in an overlapping pattern, such that one control bank begins to move when the previous control bank reaches a predetermined height. Control bank D is the final bank to be withdrawn during a normal withdrawal sequence, and the first to be inserted during a normal insertion sequence. The control rods are arranged in a radially symmetric pattern, so that control bank motion does not introduce radial asymmetries in the core power distributions.

The axial position of the shutdown and control rods is indicated by two separate and independent systems, the bank demand position indication system (commonly called the group step counters) and the rod position indication (RPI) system. The bank demand position indication system counts the pulses from the rod control system that moves the rods, and is considered to be highly precise (± 1 step or ± 5/8 inch). The RPI System provides a highly accurate indication of actual rod position, but at a lower precision than the step counter. The RPI channel has an indication accuracy of 5 percent of span (11.5 steps). Therefore, 12 steps of indication uncertainty are considered in determining the maximum allowable deviation between actual and demanded rod position indication.

PBNP TS SR 3.1.4.1 currently allows an indicated ± 12 step difference between the bank demand position and the individual rod position indicator (IRPI) when reactor power is greater than 85 percent RTP, and ± 24 steps when reactor power is less than or equal to 85 percent

RTP or in MODE 2 operation. PBNP Units 1 and 2 have experienced difficulty in maintaining the indicated difference of less than ± 12 steps for many control rods due to instability of the IRPI system. It is difficult to calibrate the IRPI for the wide variety of conditions and rod positions that can be experienced during power operation. The staff's safety evaluation (SE) for PBNP LARs 200 and 205 (Reference 4) recognized the difficulties associated with the IRPI system.

3.2 Proposed TS Changes

The licensee proposes to amend TS SR 3.1.4.1, "Rod Group Alignment Limits," by increasing and expanding the allowable alignment limits of individual rods in Mode 1 when greater than 85 percent RTP. For less than or equal to 85 percent RTP, the current alignment limit of ± 24 steps is being maintained. The proposed TS SR 3.1.4.1 would expand the alignment limits on allowable rod deviation (as indicated by the RPI System within one hour after control rod motion) from demanded position as follows:

a. ± 18 steps of the bank demand position if sufficient peaking factor margin exists, power level is greater than 85 percent RTP, and bank D demand is less than 215 steps withdrawn,

b. ± 24 steps of the bank demand position if sufficient peaking factor margin exists, power level is greater than 85 percent RTP, and bank D demand is greater than or equal to 215 steps withdrawn.

Above 85 percent RTP, sufficient peaking factor margin is demonstrated by satisfying the requirements of proposed TS Tables 3.1.4-1 and 3.1.4-2. These tables provide the peaking factor margins needed to allow the proposed rod misalignments, and are presented below.

Proposed TS Table 3.1.4-1:
Allowable Alignment Limits As A Function of Measured Peaking Factor Margin ($F_Q(z)$, $F^N_{\Delta H}$) At Power Levels > 85 percent Of Rated Power And Bank D Demand < 215 Steps Withdrawn

ALIGNMENT LIMITS (STEPS)*	REQUIRED MARGIN TO $F^N_{\Delta H}$ LIMIT (%)	REQUIRED MARGIN TO $F_Q(Z)$ LIMIT (%)
12	0.00	0.00
13	0.33	0.83
14	0.67	1.67
15	1.00	2.50
16	1.33	3.33
17	1.67	4.17
18	2.00	5.00

Proposed TS Table 3.1.4-2:

Allowable Alignment Limits As A Function of Measured Peaking Factor Margin ($F_Q(z)$, $F^N_{\Delta H}$) At Power Levels > 85 percent Of Rated Power And Bank D Demand $\geq$ 215 Steps Withdrawn

ALIGNMENT LIMITS (STEPS)*	REQUIRED MARGIN TO $F^N_{\Delta H}$ LIMIT (%)	REQUIRED MARGIN TO $F_Q(Z)$ LIMIT (%)
12	0.00	0.00
13	0.33	0.83
14	0.67	1.67
15	1.00	2.50
16	1.33	3.33
17	1.67	4.17
18	2.00	5.00
19	2.33	5.83
20	2.67	6.67
21	3.00	7.50
22	3.33	8.33
23	3.67	9.17
24	4.00	10.00

* Between the bank demand position and the RPI System.

3.3 Technical Analysis

The proposed changes are based on an evaluation performed by Westinghouse Electric Company and documented in Topical Report WCAP-15432, Revision 2, "Conditional Extension of the Rod Misalignment Technical Specification for Point Beach Units 1 and 2," dated April 2001 (Reference 5). In considering the proposed TS changes, the NRC staff reviewed this topical report, which also provided the technical basis for the staff's approval of PBNP LARs 200 and 205.

The proposed increases in allowed rod misalignment at power levels greater than 85 percent RTP are accommodated by available peaking factor margins ($F_Q(z)$ and $F^N_{\Delta H}$). The Westinghouse evaluation determined acceptable indicated misalignments based upon the margin available between the measured $F_Q(z)$ and its corresponding limit, and the measured $F^N_{\Delta H}$ and its corresponding limit. The allowed indicated misalignment is given in the proposed TS Tables 3.1.4-1 and 3.1.4-2 (shown above) as a function of the required $F_Q(z)$ and $F^N_{\Delta H}$ margin. The peaking factor margin required is determined by calculating the changes in $F_Q(z)$ and $F^N_{\Delta H}$ for given changes in rod alignment. The peaking factor margin available, and thus the

acceptability of the indicated rod misalignment, is determined based on the latest incore flux map performed per the recommended surveillance requirements of PBNP TS 3.2.1 and 3.2.2. As shown in the proposed TS Table 3.1.4-2, the required peaking factor margins are 4.0 percent in $F^N_{\Delta H}$ and 10.0 percent in $F_Q(z)$ for a maximum control rod misalignment of 24 steps indicated.

Westinghouse performed all analyses needed to support the proposed TS changes using the NRC approved core design system (References 6 and 7). Westinghouse performed and documented the calculations and cases analyzed in WCAP-15432, Revision 2. To justify the increase in allowable rod misalignment at greater than 85 percent RTP, Westinghouse evaluated the effects of the additional misalignment on normal operating peaking factors (the amount of peaking factor margin needed to allow the misalignment) and on safety analysis inputs. The number and type of rod misalignments analyzed were limited to those identified by an evaluation of the Failure Mode and Effects Analysis (FMEA) performed for the rod control system (Reference 1 of WCAP-15432, Revision 2). The evaluation was limited to single failures within the rod control system logic cabinets, power cabinets, and CRDMs. A key assumption in the analysis of the feasible failures was that the current PBNP licensing basis requires the consideration of a single failure only. These assumptions are consistent with those of PBNP LARs 200 and 205.

The FMEA identified six categories of failure mechanisms that warranted investigation. These categories and the cases analyzed are described in detail in WCAP-15432, Revision 2. As a result of the failure mode categories, Westinghouse analyzed eight different cases of rod misalignment. The cases analyzed involved single and multiple rod misalignments in a single group in either the insertion or withdrawal directions, as well as cases involving all rods in a group misaligned from the group step demand position. The Westinghouse analyses utilized computer code models for both PBNP Units 1 and 2, and considered two fuel cycles. The fuel cycles considered include PBNP Unit 1 operating cycle 26, representing the current PBNP licensing basis for fuel and peaking factor limits, and a 'future' or 'bounding' cycle based on higher enrichments and peaking factors.

The NRC staff reviewed the methodology and results of the analyses performed to justify the proposed TS changes. The staff's review identified several technical issues which the licensee addressed in its response to the staff's request for additional information (RAI) (References 2 and 3). Key issues identified by the staff include the impact of the proposed TS changes on the axial power shapes assumed in the PBNP FSAR Chapter 14 transient analyses, the incore flux map accuracy and surveillance interval impacts, the significance of the 215 steps withdrawn cutoff, impacts on shutdown margin, computation of the 95/95 $F_Q(z)$ and $F^N_{\Delta H}$ peaking factor margin requirements and any conditions or restrictions to be considered on the proposed TS changes. Each of these issues is addressed here.

Shutdown and control rod operability and alignment are directly related to core power distributions, which are initial conditions assumed in the PBNP FSAR Chapter 14 safety analyses. The licensee addressed the impacts of the proposed changes on power distribution assumptions in its response to the staff's RAI (Reference 2, Question 4). During plant operation, the reactor operator controls the core axial offset to a prescribed target that is within the relaxed axial offset control (RAOC) bands, regardless of whether a control rod or group of rods are misaligned as permitted by the TS. The indicated rod misalignments permitted by the proposed TS changes are considered to be Condition I (normal operation) events. As part of

the NRC approved PBNP reload design process, the Condition I RAOC analysis performed each cycle generates thousands of axial power shapes which will bound any minor perturbation caused by rod misalignment. These Condition I axial power shapes are used to confirm that Condition I departure from nucleate boiling (DNB) limits are met, and are also used as initial condition axial power shapes for the Condition II transients modeled as part of the RAOC analysis. The resulting Condition II axial power shapes are used to confirm that Condition II DNB limits are met. Therefore, the proposed rod alignment TS changes will not introduce more limiting axial power shapes than those currently being used.

Additionally, the allowable increase in the indicated rod misalignment is based on demonstrating sufficient margin to the TS $F_Q(z)$ and $F^N_{\Delta H}$ limits. The currently licensed $F_Q(z)$ and $F^N_{\Delta H}$ TS limits are not being revised. The amount of available margin is determined by routine incore flux map surveillance as required by the TS. If sufficient margin cannot be demonstrated, increased rod misalignment beyond the current TS limits is not permitted. As such, the PBNP cores will not exceed the current normal operation (Condition I) $F_Q(z)$ and $F^N_{\Delta H}$ limits with the proposed increased rod misalignments. Because the PBNP cores will continue to meet the peaking factor limits, while increasing the permitted rod misalignment, the design basis DNBR and fuel centerline temperature limits will still be satisfied under normal operation (Condition I) and accident conditions (Condition II). Based on this, the staff finds that the proposed TS changes are acceptable because they have no impact on the PBNP FSAR Chapter 14 transient and accident results.

The technical justification for the proposed rod misalignment values is based on the available margin between the measured $F_Q(z)$ and $F^N_{\Delta H}$ values, and their corresponding limits. The licensee determines this available margin using the latest incore flux map, which is performed at the surveillance interval specified in PBNP TS 3.2.1 and 3.2.2 (31 effective full power days). The staff questioned the impacts on the margin calculation stemming from the use of a flux map performed at the maximum possible surveillance interval; particularly, the accuracy of such a flux map and how uncertainties such as detector calibration and drift are accounted for. The licensee provided additional information to address the staff's concern (Reference 2, Question 5 and Reference 3) and stated that PBNP applies conservative peaking factor measurement uncertainty values based on a staff approved methodology described in Westinghouse topical report WCAP-7308-L-P-A (Reference 8). Based on this methodology, a conservative measurement uncertainty value of 5 percent is applied to the $F_Q(z)$ peaking factor, and a conservative measurement uncertainty value of 4 percent is applied to the $F^N_{\Delta H}$ peaking factor. These uncertainties include factors such as detector calibration and drift. Additionally, in accordance with the staff approved RAOC methodology (Reference 9), PBNP applies a correction term (W(z)) to the measured $F_Q(z)$ to account for power distribution transients encountered during normal operation. Also, if the maximum $F_Q(z)$ is projected to increase during the surveillance interval, an additional burnup correction term is required by the RAOC methodology and PBNP TS SR 3.2.1.2. This additional correction term is typically 2 percent, and is evaluated each cycle and included in the PBNP Core Operating Limits Report. Based on this information, the staff finds that the licensee adequately accounts for potential changes in the flux map over the recommended surveillance interval and that the use of the latest flux map is acceptable for determining available peaking factor margins.

The proposed TS changes allow an increased rod deviation from demand position, the magnitude of which depends on Control Rod Bank D demand position being greater or less

than 215 steps withdrawn. The staff questioned the significance of 215 steps, and considering the increased misalignment allowances, questioned how shutdown margin will be ensured (Reference 2, Question 8). The rod position of 215 steps withdrawn corresponds to the position where the control rods begin to have a significant reactivity effect. This position was also the cutoff used in the Westinghouse analysis (Reference 5) which provides the technical justification for the proposed TS changes. In accordance with TS Limiting Conditions for Operation 3.1.1, 3.1.5 and 3.1.6, the licensee demonstrates, and will continue to demonstrate, compliance with shutdown margin requirements. Consistent with the PBNP licensing basis, shutdown margin is required to be satisfied assuming the most reactive rod cannot be inserted into the core. Additionally, the licensee is not revising the current rod insertion limit TS. Therefore, the staff finds that the proposed TS changes do not adversely impact the ability to meet shutdown margin requirements.

The peaking factor margins required to allow the proposed rod misalignments were determined from the set of rod misalignment cases analyzed and documented in the Westinghouse topical report (reference 5). The needed margins were calculated based on the increases in $F_Q(z)$ and $F^N_{\Delta H}$, and represent 95 percent probability with 95 percent confidence (95/95) values. To demonstrate that the required peaking factor margins are conservative, the licensee provided plots of the calculated $F_Q(z)$ and $F^N_{\Delta H}$ peaking factor increases, with superimposed distribution functions (Reference 2, Question 11) and described the conservative process applied to determine the peaking factor margins. The staff finds that the results of the evaluation process are conservative, and therefore, the required peaking factor margins listed in proposed TS Tables 3.1.4-1 and 3.1.4-2 are acceptable.

4.0 REGULATORY COMMITMENTS

The staff's review identified a number of limitations related to the application of this methodology and proposed TS change. These issues were identified in the staff's RAIs (Reference 2) and are summarized here.

- Table 3.1 of WCAP-15432, Revision 2 (reference 5), lists the characteristics of the two fuel cycles used in performing the rod misalignment analyses. These include Unit 1, Cycle 26 and a future or bounding cycle core design. The licensee has committed to comparing the design parameters in Table 3.1 to those of actual future reload designs. This will take place as part of the standard reload design process via the RS&LC, which is completed and reviewed by the licensee prior to the start of each reload. If it is determined that the current reload design parameters fall outside those listed in Table 3.1 of WCAP-15432, Revision 2, the licensee has committed to review the results and conclusions of WCAP-15432 to determine if they remain applicable to the current design, or if a reanalysis based on the current design is required (Reference 2, Question 6).

- The licensee's analyses identified that increases in rod ejection $F_Q(z)$ and ejected rod worth must be included in the safety analyses to bound the projected effects when a cycle specific analysis is not performed. The actual calculated values of the increases are given in Section 4.0 of WCAP-15432, Revision 2 and are proprietary. The values are the same as identified in PBNP LARs 200 and 205 (Reference 4). The licensee has committed to include this requirement in the standard reload design process via the RS&LC, which is completed and reviewed by the licensee prior to the start of each reload.

- The Westinghouse (WCAP-15432, Revision 2) analysis assumes that the PBNP units would continue to operate with the +9% / -8% RAOC bands as described in Section 3.1 of WCAP-15432. Should the licensee modify these RAOC bands for any reason, then the licensee has committed to evaluate the analyses of WCAP-15432 to determine if they remain applicable or whether a reanalysis is required to be completed (Reference 2, Question 9).

The NRC staff considered the above commitments as part of its evaluation in Section 3.0 above and finds the commitments appropriate for the proposed change to revise TS SR 3.1.4.1, "Rod Group Alignment Limits." The licensee is to implement the commitments with the implementation of the license amendment.

The NRC staff has agreed that NEI 99-04, Revision 0, "Guidelines for Managing NRC Commitment Changes," provides reasonable guidance for the control of the regulatory commitments made to the NRC staff. (See Regulatory Issue Summary 200-17, Managing Regulatory Commitments Made by Power Reactor Licensees to the NRC staff, dated September 21, 2000 [ADAMS Accession Number ML003741774]). The commitments should be controlled in accordance with the industry guidance or comparable criteria employed by a specific licensee. The NRC staff may choose to verify the implementation and Maintenance of these commitments in a future inspection or audit.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Wisconsin State official was notified of the proposed issuance of the amendments. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or change a surveillance requirement. The staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously published a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding (68 FR 22749). Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

8.0 REFERENCES

1. Letter from A. J. Cayia, Nuclear Management Company, LLC (NMC) to USNRC, "Point Beach Nuclear Plant - Docket Nos. 50-266 and 50-301 - License Amendment Request 231 - Technical Specifications SR 3.1.4.1, Rod Group Alignment Limits," License Nos. DPR-24 and DPR-27, dated March 27, 2003.

2. Letter from A. J. Cayia, Nuclear Management Company, LLC (NMC) to USNRC, "Point Beach Nuclear Plant Units 1 and 2 - Docket Nos. 50-266 and 50-301 - License Nos. DPR-24 and DPR-27 - Response To Request For Additional Information Regarding License Amendment Request 231 - Technical Specifications SR 3.1.4.1, Rod Group Alignment Limits," dated November 3, 2003.

3. Letter from G. D. Van Middlesworth, Nuclear Management Company, LLC (NMC) to USNRC, "Point Beach Nuclear Plant Units 1 and 2 - Docket Nos. 50-266 and 50-301 - License Nos. DPR-24 and DPR-27 - Response To Request For Additional Information Regarding License Amendment Request 231 - Technical Specifications SR 3.1.4.1, Rod Group Alignment Limits," dated January 28, 2004.

4. Letter from B. A. Wetzel, USNRC, to M. Reddemann, Nuclear Management Company, LLC (NMC), "Point Beach Nuclear Plant, Units 1 and 2 - Issuance of Amendments RE: Individual Rod Position Indication System (TAC NOS. MB0671 and MB0672)," dated May 8, 2001.

5. WCAP-15432, Revision 2, "Conditional Extension of the Rod Misalignment Technical Specification for Point Beach Units 1 and 2," dated April, 2001.

6. WCAP-11596-P-A, "Qualification of the PHOENIX-P/ANC Nuclear Design System for Pressurized Water Reactor Cores," dated June 1988.

7. WCAP-10965-P-A, "ANC: A Westinghouse Advanced Nodal Computer Code," dated December 1985.

8. WCAP-7308-L-P-A, "Evaluation of Nuclear Hot Channel Factor Uncertainties," June 1988.

9. WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control - F_Q Surveillance Technical Specification," dated February, 1994.

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Date: March 29, 2004