August 15, 2003

MEMORANDUM TO: File

FROM: Deirdre W. Spaulding, Project Manager, Section 1 ***/RA/***
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 - FACSIMILE TRANSMISSION FOR ISSUES DISCUSSED IN TELEPHONE CONFERENCE (TAC NOS. MB8183 AND MB8184)

The attached questions were transmitted by fax to Mr. Jack Gadzala, the Nuclear Management Company, LLC, in preparation for a telephone conference. This memorandum and the attachment do not convey a formal request for information or represent an Nuclear Regulatory Commission staff position.

Docket Nos. 50-266 and 50-301

Attachment: Discussion Points

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DATE	08/14/03	08/14/03	08/14/03

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Point Beach Unit 1 and 2 License Amendment Request 231
Technical Specifications (TS) Surveillance Requirement (SR) 3.1.4.1,
Rod Group Alignment Limits, dated March 27, 2003
Discussion Points
TAC Nos. MB8183 and MB8184

1. On page 4 of the submittal, the licensee states that two types of static rod misalignment analyses are performed. With control banks at their respective rod insertion limits, one analysis considers any one rod completely inserted into the core, and the other analysis considers any one rod completely withdrawn from a bank. The licensee states that satisfying the limits on departure from nucleate boiling ratio (DNBR) in both of these cases bounds the situation when a rod is misaligned from its group by up to 36 steps. The licensee does not provide any technical discussion to justify this conclusion. Please discuss the assumptions made in these analyses and whether they are limiting, and provide the technical justification for this conclusion. Include the DNBR values for these analyses to demonstrate that the acceptance limits are satisfied.

2. On page 5 of the submittal, the licensee indicates that proposed control rod misalignments are indicated by the rod position indicator system within one hour after control rod motion. Please provide a discussion regarding the one-hour time limit. TS SR 3.1.4.1, which is being modified, has a 12-hour frequency for verifying that the proposed rod alignment limits are satisfied. What is the significance of the one-hour time limit, and are there any administrative controls or actions associated with the one hour? How does the one-hour relate to the 12-hour TS surveillance frequency?

3. The licensee states that the proposed rod misalignment TS changes are applicable to all shutdown and control rods (of all banks) over the range of 0 to 230 steps withdrawn inclusive. Please provide the technical basis for this broad applicability.

4. The licensees submittal discusses the impacts of the increased rod alignment limits on the misaligned rod transient. The proposed TS change to increase rod alignment limits could potentially change the limiting axial power shapes assumed in final safety analysis report (FSAR) Chapter 15 transient analyses. Please discuss the analysis performed to evaluate whether the current limiting axial power shapes remain bounding considering the possible spectrum of axial power shapes created by the proposed increase in rod alignment limits. Include a discussion of any differences and provide plots comparing the current to the proposed axial power shapes profiles. If new axial power shapes are not bounded, please provide results of updated final safety analysis report Chapter 15 reanalyses and demonstrate that all acceptance criteria remain satisfied.

5. Technical justification for the proposed rod misalignment values is based on the margin between measured values of F_Q and $F_{\Delta H}$, and their corresponding limits. The licensee states that the margin will be determined based on the latest incore flux map performed per the recommended surveillance intervals of TS 3.2.1 and 3.2.2. The margin calculation and its accuracy will depend upon when the last flux map was performed. Please quantify the impacts on the margin calculations stemming from the use of a flux map performed at the maximum possible surveillance interval. Include a discussion of the factors which could influence the accuracy of the peaking factor calculations and how these factors, such as detector calibration and drift, are accounted for.

6. Table 3.1 of WCAP-15432, Revision 2, lists the characteristics of the two fuel cycles used in performing the rod misalignment analyses. The two cycles considered include Unit 1, Cycle 26 and a “future” or “bounding” cycle core design. Please discuss how the assumptions used in the bounding core analyses are controlled such that the rod misalignment analyses remain valid. What actions will the licensee take in the event that future cycle characteristics change such that the analyses in WCAP-15432, Revision 2 are no longer valid?

7. The licensees analyses found that an increase of 2.8 percent in rod ejection $F_{Q,}$ and 3.0 percent in the ejected rod worth, $\Delta\rho_{EJ,}$ must be included in the safety analyses to bound the projected effects when a cycle specific analysis is not performed. Please discuss the administrative controls in place which ensure that this adjustment is applied in future reload designs.

8. The proposed TS changes would allow an increased deviation from demand position, the magnitude of which depends on bank demand position being greater or less than 215 steps. Please provide a discussion of the significance of 215 steps and why this value was selected. Also, when applying the maximum allowed deviations, a rod position can fall below the rod insertion limits. For example, consider Bank D insertion at 210 steps withdrawn and 100 percent of rated power. Applying the proposed 18 step deviation (for < 215 steps) and an additional 12 steps to account for indication accuracy, the rod position could be 180 steps withdrawn. Figure 3.2 of WCAP-15432, Revision 2 shows that the rod insertion limit at these conditions is 185 steps withdrawn. How is shutdown margin ensured in this situation?

9. WCAP-15432-P, Revision 2, is used as the basis for the current license amendment request (LAR) and was also used as the basis for LAR’s 200 and 205, which increased the rod alignment limits for rated thermal power (RTP) less than 85 percent. All references to power level in this WCAP are given as either a percentage of RTP (percent RTP) or stated as hot full power (HFP). Please provide the 100 percent RTP level (MWth) used in the analyses performed in WCAP-15432-P, Revision 2. Does this assumed RTP, and thus, the analyses in WCAP-15432-P, Revision 2, bound all future power uprate plans for Point Beach Units 1 and 2 (margins to $F_{\Delta H}$ and F_Q limits are usually lower at higher power levels). If not, does Point Beach have a mechanism in place to reevaluate these analyses at the higher power levels as part of a future power uprate LAR?

10. The proposed TS changes are based on adequate margin to $F_{\Delta H}$ and F_Q limits. WCAP-15432-P provides the margins necessary for the proposed rod alignment limits. However, the WCAP does not clearly discuss the methodology applied to determine the necessary margins. Please provide a discussion of how the $F_{\Delta H}$ and F_Q margins are calculated and include the following items in the discussion:

    a. How the $F_{\Delta H}$ and F_Q margins ensure that the acceptance criteria of NUREG-0800, Standard Review Plan,” Section 15.4.3 (Control Rod Misoperation) are satisfied for the proposed rod misalignment limits? These acceptance criteria include DNBR and fuel centerline temperature.

b. Were the rod misalignment analyses performed in accordance with the approved reload design methodology for Point Beach, including all conservative assumptions of that methodology?

c. Please provide the DNBR and fuel centerline temperature results vs. limits for the limiting rod >85 percent power misalignment cases.

11. WCAP-15432-P does not include any discussion regarding the statistical analyses performed to determine the 95/95 $F_{\Delta H}$ and F_Q margin requirements. Please provide a discussion of the methodology applied, including:

a. Justification that sample sizes for the HFP cases are adequate
b. Determination and effect of the distribution function selected
c. For the HFP cases, provide plots of the $F_{\Delta H}$ and F_Q data points used, including a curve (superimposed) of the distribution function selected

12. Do the proposed TS changes introduce any impacts or needed adjustments on rod withdrawal interlocks or rod stops in either manual or automatic mode?

13. Assuming the proposed TS changes are implemented, the licensee could find itself in a position where rod alignment exceeds the current TS limit of ±12 steps at HFP. In accordance with the proposed TS changes, the licensee would then need to verify that the $F_{\Delta H}$ and F_Q margins do not exceed the values in the proposed TS Tables. Should the licensee find that an adequate peaking factor margin does not exist, what is an acceptable amount of time to be in this condition? Please justify that the 12-hour surveillance frequency to verify rod position is acceptable.

14. WCAP-15432-P, Section 4.0, “Safety Analysis Impacts,” states that, “Therefore, one does not need to assume a rod misalignment from the [ ][a,c] as a precondition to one of the above mentioned Condition II rod misalignment transients; such an assumption would be beyond the current Westinghouse licensing basis and overly conservative. As such, the proposed changes to the rod misalignment TS do not have an adverse impact on the safety analysis inputs for these accidents, or the DNB results.” The staff does not agree with this statement. The proposed TS changes to increase alignment limits can introduce more adverse initial conditions, which must be considered in the transient analyses. Also, the licensees submittal states that, “Shutdown and control rod operability and alignment are directly related to power distributions and SDM, which are initial conditions assumed in safety analyses.” Please provide qualitative technical justification for excluding single/multiple rod misalignment in conjunction with other FSAR Chapter transients.