June 25, 2008

Mr. Robert E. Brown
Senior Vice President, Regulatory Affairs
GE Hitachi Nuclear Energy
3901 Castle Hayne Road MC A-45
Wilmington, NC 28401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 217 RELATED TO NEDC-33374P, "SAFETY ANALYSIS REPORT FOR FUEL STORAGE RACKS CRITICALITY ANALYSIS FOR ESBWR PLANTS"

Dear Mr. Brown:

By letter dated February 26, 2008, the U. S. Nuclear Regulatory Commission (NRC) staff informed you of the result of the acceptance review of NEDC-33374P, "Safety Analysis Report for Fuel Storage Racks Criticality Analysis for ESBWR Plants." In that letter, the staff determined that the material presented in the topical report is sufficient to begin a detailed review as part of the ESBWR design certification review.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

If you have any questions or comments concerning this matter, you may contact me at 301-415-6715 or Bruce.Bavol@nrc.gov or you may contact Amy Cubbage at 301-415-2875 or Amy.Cubbage@nrc.gov.

Sincerely,

/RA/

Bruce Bavol, Project Manager
ESBWR/ABWR Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-010

Enclosure:
Request for Additional Information

cc: See next page

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DATE	06/25/2008	06/25/2008

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Requests for Additional Information (RAIs): ESBWR Design Control Document (DCD)
Revision 5; NEDC-33374P, "Safety Analysis Report for Fuel Storage Racks Criticality Analysis for ESBWR Plants"

RAI Number	Reviewer	Question Summary	Full Text
9.1-77	Gilmer J	Provide a copy of References 2, 3, 4, and 6.	Please provide a copy of References 2, 3, 4, and 6 identified in Section 9.0 of NEDC-33374P so that staff can perform confirmatory runs.
9.1-78	Gilmer J	Provide justification for the limited scope of normal and abnormal conditions described and analyzed.	NEDC-33374P, Section 1.0 – The scope of the analysis, as described in Section 1.0, may be too restricted. Provide justification for the limited scope of normal and abnormal conditions described and analyzed. Describe the process used to identify the normal and credible abnormal conditions for fresh and spent fuel handling and storage. If bounding configurations are used for the analysis, provide the logic for eliminating the non-bounding configurations.
9.1-79	Gilmer J	What are the restrictions and requirements for fuel handling?	NEDC-33374P, Section 2.0 – The requirements stated in Section 2.0 appears to apply only to fuel in storage racks. What are the restrictions and requirements for fuel handling?
9.1-80	Gilmer J	Provide a list of all assumptions and justification for their use.	NEDC-33374P, Section 3.0 – Although labeled "ASSUMPTIONS", the items listed appear to be modeling steps used in the analyses. In addition to the modeling steps, provide a list of all assumptions and justification for their use.

Enclosure

RAI Number	Reviewer	Question Summary	Full Text
9.1-81	Gilmer J	Provide sufficient design detail to enable independent confirmatory calculations.	NEDC-33374P, Section 4.0 – Provide sufficient design detail for the in-core configuration, the racks and bundle to enable independent confirmatory calculations, including manufacturing tolerance/uncertainties and isotopic compositions for the limiting conditions.
9.1-82	Gilmer J	Provide details of the tolerance analysis.	NEDC-33374P, Section 4.2 – Provide details of the cell width tolerance analysis.
9.1-83	Gilmer J	Clarify modeling in the axial direction.	NEDC-33374P, Section 4.2 – Clarify the modeling in the axial (Z) dimension, including the basis for neglecting consideration of the axial burnup variation and the height of the borated stainless steel and its position relative to the active fuel region.
9.1-84	Gilmer J	Provide justification for modeling the inactive parts of the fuel bundle as water.	NEDC-33374P, Section 4.3 – Provide justification for modeling the inactive parts of the fuel bundle as water.
9.1-85	Gilmer J	Provide the sensitivity calculations related to the presence of the channel.	NEDC-33374P, Section 4.3 – Provide the sensitivity calculations related to the presence of the channel.
9.1-86	Gilmer J	Clarify what is meant by “DOM” and “VAN” lattices.	NEDC-33374P, Section 4.4 – Clarify what is meant by “DOM” and “VAN” lattices.

RAI Number	Reviewer	Question Summary	Full Text
9.1-87	Gilmer J	Provide additional information and justification for the operating conditions utilized for the isotopic calculations.	NEDC-33374P, Section 4.4 – Provide additional information and justification for the operating conditions utilized for the isotopic calculations.
9.1-88	Gilmer J	Provide additional explanation and/or justification for the determination of the “equivalent in-core K-inf” value.	NEDC-33374P, Section 4.4 – Provide additional explanation and/or justification for the determination of the “equivalent in-core K-inf” value.
9.1-89	Gilmer J	Provide additional information and justification of the handling of uncertainties in the K(95/95) equation.	NEDC-33374P, Section 5.0 – Provide additional information and justification of the handling of uncertainties in the K (95/95) equation. For example, how was the 95/95 tolerance limit, which was applied to the bias uncertainty, determined? What confidence level is associated with the ΔK_U terms?
9.1-90	Gilmer J	List of criticality experiments	NEDC-33374P, Section 5.0 - Provide the process and criteria used to select the critical experiments and specific list of critical experiments which were used for the bias determination.
9.1-91	Gilmer J	Provide a detailed description of new fuel operations.	NEDC-33374P, Section 6.1 – Provide a detailed description of new fuel operations, including a thorough review of potential conditions affecting criticality, e.g., sources of moderation and handling accidents.
9.1-92	Gilmer J	Initial Fuel Criticality Analysis	NEDC-33374P, Section 6.1 states that new fuel bundles are channeled and moved into the spent fuel pool, from which point

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			on they are submerged. Explain any differences for receipt of initial fuel.
9.1-93	Gilmer J	Fission product inclusion in k-inf calculations	NEDC-33374P, Section 7.3 – Provide clarification as to whether the fission products are included in the in-core k-inf calculations.
9.1-94	Gilmer J	Channel versus no channel K-eff results	NEDC-33374P, Section 7.3 - Provide the results of calculations performed with and without the bundle channel which demonstrated that the higher K-eff values are obtained in the presence of the channel.
9.1-95	Gilmer J	In Section 7.4, confirm the presence of borated stainless steel panels on the exterior sides of periphery rack cells.	NEDC-33374P, Section 7.4 – Confirm/clarify the presence of borated stainless steel panels on the exterior sides of periphery rack cells, i.e., walls adjacent to pool walls.