

ENCLOSURE 2 CONTAINS SENSITIVE PROPRIETARY INFORMATION

March 5, 2008

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 157 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Brown:

By letter dated August 24, 2005, GE-Hitachi Nuclear Energy Americas, LLC (GEH) submitted an application for final design approval and standard design certification of the economic simplified boiling water reactor (ESBWR) standard plant design pursuant to 10 CFR Part 52. The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed design.

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.

Pursuant to 10 CFR 2.390, we have determined that the enclosed RAI contains proprietary information. We have prepared a non-proprietary version of the RAI (Enclosure 1) that does not contain proprietary information. The proprietary information is indicated in brackets and underlined in Enclosure 2. We will delay placing this document in the public document room for a period of ten (10) working days from the date of this letter to provide you with the opportunity to comment on the proprietary aspects only. If you believe that any additional information in the enclosure is proprietary, please identify such information line by line and define the basis pursuant to the criteria of 10 CFR 2.390 before the public release date.

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R. Brown

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If you have any questions or comments concerning this matter, you may contact me at 301-415-6715 or bmb2@nrc.gov or you may contact Amy Cubbage at 301-415-2875 or aec@nrc.gov.

Sincerely,

/RA/

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

Docket No. 52-010

Enclosure:

1. Request for Additional Information (Non-Proprietary)
2. Request for Additional Information (Proprietary)

cc: See next page (w/o enclosure 2)

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Bruce Baval, Project Manager
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Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-010

Enclosure:

1. Request for Additional Information (Non-Proprietary)
2. Request for Additional Information (Proprietary)

cc: See next page (w/o enclosure 2)

ACCESSION NO. ML080510069-Non-Proprietary Version

OFFICE	NGE1	NGE1	NGE1/BC
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DATE	03/05/2008	03/04/2008	03/05/2008

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ESBWR DESIGN CERTIFICATION APPLICATION DATED MARCH 5, 2008

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Requests for Additional Information (RAIs)
ESBWR Design Control Document (DCD)

RAI Number	Reviewer	Question Summary	Full Text
4.4-1, Supplement No. 1 (MFN 07-029, Supplement No. 1, December 21, 2007)	Gilmer J	<p>Explain the axial power distributions used for the tests; provide justification for testing [] [] ; provide a statistical evaluation of the test data; provide R-factor confirmation using the test data.</p>	<p>The staff did not have an opportunity to review and comment on the test matrix prior to the test completion. It is expected that most of the following staff questions on the tests performed and the statistical assessment will be addressed in the new supplement to NEDC-33237P, "Critical Power Correlation, Uncertainty, and OLMCPR Development."</p> <ol style="list-style-type: none"> 1. Based on the GEH response to the RAI and teleconference discussion, it seems that [] [] was tested. [] [] and 'One Peaking Distribution.' Please explain the axial power configuration(s) actually tested. Does this account for possible upskewed, downskewed, or double-hump power distributions? 2. Table 1 in the response indicates that all tests were conducted at [] [] (including the starting pressure for the transient test). Were other combinations tested for pressure, mass flux, and enthalpy change? If not, provide justification for testing [] [] . 3. No statistical evaluation is provided in the response. Provide the statistical assessment of the GEXL correlation uncertainty for the GE14E fuel. 4. This response, which is tied to RAI 4.4-27, Supplement 2, does not contain confirmation based on test data that the R-factor calculation methodology is applicable to ESBWR. The staff requests that this information using

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RAI Number	Reviewer	Question Summary	Full Text
			the GE14E test data be addressed in the new supplement to NEDC-33237P, "Critical Power Correlation, Uncertainty, and OLM CPR Development."
RAI 4.4-5, Supplement No. 2 (MFN 06-297, Supplement No. 8, June 21, 2007)	Gilmer J	Update DCD Reference 4.4-12	The staff finds the response acceptable. However, DCD Reference 4.4-12 must be updated to include the supplement to LTR NEDC-33237P.
RAI 4.6-28, Supplement No. 1 (MFN 07-446, August 20, 2007)	Clifford P, Thomas, G	SCRRI and SRI functions	<p>The response provided by GEH proposed to resolve the question of core thermal limit violation by introducing SRI.</p> <p>To complete the response GEH needs to address the following questions:</p> <ol style="list-style-type: none"> 1. As stated previously, the SCRRI system was designed to lower power (following a transient) to avoid shutting the reactor down. The proposed SRI does this ahead of SCRRI insertion so that SCRRI will not violate thermal limits. If SRI lowers power, why is SCRRI needed? 2. The case of partial SCRRI failure i.e., to be inserted on half of the core and not on the other half and the possibility of introduction of core instability has not been discussed. 3. Is there a possibility of partial SRI insertion disturbing symmetry and introducing instabilities? 4. Confirm that SRI will be added to TS in addition to SCRRI

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RAI 15.0-31	Thomas G	ESBWR Feedwater Temperature Operating Domain in Chapter 15 of the DCD as an Appendix	Submit a summary of the operation and analysis of the ESBWR Feedwater Temperature Operating Domain in Chapter 15 of the DCD as an Appendix. Grand Gulf Updated FSAR Section 15D.13, "Feedwater out of service in the maximum extended operating domain" may be used as an example of the scope and format of the submittal.
RAI 15.3-26, Supplement No. 1 (MFN 07-582, December 4, 2007)	Lambros L	Analyses of events found in Table 15.3-1b	DCD Tier 2, GEH will need to provide in text format the quantitative reactivity transient analyses of events found in Table 15.3-1b covering sections 15.3.7-15.3.11.
RAI 15.4-26, Supplement No. 1 (MFN 07-299, June 27, 2007)	Forrest E	RB leakage testing criteria	<p>Please confirm that the leak test criteria will always be less than or equal to the leakage assumed in the design basis analysis. Please state what that leakage is in terms of the units being used for flow rate in the testing for leakage.</p> <p>The information provided on testing needs to be related to a flow rate at a differential pressure (such as 750 cfm at 1/4 in wg). The pressure should be established in essentially all areas of the RB and maintained for a period of time such as currently done in existing BWR's. The differential pressure should be reflective of the worst meteorological conditions that could be expected to influence exfiltration from the building. The test procedures should be addressed in RAI 6.2-167 S01 and, or RAI 6.2-165 part B. The testing should be described in the DCD in Section 6.2.3. Please provide the location of the SR and the TS criteria for the test in the DCD.</p> <p>Please explain how GEH modeled the 50%/day RB leakage and 40 percent of volume mixing. The revision 4 TS basis is not consistent with the GEH dose analyses. Please revise the TS basis.</p>

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(Revised 02/14/2008)

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