

January 17, 2008

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 144 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.

To support the review schedule, you are requested to provide the requested additional information within 45 days of the date of this letter.

If you have any questions or comments concerning this matter, you may contact me at 301-415-3207 or [saw8@nrc.gov](mailto:saw8@nrc.gov) or you may contact Amy Cabbage at 301-415-2875 or [aec@nrc.gov](mailto:aec@nrc.gov).

Sincerely,

*/RA/*

Shawn Williams, 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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Office of New Reactors

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Distribution: See next page

ADAMS ACCESSION NO. ML080150488

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<b>DATE</b>	1/16/08	1/17/08	1/17/08

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ESBWR DESIGN CERTIFICATION APPLICATION

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**Requests for Additional Information (RAIs)  
ESBWR Design Control Document (DCD), Revision 4**

<b>RAI Number</b>	<b>Reviewer</b>	<b>Question Summary</b>	<b>Full Text</b>
21.6-69, Supplement No. 1, (MFN 07-382, July 11, 2007)	Haider S	The focus of the RAI is on the sensitivity of the MSLB / FWLB results to the PIRT multipliers, and the underlying phenomena, such as, radiolysis, and droplet entrainment into the PCCS condensers.	<p>Concerning GEH's response to RAI 21.6-69, Part (b), it is necessary for the staff to validate the sensitivity of the phenomena identification and ranking table (PIRT) multipliers. In this regard, please address the following:</p> <p>A. Provide a discussion of the dominant phenomena driving the predicted pressure profiles. Please include phenomena, such as the water droplets entrainment into the PCCS condenser, likely to significantly affect the containment pressure, considering the available margin to the containment design pressure at 72 hours.</p> <p>In more recent long term peak containment pressure calculations, core radiolysis appears to be an important process, and yet it was not identified in any PIRT or discussion within NEDC-33083P-A. Please include this process, or explain why this process should not be included in the containment PIRT.</p> <p>B. Perform a sensitivity study to determine the limiting PIRT multipliers set for both feed water line break (FWLB) and main steam line break (MSLB); or provide the basis as to why a single multiplier set is applicable to both breaks.</p> <p>C. DCD, Tier 2, Revision 4, Appendix 6B documents the Main Steam Line Break (MSLB) results, but it does not document the Main Feed Water Line Break (FWLB) results. Please include the corresponding FWLB results and their sensitivity to nodalization in the DCD or NEDE-32176P, TRACG Model Description, as background information for the short and long-term containment analyses. This documentation is necessary due to the design and modeling changes, such as the removal of the T-component in the lower DW (Figure 7-43, NEDE-32176P, Rev.3), and using the wider interconnecting pathways between the lower and upper dry well.</p>

RAI Number	Reviewer	Question Summary	Full Text
			<p>D. The staff also recommends the following editorial corrections to be made to NEDE-32176P, Rev.3, page 6-142, in Steam Condensation in Containment section.</p> <ul style="list-style-type: none"> <li>• The second line of the first paragraph should read .....designed for vertical plate condensation, in the viscous region., instead of .....designed for vertical plate condensation.</li> <li>• The expression <math>g\cos(0^\circ) = 0</math> is incorrect.</li> <li>• The statement starting on the fourth line of the second paragraph (A comparison of the.....) is incomplete.</li> </ul>

DC GE - ESBWR Mailing List

(Revised 01/16/08)

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