

June 17, 2009

Mr. Jerald G. Head
Senior Vice President, Regulatory Affairs
GE Hitachi Nuclear Energy
3901 Castle Hayne Road MC A-18
Wilmington, NC 28401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 353 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Head:

By letter dated August 24, 2005, GE Hitachi Nuclear Energy 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 U.S. 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.

If you have any questions or comments concerning this matter, you may contact me at 301-415-3808 or zahira.cruz@nrc.gov, or you may contact Amy Cabbage at 301-415-2875 or amy.cabbage@nrc.gov.

Sincerely,

/RA/

Zahira Cruz Perez, 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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Distribution: See next page

ADAMS ACCESSION NO. ML091680354

NRO-002

OFFICE	PM:NGE1:NRO	PM:NGE1:NRO
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DATE	06/17/09	06/17/09

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO.353 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION DATED JUNE 17, 2009

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**Requests for Additional Information (RAIs)
ESBWR Design Control Document (DCD), Revision 5**

RAI Number	Reviewer	RAI Summary	RAI Text
RAI 3.8-107 S04	Chakrabarti S	The need to consider cracked properties of concrete for loads other than thermal.	<p>In the Supplement 3 response dated April 24, 2009, GEH provide additional information of a study to demonstrate that if cracked properties are used for both thermal and pressure loading inside containment, then the rebar and concrete stresses of the RCCV are shown to be acceptable. Based on this information, the staff requests GEH to explain the following:</p> <ol style="list-style-type: none"> 1. An explanation was provided for the one exceedance of concrete stress. The response indicates that this occurs at only one location, is only slightly higher (less than 10 percent), and the whole section is still below general yielding in view of the rebar stresses being well below yield. The staff notes that the design philosophy of reinforced concrete sections is generally based on having ductile behavior not brittle behavior if loads are exceeded. Thus, if the concrete stress in compression on one side of the member exceeds the allowable value and the rebar stress in tension on the other side of the member is still well below yield, this approach does not appear to provide a ductile design in which the steel would yield before the concrete would rupture in compression. Therefore, explain how the statement that the “whole section is still below general yielding in view of the rebar stresses being well below yield” can be used as a technical basis for accepting some exceedance in the calculated compressive stress of concrete. 2. GEH is requested to verify the equation for the K_3 parameter used on page 59 of 63 of the response. The equation given for K_3 does not appear to match the expression for this parameter in the text book by S. S. Ray which was referenced in the RAI response.

Enclosure

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(Revised 06/10/2009)

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