

February 25, 2009

Mr. Robert E. Brown
Senior Vice President, Regulatory Affairs
GE Hitachi Nuclear Energy
3901 Castle Hayne Road MC A-50
Wilmington, NC 28401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 311 RELATED TO
DESIGN CONTROL DOCUMENT (DCD) REVISION 5

Dear Mr. Brown:

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

Pursuant to 10 CFR 2.390, we have determined that the enclosed RAIs contain proprietary information. We have prepared a non-proprietary version of the RAIs (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.

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 Bruce.Bavol@nrc.gov or you may contact Amy Cubbage at 301-415-2875 or Amy.Cubbage@nrc.gov.

Sincerely,

/RA/

Bruce M. Bavol, 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)

R. Brown

- 2 -

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,

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Bruce M. Bavol, Project Manager
ESBWR/ABWR Projects Branch 1
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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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Requests for Additional Information (RAIs): ESBWR Design Control Document (DCD) Revision 5

RAI Number	Reviewer	Question Summary	Full Text
RAI 21.6-123 Supplement 1 (MFN 09-002 dated January 8, 2009)	Wang W	3D momentum equation formulation of TRACG	In the response to RAI 21.6-123 (MFN 09-002), GEH has evaluated the impact of inaccurate models in the 3D momentum equation formulation of TRACG. GEH concludes that the TRACG models could overestimate the lower plenum pressure drop by as much as [[]] under typical ESBWR conditions. The staff is concerned that this non-physical increase in friction in the lower plenum is equivalent to increasing the single-phase pressure drop, which is non-conservative for stability calculations. The staff has performed a scoping LAPUR6 calculation and determined that an increase of [[]] in the single-phase channel region (at the inlet orifice) has a significant effect on core-wide decay ratio [[]]. A similar evaluation has been performed for the regional mode of oscillation, but the non-physical increased friction is smaller [[]] because only the lower plenum components of the 3D flow is involved in regional oscillations (the downcomer flow remains constant). The staff scoping calculations indicate that the regional decay ratio is also affected non-conservatively [[]] for ESBWR typical conditions. Staff requests GEH provide the following information: 1. Estimate the difference between the real expected ESBWR core flow and the core flow predicted by TRACG with the additional pressure drop. 2. Estimate the impact on core-wide decay ratio of the additional pressure drop caused by the axial and radial components of the lower plenum flow. Separate the effects from the flow reduction (conservative) and the pressure drop increase (non-conservative)

RAI Number	Reviewer	Question Summary	Full Text
			3. Estimate the impact on regional decay ratio of the additional pressure drop caused only by the radial component of the lower plenum flow. Separate the effects from the flow reduction (conservative) and the pressure drop increase (non-conservative) Additionally, the staff expects that the upcoming revisions to topical reports NEDO-33337 and NEDO-33338, as well as DCD, Revision 6, will include the nodalization changes necessary to preclude momentum term errors in the analyses.
4.4-86 Supplement 1 - and - 4.4-90 Supplement 1 (MFN 08-711 dated October 6, 2008)	Gilmer J	Include NEDC-33237P, Revision 4 in DCD, Tier 2, Table 1.6-1. Ensure that the most recent document revisions are reflected in Tables 1.6-1 and 1.6-2.	In the response to RAI 4.4-86 and by reference to this response in RAI 4.4-90, (MFN 08-711), it was stated that DCD Subsection 4.4.8, Reference 4.4-12 will be revised to reference NEDC-33237P, Revision 4. Please confirm that DCD, Tier 2, Table 1.6-1 will also be revised to refer to NEDC-33237P, Revision 4. In addition, please ensure that DCD, Tier 2, Tables 1.6-1 and 1.6-2 list the most recent documents submitted to staff for review as part of the design certification review.

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(Revised 02/23/2009)

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