

March 5, 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. 314 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Brown:

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 Cubbage at 301-415-2875 or amy.cubbage@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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ADAMS ACCESSION NO.

NRO-002

OFFICE	PM:NGE1:NRO	PM:NGE1:NRO
NAME	ZCruz Perez	ACubbage
DATE	03/05/09	03/05/09

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO.314 RELATED TO
ESBWR DESIGN CERTIFICATION APPLICATION DATED MARCH 5, 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 3.9-64 S01	Sekerak P	Modify the DCD to reflect the approach to benchmark MSL instrumentation	GEH describes how they plan to benchmark MSL instrumentation using the prototype dryer pressure instrumentation, specifying bias errors and uncertainties to be used in subsequent plants which may include MSL instrumentation only. The GEH approach is acceptable, but GEH did not modify the DCD to reflect their approach. This RAI will remain open until the DCD is modified accordingly.
RAI 3.9-133 S02	Sekerak P	Explain why the frequency bandwidth for strain gages on the skirt is not 0-200 Hz.	In Table 3L-5 of Appendix 3L, GEH has listed the frequency bandwidth for strain gages that will be installed at the different locations on the steam dryer. The frequency bandwidth is 0-200 Hz for strain gages installed on steam dryer hoods and drain channels, whereas it is 0-100 Hz for the dryer skirt. Since field experience shows that the steam dryer skirt may be subjected to acoustic loading at frequencies higher than 100 Hz, please explain why the frequency bandwidth for strain gages on the skirt is not 0-200 Hz.
RAI 3.9-137 S01	Sekerak P	Explain how the response amplitude bias error of the dryer FE model will be determined using the hammer test data.	GEH indicated that they intend to conduct hammer testing on the prototype ESBWR steam dryer with the dryer supported on blocks. Multiple tests will be conducted with the dryer in air, and partially submerged in water. The test data will be compared to the analytical results generated by the structural finite element (FE) model of the ESBWR dryer. GEH should explain how the response amplitude bias error of the dryer FE model will be determined using the hammer test data. Note that the response amplitude bias error is not associated with uncertainties in the resonance frequencies (which are resolved by conducting multiple analyses with stretched and contracted loading time histories), but is related to errors in modal mass and stiffness, and therefore to mean vibration (and stress) response level.
RAI 3.9-144 S02	Sekerak P	Detailed description of pressures acting on the steam dryer and steam lines.	In response to RAI 3.9-144 (c) and (d), the applicant states that the main steam lines are instrumented to measure the acoustic pressures in the piping. These measurements, along with the steam dryer pressure measurements, are used as input to an acoustic model for determining the pressures acting on the steam dryer. The applicant plans to use this load definition in performing confirmatory structural evaluations. The applicant is requested to provide a detailed description of how the pressures acting on the steam dryer will be determined using the measured acoustic pressures in the main steam lines and on the

			steam dryer. In addition, the applicant needs to explain how it will account for, (i) the plant noise and the electrical noise, which may be present in the instrumentation system, in determining the acoustic pressure acting in the main steam lines, and, (ii) any circumferential variation in the wall thickness of the main steam lines.
3.9-252	Sekerak P	Provide additional clarification / discussion of the design basis requirements applied in the construction of non-safety related reactor internal structures.	(Ref. ESBWR DCD Section 3.9.5.4, Rev. 5) The final paragraph of DCD Section 3.9.5.4 requires additional explanation. The design requirements presented for equipment classified as non-safety related class internals are not consistent with requirements presented in other design basis related documents, e.g., Topical Report NEDE-33313P for the steam dryer. Additional discussion should be included in DCD Section 3.9.5.4 to clarify the following: (a) Which non-safety related internals components use selected ASME Code requirements as their design basis. (b) What are the specific ASME Code requirements adopted as the design basis for those components identified in (a) above. (c) For those non-safety related internals components which do not use ASME Code requirements for their design, identify the “accepted industry or engineering practices” which are used for their design.

DC GE - ESBWR Mailing List
cc:

(Revised 03/04/2009)

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