

April 8, 2009

Mr. Jerald G. Head  
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. 326 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 301-415-2375 or [leslie.perkins@nrc.gov](mailto:leslie.perkins@nrc.gov), or you may contact Amy Cubbage at 301-415-2875 or [amy.cubbage@nrc.gov](mailto:amy.cubbage@nrc.gov).

Sincerely,

*/RA/*

Leslie Perkins, 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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Sincerely,

/RA/

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

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Enclosure:  
Request for Additional Information

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Distribution: See next page

**ADAMS ACCESSION NO.** ML090960634

NRO-002

|        |             |             |
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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO.326 RELATED TO  
ESBWR DESIGN CERTIFICATION APPLICATION DATED APRIL 8, 2009

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

| RAI Number   | Reviewer | Question Summary       | Full Text                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------|----------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14.3-430 S01 | Taneja D | Revise Table 2.15.1-1c | In response to RAI 14.3-430 GEH provided a reference to DCD Tier 1, Revision 5, Section 2.15.1 instead of providing the vacuum breaker isolation valve design description in Section 2.2 of the DCD Tier 1. In Tier 1 Table 2.15.1-1c, the active safety function for the vacuum breaker isolation valve is stated as "OPEN" and "CLOSE", whereas in Section 2.15.1, there is no design description provided for the "OPEN" safety function. Explain the discrepancy between the design description in section 2.15.1 and the information in Table 2.15.1-1c.                                                                                                                                                                                                                                                                                                                                                                                          |
| 14.3-451     | Ng C     | Tier 2* Designation    | <p>The staff requests that the following text in Section 14.3A.2, Design Acceptance Criteria ITAAC For Piping is marked as Tier 2* information:</p> <p>“The ESBWR piping Design Acceptance Criteria ITAAC consists of both the piping/piping component analysis and the pipe break analysis for safety-related ASME Code components. These are identified in separate Design Acceptance Criteria ITAAC in Tier 1. The piping design may be completed on a system-by-system basis for applicable systems and, in order to support closure of the Design Acceptance Criteria ITAAC, information will be made available for NRC review, inspection, and audit on a system basis. Information will be made available to the NRC to facilitate reviews, inspections, and audits throughout the process and, if appropriate, the NRC may inform the licensee of any concerns as they are identified so that adjustments may be made in a timely manner.”</p> |

| RAI Number  | Reviewer              | Question Summary                                                                   | Full Text                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|-----------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                       |                                                                                    | <p>“For completing the pipe break analysis Design Acceptance Criteria ITAAC, the analyses will document that structures, systems, and components (SSCs) which are required to be functional during and following a safe shutdown earthquake have adequate high-energy and moderate energy pipe break mitigation features. The pipe break analysis report verifies that the criteria used to postulate pipe breaks, the analytical methods used to analyze pipe breaks, and the method to confirm the adequacy of the results of the pipe break analyses are appropriate. The pipe break analysis report provides assurance that the high-energy and moderate-energy line break analyses have been completed. The content of the report is discussed in Subsection 3.6.2.5 of the ESBWR Tier 2 DCD.”</p>                                                                                                                                                                                                                                                              |
| 16.2-33 S02 | Harbuck C<br>Thomas G | Clarify bases for LCO 3.2.2, MCPR, that LCO is not met when FWCS is in manual mode | <p>The response to RAI 16.2-33S01 (MFN 07-024 Supplement 4, Oct 7, 2008) states that when the FWCS is in manual mode, the requirements of TS 3.2.2 are not met because a basic assumption of the OLMCPR as defined in the COLR would not be met. The response then states that, “In this case, Specification 3.2.2 includes appropriate actions requiring restoration of automatic control of the FWCS or to reduce thermal power of the unit to less than 25% of rated thermal power, as necessary.” Without clarifications in the Bases, it is unlikely that anyone, other than a trained licensed operator, would know that the MCPR LCO is not met when FWCS is in manual mode. In addition, the Actions do not explicitly address restoring FWCS to automatic mode.</p> <p>Revise the Bases for GTS 3.2.2 to explicitly state that meeting the LCO on minimum critical power ratio (MCPR) requires the feedwater control system (FWCS) to be in automatic mode (automatic feedwater control) because this is a basic assumption of the operating limit MCPR</p> |

| RAI Number | Reviewer | Question Summary | Full Text                                                                                                                                                                                                                                                                     |
|------------|----------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |          |                  | <p>(OLMCPR) as specified in the COLR and which is based on the safety analysis of the inadvertent isolation condenser initiation event. Also, revise the bases to explicitly state that the LCO is not met while FWCS is in manual mode (controlling feedwater manually).</p> |

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(Revised 04/01/2009)

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