April 2, 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. 324 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, or you may contact Amy Cubbage at 301-415-2875 or 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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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.

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If you have any questions or comments concerning this matter, you may contact me at 301-415-2375 or leslie.perkins@nrc.gov, or you may contact Amy Cubbage at 301-415-2875 or amy.cubbage@nrc.gov.

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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
Distribution: See next page

ADAMS ACCESSION NO. ML090920257 NRO-002

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DATE	4/2/09	4/2/09

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO.324 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION DATED APRIL 2, 2009

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

RAI Number	Reviewer	Question Summary	Full Text
14.2-102	Talbot F	Tier 2* designation	The staff requests that the entire section 14.2.8.2.35, ESBWR First-of-A-Kind Tests is identified as Tier 2* information.
14.3-265 S02	Oesterle E	Remove Tier 2, section 14.3.2.3 and ensure the information is included in either Tier 1, Section 2.2.15 or Tier 2 Section 7.1	The staff reviewed the portion of the GEH response to RAI 14.3-265 S01 that included a new section "14.3.2.3 Safety-Related System Compliance with 10CFR 50.55a(h), IEEE Std. 603 Criteria." The staff determined that the new section is not consistent with content requirements for Tier 2, section 14.3 and it appears to contain mostly regulatory compliance information which should be discussed in the section associated with design of the SSCs. The new section also contains duplicative information already contained in Tier 1, Section 2.2.15 and throughout Tier 2, Section 7.1 and does not provide any new information. The section does not contain new information regarding the ITAAC/DAC closeout process or provide new details on what information would be included in the reports prepared to document that the acceptance criteria have been met. Therefore, the staff recommends that GEH delete Section 14.3.2.3. GEH should ensure that all information contained in 14.3.2.3 is either included in Tier 1, Section 2.2.15 or Tier 2, Section 7.1, as appropriate, and revise any references to Section 14.3.2.3.

RAI Number	Reviewer	Question Summary	Full Text
14.3-402 S01	Harding L	Revise Tier 2 Section 14.3.3.2 and Tier 1 Table 3.2-1	The staff reviewed GEH response to 14.3-402 and discussed their concerns with GEH during conference calls and a meeting held on February 6, 2009. The staff identified concerns that still need to be addressed by GEH. The staff requests GEH to address the comments below. A. The information provided in Tier 2, Section 14.3.3.2 is good information and will definitely help to understand the information and documents expected to be included for close-out of the ITAAC for Software Development; however, this level of information is too design-specific for inclusion in 14.3. The staff determined that it is more appropriate to locate this information in appropriate sections in Chapter 7. As an example, piping DAC is discussed only at the summary level in Section 14.3 and there is no detailed discussion of the closure of piping DAC for individual piping systems in Section 14.3 or an Appendix to Section 14.3. The discussions regarding software development for Q-DCIS and N-DCIS is more appropriately discussed in the Tier 2 sections that discuss Q-DCIS and N-DCIS. Also, the references to LTRs, "'ESBWR Software Management Plan," and "ESBWR I&C Software Quality Assurance Plan" in section 14.3.11 should be moved to 7.1.1 Also, the following statement is made in Tier 2 Section, 14.3.3.2, "(1) The platform or network segment software plans and cyber security program for each platform or network segment are developed in accordance with the following criteria." The items listed in section 14.3.3.2 do not read as criteria. The items read more like the characteristics identified for each plan in BTP 7-14. Therefore, staff suggests GEH consider revising the statement to delete the word "criteria" and use "characteristics".

RAI Number	Reviewer	Question Summary	Full Text
			B. The first Tier 2* paragraph in Section 7.1.1 discusses that the SMPM and SQAPM provide the bases for the development of the project software plans. A similar statement needs to be made to state that Cyber Security Program Plan (CySPP) provides the bases for the project Cyber Security Programs (CySP). This would include referencing NEDE-33295P. C. The staff identified some concerns with ITAAC in Tier 1 table 3.2-1. One of the concerns is that there is not a clear link to a document that contains the criteria for the software plans. For example, the acceptance criteria for ITAAC 2a1 through 3a1 in Tier 1 Table 3.2-1 states that software project complies with BRR criteria. It is not clear where the BRR criteria are located. The other concern is that the staff does not have a clear understanding of how some of the design commitments (DC) were developed. Some of the design commitments read like they are verification actions that should be inspections, tests, analyses (ITAs). The staff requests that GEH consider revising the ITAAC in Tier 1 Table 3.2-1 as stated in the examples below. In the examples below, the staff believes that the cyber security software program plan (CySPP) should be referenced in the ITAAC along with the software management program manual (SMPM) and software quality assurance program manual (SQAPM). The examples use cyber security program manual (CySPM) to be consistent with SMPM and SQAPM; however, the use of cyber security program plan (CySPP) would be acceptable. The intent of including the references is to provide clear reference to documents that contain the criteria or requirements by which the developed software plans and cyber security plan will be judged to be acceptable. The following are a few examples of how the staff would like GEH to revise the acceptance criteria (AC) for the ITAACs that are in group one in Tier 1 Table 3.2-1:

RAI Number	Reviewer	Question Summary	Full Text
			ITAAC 1a2. AC: A report exists and concludes that the SMP for the NMS software project complies with the criteria contained in the SMPM. ITAAC 1g2. AC: A report exists and concludes that the SQAP for the NMS software project complies with the criteria contained in the SQAPM. ITAAC 1l2. AC: A report exists and concludes that the CySP for the NMS software project complies with the criteria in the CySPM. The following is an example of how the staff would like GEH to revise the ITAAC that are in group two in Tier 1 Table 3.2-1. ITAAC 2a2 DC: The planning phase activities detailed in the NMS software plans and CySP are completed for the NMS project ITAAC 2a2 ITA: The planning phase outputs are inspected and analyzed for the NMS software project. ITAAC 2a2 AC: A Planning Phase Summary BRR exists and concludes that the NMS software project planning phase activities were performed in compliance with NMS software plans and CySP as derived from SMPM, SQAPM, and CySPM. The following are a few examples of how the staff would like GEH to revise the ITAAC that are in group three in Tier 1 Table 3.2.1: ITAAC 3b1 DC: The installation phase activities detailed in the NMS software plans and CysP are completed for the NMS software project. ITAAC 3b1 ITA: The installation phase outputs for the NMS software project, including NMS FAT and NMS Cyber Security FAT are inspected and analyzed ITAAC 3b1 AC: Installation Phase Summary BRR exists and concludes that the NMS software project installation phase activities were performed in compliance with the NMS software plans and CySP as derived from the SMPM, SQAPM, and CySPM.

RAI Number	Reviewer	Question Summary	Full Text
			ITAAC 3b2 DC: The NMS software project performs as designed ITAAC 3b2 ITA: FAT is performed on the NMS software project ITTAC 3b2 AC: An NMS FAT report exist and concludes that the NMS software project is in compliance with the NMS software plans as derived from the SMPM, SQAPM, and CySPM. ITAAC 3j2 DC: The NMS software project performs as designed. ITAAC 3j2 ITA: An NMS software cyber security SAT is performed. ITAAC 3j2 AC: An NMS cyber security SAT report exists and concludes that the NMS software project is in compliance with the NMS CySP as derived from the SMPM, SQAPM, and CySPM. ITAAC 3h DC: The complete ESBWR instrumentation and control systems with sensors and actuators is capable of operating as designed. ITAAC 3h ITA: An overlapping and encompassing SAT is performed on the as-built platforms and network segments ITAAC 3h AC: The Installation Phase Summary BRR for the complete ESBWR instrumentation and control system SAT exists and concludes that the complete ESBWR instrumentation and control system with sensors and actuators is capable of operating as designed and is in compliance with the software project plans and CySP as derived from the SMPM, SQAPM and CySPM.

16.2-135 S01	Rhow S Harbuck C	Clarify the descriptions of RPS back up scram and ARI hydraulic scram in Tier 2 section 4.6.1.2.1 and ARI air header dump in Section 7.8.1.1.2	In Tier 2 Section 7.2.1.2.4.1 of DCD Revision 5, GEH describes the arrangement of the Reactor Protection System (RPS) division of trip actuators. The equipment within a division of trip actuators includes load drivers for automatic primary scram and air header dump initiation backup scram. According to Figure 7.2-2, RPS Interfaces and Boundaries Diagram, RPS signals initiate the backup scram and primary scram powered by safety-related power supply systems. In DCD Section 4.6.1.2.4, the Alternate Rod Insertion (ARI) function of the control rod drive (CRD) system provides an alternate means for actuating hydraulic scram that is diverse and independent from the RPS. In DCD Section 7.8.1.1.2, the ARI function of the ATWS mitigation logic is implemented by non-safety-related logic that is processed by the diverse protection system (DPS). The DPS generates the signal to open the ARI air header dump valves in the CRD system. The staff requests GEH to clarify if the descriptions in the three sections identified above describe the same backup scram? Clarify the descriptions for RPS backup scram and ARI hydraulic scram in DCD 4.6.1.2.4, and ARI air header dump in 7.8.1.1.2.

cc:

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