April 15, 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. 319 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Head:

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.

If you have any questions or comments concerning this matter, you may contact me at 301-415-6256 or Dennis.Galvin@nrc.gov or you may contact Amy Cubbage at 301-415-2875 or Amy.Cubbage@nrc.gov.

Sincerely,

/RA/

Dennis Galvin, 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

ACCESSION NO.: ML091030356 NRO-002

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 319 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION DATED APRIL 15, 2009

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

RAI Number	Reviewer	Question Summary	Full Text
7.1-139	Ashcraft J	Clarify I&C issues identified following interactions with ACRS.	Several instrumentation and control (I&C) issues were raised that might require further clarification during interactions with the Advisory Committee on Reactor Safeguards (ACRS). After further review, the staff has identified the following issues that require clarification by GEH. 1. The Deluge System is used for severe accident monitoring function. The capability of the power source for the Deluge System should be documented in the DCD. For example, DCD Tier 2, Section 7.3.1.2.2 System Description of Deluge System does not include a discussion about life of the Deluge System batteries, with or without chargers. 2. Additional clarification is required in the DCD of the Safety System Logic and Control/Engineered Safety Features (SSLC/ESF) and the anticipated transient without scram (ATWS) independent control platform control of the standby liquid control (SLC) system. The DCD is unclear whether the SLC isolation valves are controlled by each of these systems, and if so, which system has priority if concurrent signals occur. 3. DCD Tier 2 Figure 7.1-1 shows the elements of the Q-DCIS and the N-DCIS with a very high-level functional representation. During the ACRS meeting, GEH presented additional architectural information, including a simplified diagram with a “safety ring.” This level of architectural detail needs to be included in the DCD for the safety systems. Add figures with this level of detail to the DCD with corresponding discussion in the text as applicable. 4. Provide additional clarification in DCD Section 7.4.2.2.2 to describe how plant control is transferred from the main control room to remote shutdown station (RSS). If RSS is normally online and with no operators at the panels, clarify the kind of administrative control will be implemented for these panels.

Enclosure

RAI Number	Reviewer	Question Summary	Full Text
7.1-140	Ashcraft J	Clarify the active components, electrical motive power, and I&C functions needed for the PCCS to perform its safety functions, including supporting functions provided by other systems.	DCD Tier 2 and the PRA present inconsistent information on the instrumentation and control (I&C) needed for the safety-related functions of the Passive Containment Cooling System (PCCS). A review of multiple sections collectively indicates that the PCCS relies on water in the Equipment Storage Pool and Reactor Well to perform its safety functions. This requires cross-connect valves actuated by the isolation condenser system (ICS) through Safety System Logic and Control/Engineered Safety Feature (SSLC/ESF) system to open on a low water level signal in the ICS/PCCS pools. The water level transmitters are part of the Fuel and Auxiliary Pool Cooling System (FAPCS). While PCCS has no instrumentation and controls (I&C) functions, it does rely on I&C functions in other systems, namely the ICS, SSLC/ESF, and FAPCS previously mentioned, to perform it safety functions. However, the DCD variously describes the active components, electrical motive power, or I&C functions needed for the PCCS to perform its safety-related functions as none, automatic, or passive. The staff found conflicting statements in DCD Tier 2 Sections 3.1.4.15, 6.2.2.2.2, 5.4.6.2.2, 7.3.2, 7.4.4.3, 7.8.1.2.5, 9.1.3.5, 9.2.5. and NEDO-33201 (the probabilistic risk assessment (PRA)) Sections 4.2 and 4.19. The cross-connect valves between the IC/PCCS pools and equipment storage pool and reactor well are identified by multiple names including connections, equalizing valves, and cross-connect valves. This makes it difficult to determine if the same valves are being discussed in each section. No I&C is described in DCD Tier 2 Sections 7.4.4.5 or 5.4.6.5 corresponding to I&C functions identified in Sections 7.4.4.3 and 5.4.6.2.2 respectively. NEDO 33201, Revision 3, Section 4.2 on the ICS does not specifically discuss the ICS function to open the cross-connect valves between the IC/PCCS pools and equipment storage pool and reactor well. The cross-connect valves are

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			mentioned as a system interface in Section 4.2.5. The need for an interconnection is identified as a PRA insight in Section 4.2.11. Based on the above: • Clearly identify whether water in the Equipment Storage Pool and Reactor Well is relied on the by the PCCS to perform its safety functions for 72 hours. • Identify whether any active components, electrical motive power, or I&C functions are required to open the cross-connect valves and the systems that provide these functions. For I&C functions, identify the systems that provide sense through actuation. • Revise the DCD and NEDO-33201 as applicable to consistently describe the active components, electrical motive power, and I&C functions needed for the PCCS to perform its safety functions, including supporting functions provided by other systems. This include consistently identifying the cross-connect valves.

cc:

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