April 23, 2008

Mr. Robert E. Brown
Senior Vice President, Regulatory Affairs
GE Hitachi Nuclear Energy
3901 Castle Hayne Road, MC A-45
Wilmington, NC 28401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 186 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION

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 is contained in the enclosure to this letter.

If you have any questions or comments concerning this matter, you may contact me at 301-415-5787 or rocky.foster@nrc.gov or you may contact Amy Cubbage at (301) 415-2875 or amy.cubbage@nrc.gov.

Sincerely,

/RA/

Rocky D. Foster, Project Manager
ESBWR/ABWR Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

Docket No. 52-010

Enclosure:
Request for Additional Information

cc w/encl: See next page

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ADAMS ACCESSION NO.: ML081070527 NRO-002

OFFICE	PM:NRO:DNRLNGE2	PM:NRO:DNRL: NGE1
NAME	RFoster	ACubbage
DATE	04/23/2008	04/23/2008

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 186 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION DATED APRIL 23, 2008

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Request for Additional Information (RAI)
ESBWR Design Control Document (DCD), Revision 4

RAI Number	Reviewer	Question Summary	Full Text
19.1-96 S02	Pohida M	Shutdown PRA Success Criteria	The staff reviewed GEH's response to RAI 19.1.96 S01. This response was discussed with GEH during a telecon on March 6, 2008, during which GEH inficated that they plan to modify the GDCS Technical Specifications in Revision 5 of the DCD to require four DPV valves to be automatically operable by ADS in Modes 5 and 6 until the vessel head is removed. However, if one of the four DPVs fails to open, then the GDCS function fails. The shutdown PRA models all eight DPVs as being operable for ADS (similar to the full power PRA) in Modes 5 and 6 (until the vessel head is removed). The staff is requesting GEH to perform and document a sensitivity study in the shutdown PRA (including internal events, flood, fire, and high winds) assuming only four DPVs are available and operable for ADS. The staff is requesting GEH to evaluate the impact of this sensitivity study on the shutdown PRA results, including the RTNSS shutdown risk results.
19.1-169 S01	Kelly G	Discuss why it is assumed that hurricanes and tornados cannot damage Seismic Category 1 and 2 structures	GEH's response to RAI 19.1-169 indicated that the buildings were built to withstand seismic criteria and are assumed to be able to withstand high winds. It did not provide a technical basis for why hurricanes or tornados cannot at any probability damage seismic Category I or II structures. Their argument is a deterministic, not a probabilistic one. Explain the basis for assuming in the high winds risk assessment that no hurricane or tornado will significantly damage any ESBWR seismic Category 1 or Category 2 structure.
19.2-90	Xu J	Request to incorporate SMA data in NEDO-33201 Revision 2 into DCD Tier 2, Section 19.2.3.2.4	DCD Tier 2, Revision 4, Section 19.2.3.2.4 provided a description of the evaluation and insights of seismic margin assessment (SMA). It stated that "A PRA-based seismic margin analysis is used ..." The staff requests that a reference to NEDO-33201, Revision 2, Chapter 15, where a detailed SMA analysis is documented, be inserted in this section of the DCD. The staff also requests that the seismic sequences in NEDO-33201, Revision 2, Chapter 15 be discussed in this section as the basis for the as-built SSC HCLPFs listed in DCD Tier 2, Table 19.2-4. In addition, the staff requests that Table 19.2-4 incorporate the failure modes associated with respective SSC HCLPF capacity

RAI Number	Reviewer	Question Summary	Full Text
			values.
19.2-91	Xu J	Clarify the HCLPF capacity calculation for the fire protection water system.	According to NEDO-33201, Revision 2, Table 15-8, the fire protection water (FPWS) system was utilized in the seismic event trees, and Figure 15-15 showed the FPWS fault tree which has only one component: pump. The staff noticed that FPWS is located in the Fire Water Service Complex (FWSC), which has been designed and analyzed using the CSRDS. FWSC consists of two waster storage tanks, a pump enclosure and attached piping. To ensure successful vessel water injection, all three components must remain functional during and after a seismic event. Therefore, the fault tree in Figure 15-15 should have theses three components in OR gates. The staff requests that: a) GEH justify the exclusion of tanks and attached piping in the FPWS fault tree, and if GEH determines that tanks and piping should be part of the FPWS fault tree, provide the HCLPF capacity for these components; b) GEH provide HCLPF calculation for FWSC.
22.5-22	Harbuck C	Clarify requirements in availability control (AC) LCOs, ACTIONS, and SRs, and add additional information in the AC Bases	The following proposed availability controls (ACs) in DCD Revision 4 should state, in the ACLCO, the associated instrumentation functions, and the number of required divisions for each function. The AC Bases should explicitly state the minimum level of system degradation that corresponds to a function being unavailable (usually addressed by Condition A), and the number of divisions used to determine the test interval for each required division (or component) for AC surveillance requirements (ACSRs) (e.g., logic system functional test) that specify a Frequency of 24 months on a staggered test basis. • AC 3.3.1 Alternate Rod Insertion (ARI) • AC 3.3.2 Anticipated Transient Without Scram (ATWS) / Standby Liquid Control (SLC) System Actuation • AC 3.3.3 Feedwater Runback (FWRB) • AC 3.3.5 Automatic Depressurization System (ADS) Inhibit • AC 3.5.1 Gravity-Driven Cooling System (GDCS) Deluge Function
22.5-23	Harbuck C	Fuel and Auxiliary Pools Cooling System (FAPCS) availability control (AC) LCOs,	Regarding DCD Revision 4 • AC 3.7.2 Fuel and Auxiliary Pools Cooling System (FAPCS) – Operating, and • AC 3.7.3 FAPCS – Shutdown

RAI Number	Reviewer	Question Summary	Full Text
		ACTIONS, and SRs	a. An ACSR should be added to demonstrate availability of FAPCS pumps. b. Why is just one FAPCS train required to be available in ACLCO 3.7.2 when the focused PRA assumes two trains, and two trains are required in ACLCO 3.7.3? c. For a total loss of the FAPCS function, why does AC 3.7.2 allow 7 [14?] days to restore function, instead of 24 hours as specified in AC 3.7.3?
22.5-24	Harbuck C	Standby Diesel Generator availability control	Regarding DCD Revision 4 • AC 3.8.1 Standby Diesel Generators – Operating, and • AC 3.8.2 Standby Diesel Generators - Shutdown a. Why does ACLCO 3.8.1 require just one standby diesel generator, when the focused PRA assumes two, and two are required by ACLCO 3.8.2? b. For a total loss of standby diesel generator availability, why does AC 3.8.1 allow 14 days to restore function, instead of 24 hours as specified in AC 3.8.2?

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