August 15, 2008

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. 241 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 301-415-2375 or leslie.perkins@nrc.gov, or you may contact Eric Oesterle at 301-415-1365 or eric.oesterle@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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Leslie Perkins, Project Manager
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Request for Additional Information
cc: See next page
Distribution: See next page

ADAMS ACCESSION NO. ML082260383 NRO-002

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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO.241 RELATED TO ESBWR DESIGN CERTIFICATION APPLICATION DATED AUGUST 15, 2008

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

RAI Number	Reviewer	Question Summary	Full Text
14.3-217 S02	Haider S Forrest E	EFU Testing and CRHA pressure control	A. Revise the design commitment (DC) for item 10 in Tier 1, table 2.16.2-6 of to show that the filter testing requirements are based on Regulatory Guided 1.52. And revise the acceptance criteria (AC) to show that filter efficiency testing is not the in place leakage test (covered in item 7) but is a laboratory test as per Regulatory Guide 1.52. B. Revise the DC in item 12 in Tier 1, table 2.16.2-6 to show that the EFU can maintain the habitable conditions indefinitely or at least for the duration of any accident. The 72 hour value is not applicable here.
14.3-405	Oesterle E	ITAAC roadmap	SRP 14.3, Section III, Review Procedures, as well as Appendix C, Detailed Review Guidance, discuss the need for the staff to review cross-references in DCD Tier 2, Section 14.3, showing where key parameters from safety analyses for the design, including, analyses of design-basis accidents, severs accidents, flooding, overpressure protection, containment, core cooling, fire protection, transients, shutdown risk, anticipated transient without scram, Three Mile Island (TMI) items, PRAs, regulatory treatment of nonsafety-related systems (RT Enclosure analyses as specified by the staff. The applicant did not provide these roadmaps in Tier 2 of the ESBWR DCD, Rev. 5. The applicant is requested to provide these cross-references/roadmaps in Tier 2, Section 14.3 of the ESBWR DCD. Guidance on the format and content for these cross-references may be gleaned by referring to Tables 14.3-1 through 14.3-8 in the AP1000 Design Control Document.
14.3-406	Pal A	ITAAC for containment electrical penetration	DCD, Tier 1, Section 2.15 regarding ITAAC items in electrical areas is inadequate. Include ITAAC for the following items or provide justification for not including them:

RAI Number	Reviewer	Question Summary	Full Text
			a) Verification that all electrical containment penetrations are protected against postulated currents greater than their continuous current rating. b.) Verification that electrical containment penetration circuits are protected by redundant protective devices in accordance to RG 1.63.
14.3-407	Pal A	Containment electrical penetrations are missing from in Tier 1 Tables 2.15.1-1	Containment electrical penetrations are missing from Tables 2.15.1-1a, 1b, and 1c. in Tier 1. Add all containment penetrations in appropriate Table.
14.3-408	Pal A	Table 2.13.1-1 is incomplete	In DCD, Tier 1, Section 2.13.1-1, Table 2.13.1-1 is incomplete. Include the following or provide justification for not including them: a) Breaker to regulating transformer and relay (degraded voltage and under-frequency) compartments. b) Ancillary diesel buses
14.3-409	Pal A	Figure 2.13.1-1 is incomplete	In DCD, Tier 1, Figure 2.13.1-1 Sh. 2 is not complete. Correct figure as stated below: a) The figure is missing ancillary diesel bus, b) 480 V buses do not include all loads [e.g., UPS rectifiers, regulating transformers, etc.], c) PIP bus A feeds to Isolation Power Center Bus A alternate feed is incorrect, d) PIP bus B feeds Isolation Power Center Bus D alternate feed is incorrect

RAI Number	Reviewer	Question Summary	Full Text
14.3-410	Pal A	ITAAC items missing from Table 2.13.4-2	In DCD, Tier 1, Section 2.13.4, Table 2.13.4-2 is incomplete. Include ITAAC for the following items or provide justification for not including them: a) Verification of automatic load sequencing b) Verification that Control exist in the MCR to start and stop each SDG c) Verification that Ancillary diesel generator and associated auxiliaries, control, electrical buses, fuel tanks, etc. are Seismic Category II.
14.3-411	Pal A	Section 2.13.5 is incomplete	In DCD, Tier 1, Section 2.13.5 is incomplete. Include the following items or provide justification for not including them: a) Control Building and Reactor Building distribution panels are missing from Table 2.13.5-1. b) In Table 2.13.5-2, item 6 should include maximum and minimum battery terminal voltages in design commitment. Acceptance criteria for item 6 should specify voltage and frequency tolerances. c) An item should be added for regulating transformers. In case of one inverter problem, regulating transformer and other inverter will supply power. Provide synchronization scheme to be used. Add as another ITAAC item.
14.3-412	Pal A	Inconsistencies in figures	Explain why the figures in DCD Tier 1, Section 2.13 are not consistent with DCD Tier 2, Chapter 8 figures.
14.3-413	Pal A	Trip coordination of battery chargers and UPS input rectifiers with inverters.	In response to RAI 8.2-14 related to the effects of voltage spike on the electrical distribution system components after loss of the electrical grid during islanding, GEH stated that fast transients on the AC input to the UPS input rectifiers and battery chargers can result in high DC voltages and, if the rectifiers and inverter trips are not coordinated subsequent inverter trips and loss of power to safety-related loads can occur. Since

RAI Number	Reviewer	Question Summary	Full Text
			trip coordination of battery chargers and UPS input rectifiers with inverters is critical for proper operation of UPS under excessive ac input voltage conditions during islanding mode, an ITAAC is necessary to verify the trip coordination of safety-related battery chargers and UPS input rectifiers with inverters. Provide an ITAAC to address proper operation of the above devices under all conditions including transients.

cc:

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