

July 20, 2012

Mr. Jerald G. Head
Senior Vice President, Regulatory Affairs
GE Hitachi Nuclear Energy
3901 Castle Hayne Road MC A-18
Wilmington, NC 28401

SUBJECT: GE-HITACHI NUCLEAR ENERGY – UNITED STATES ADVANCED BOILING-WATER REACTOR DESIGN CERTIFICATION RENEWAL APPLICATION

Dear Mr. Head:

In a letter dated December 7, 2010, you submitted a Design Certification (DC) Renewal application for the U.S. Advanced Boiling-Water Reactor (ABWR) pursuant to the requirements of Subpart B, "Standard Design Certifications," of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants."

On March 24, 2011, the U.S. Nuclear Regulatory Commission (NRC) staff met with GE-Hitachi Nuclear Energy (GEH) staff to discuss your renewal application as well as Draft NRC Views on Application Content and Draft Staff Review Guidelines (Agencywide Documents Access and Management System Accession No. ML103140050). During the meeting, the NRC indicated that the scope of your application needed to be further defined before the staff could develop a review schedule and informed GEH that the NRC would issue a letter to you describing certain design changes that the staff believes should be considered for inclusion in your application.

The NRC has completed its compilation of design changes that the agency considers to be regulatory improvements or changes that could meet the 10 CFR 52.59(b) criteria. The design changes are identified in the enclosure to this letter. The Commission also has directed the staff to implement the Fukushima Near-Term Task Force recommendations contained in SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami" dated February 17, 2012. Therefore, GEH is requested to address the Fukushima Recommendations 4.2, 7.1 and 9.3 as described in the enclosure to this letter.

The NRC requests that you identify the design changes that you intend to incorporate in your renewal application and that you provide a schedule for submitting your revised application within 60 days of the date of this letter.

J. Head

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Should you have any questions or comments concerning this matter, please contact Adrian Muñiz at (301) 415-4093, or via e-mail at Adrian.Muniz@nrc.gov.

Sincerely,

/RA/

David B. Matthews, Director
Division of New Reactor Licensing
Office of New Reactors

Docket No.: 52-045

Enclosure:
As stated

cc w/encl: See next page

J. Head

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OFFICE	D:NRO/DSRA	D:NRO/DE	D:NRO/DCIP	D:NSIR/DPR	D:NRO/DNRL
NAME	CAder	TBergman	LDudes	RLewis (Kevin Williams for)	DMatthews (Frank Akstulewicz for)
DATE	06/25/2012	06/21/2012	06/20/2012	06/12/2012	07/20/2012

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**Advanced Boiling Water Reactor Design Certification Renewal
Design Changes For GE-Hitachi Nuclear Energy's Consideration**

Item No.	Description
1	Specify dynamic bearing capacity and differential settlement site parameters determined by design requirements and/or model analysis to ensure foundation and structural stability.
2	Include hurricane winds and missiles as site parameters and how the appropriate SSCs are protected from these winds and missiles.
3	Remove references in Tier 2, Chapter 2 of the ABWR DCD directing COL applicants to use the outdated CRAC2 computer code and replace with direction to use an appropriate severe accident consequences code, such as MACCS2.
4	Address the significance of design basis maximum groundwater level in the hydrology section and its allowable margin if any, identify where this parameter is used, and if possible, set the design basis maximum groundwater level at site grade.
5	Include 10 CFR 20.1406 design features to minimize contamination and the generation of reactor waste.
6	Include the Condensate Storage Tank (CST) as a radioactive source, describe how it complies with the requirements of 10 CFR 20.1406, and describe access control requirements for the CST to ensure that doses from the CST are maintained as low as reasonably achievable and do not exceed 10 CFR Part 20 limits <u>or</u> include a COL item for COL applicants to provide the information described above.
7	Correct data in the source term tables (Tables 12.2-3b and 12.2-3c), provide calculation supporting any additional changes, and verify that there are not additional errors in the ABWR DCD as a result of the table errors.
8	Confirm that the Off-Gas System (OGS) components housed in the non-safety related Turbine Building (TB) structure meet the design criteria per Regulatory Guide (RG) 1.143.
9	Confirm that the emergency core cooling system suction strainer design complies with 10 CFR 50.46(b)(5), including providing NPSH margins using RG 1.82, Revision 4, addressing chemical, in-vessel, and ex-vessel downstream effects, providing a structural analysis, and updating the ITAAC as necessary consistent with the new guidance.
10	Address three major review areas from ISG-019: identification of potential gas accumulation locations and intrusion mechanisms, addition of ITAAC to confirm identification and prevention measures, and development of procedures for surveillance and venting.
11	State that the evaluation for the effects of multiple spurious operations due to a fire has been performed consistent with NEI 00-01, Revision 2, as modified in RG 1.89, Revision 2 <u>or</u> include a COL item for COL applicants to provide the information described above.
12	Add a COL item to develop operating procedures to respond to prolonged low-level reactor coolant leakage below technical specification limits.
13	Add a commitment to ASME NOG-1 as an acceptable approach to meeting NUREG-0554 criteria for the design of overhead heavy load handling system cranes.

Enclosure

14	Update the Level 1 and 2 full-power probabilistic risk assessment (PRA) for the ABWR, including its description and results in Chapter 19 of the DCD.
15	Complete a Level 1 and 2 shutdown PRA for the ABWR, including its description and results in Chapter 19 of the DCD.
16	Update Appendix 19K to develop a comprehensive list of risk-significant SSCs.
17	Update emergency procedure guidelines and severe accident management guidelines consistent with NEI 91-04.
18	Seismic/Structural Analysis: <div style="margin-left: 40px;">(a) Provide analysis of reactor core combined seismic and LOCA loading to demonstrate conformance to the structural acceptance requirements described in Appendix A of SRP Section 4.2 (DCD Tier-2, 4.2.3.1.2 (1))</div> <div style="margin-left: 40px;">(b) Provide structural, dynamic and impact analysis of new and spent fuel racks (DCD Tier-2, 9.1.6.2 and 9.1.6.7)</div>
19	Provide thermal-hydraulic analysis that evaluates the rate of naturally circulated flow and the maximum rack water exit temperatures (DCD Tier-2, 9.1.6.8).
20	Provide criticality analyses of new and spent fuel storage racks (DCD Tier-2, Sections 9.1.6.1 and 9.1.6.3).
21	Replace obsolete data communication technology. The replacement design should conform to current instrumentation and control related regulations, industry standards, and regulatory guidance.
22	Correct Section 7.7.1.2.1(5)(b)(iii) to eliminate ganged withdrawal sequence restriction typographical error.
23	Provide Design/Analysis for Diesel Generator (DG) Fuel Oil Transfer System tunnel structures for routing the fuel oil transfer piping and cable systems from fuel oil storage tank to DGs located in the reactor building.
24	Apply the guidance from Regulatory Issue Summary 2008-05, Revision 1, to the existing ITAAC and submit revised ITAAC.
25	Provide a control room design that reflects state-of-the-art human factor principles in accordance with 10 CFR 50.34(f)(2)(iii).
26	Address the design related aspects of Fukushima Recommendation 4.2 regarding mitigation strategies for beyond-design-basis external events as outlined in Attachment 2 of the Order issued on March 12, 2012 (ML12054A735).
27	Address the design related aspects of Fukushima Recommendation 7.1 regarding enhanced spent fuel pool instrumentation as outlined in Attachment 2 of the Order issued on March 12, 2012 (ML12054A679).
28	Include a COL item for Fukushima Recommendation 9.3 regarding emergency preparedness as outlined in the Request for Information pursuant to 10 CFR 50.54(f) dated March 12, 2012 (ML12053A340).

DC GEH - ABWR Mailing List
cc:

(Revised 02/17/2012)

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