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Subject: **Response to Portion of NRC Request for Additional
Information Letter No. 233 Related to ESBWR Design
Certification Application – Site Characteristics – RAI Number
2.0-2**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent by NRC letter dated August 15, 2008 (Reference 1). GEH response to RAI Number 2.0-2 is addressed in Enclosure 1. The DCD markup pages related to this response are provided in Enclosure 2.

If you have any questions or require additional information, please contact me.

Sincerely,

Lee F. Dougherty for

Richard E. Kingston
Vice President, ESBWR Licensing

*Does
NRO*

Reference:

1. MFN 08-648, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 233 Related to the ESBWR Design Certification Application*, August 15, 2008.

Enclosures:

1. Response to Portion of NRC Request for Additional Information Letter No. 233 Related to ESBWR Design Certification Application – Site Characteristics - RAI Number 2.0-2
2. DCD Markup Pages

cc: AE Cubbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0090-5390

Enclosure 1

MFN 08-792

**Response to Portion of NRC Request for
Additional Information Letter No. 233
Related to ESBWR Design Certification Application**

Site Characteristics

RAI Number 2.0-2

NRC RAI 2.0-2:

1. *Revise Footnote 11 to DCD Tier 2 Table 2.0-1 to state that if a selected site has a X/Q value that exceeds the ESBWR reference site value, the COL Applicant will address how the radiological consequences associated with the controlling design basis accident continue to meet the dose reference values provided in 10 CFR 52.79(a)(1)(vi) (instead of 10 CFR 50.34(a)) using site-specific X/Q values. 10 CFR 52, not 10 CFR 50, applies to COL Applicants.*
2. *Delete the sentence "COL Applicant to determine basic speed of extreme wind for use in design of non-safety related structures that are not included as part of the ESBWR Standard Plant design" from COL information Item 2.0-7-A in DCD Tier 2 Table 2.0-2. The review of the design basis for non-safety related structures that are not included as part of the ESBWR standard plant design is beyond the scope of the COL FSAR.*
3. *Delete the sentence "COL Applicant to confirm or reanalyze in accordance with SRP 2.3.1." from COL information Item 2.0-7-A in DCD Tier 2 Table 2.0-2. This sentence is redundant to the first sentence in the same COL information Item which states the COL Applicant is to supply site-specific information in accordance with SRP 2.3.1.*
4. *Delete the phrase "and compared to dose values given in Chapter 15" from COL information Item 2.0-10-A listed in DCD Tier 2 Table 2.0-2. This COL information Item asks the COL Applicant to compare site meteorological dispersion values to dose values in Chapter 15. The comparison of dispersion values with dose values makes no sense.*
5. *Revise COL information Item 2.0-10-A in DCD Tier 2 Table 2.0-2 to state that the COL Applicant will supply site-specific information in accordance with SRP 2.3.4 to show that the site meteorological dispersion values as calculated in accordance with RG 1.145 and 1.194 result in doses less than stipulated in 10 CFR 52.79(a)(1)(vi) (instead of 10 CFR 50.34 (a)). 10 CFR Part 52, not 10 CFR Part 50, applies to COL Applicants.*

GEH Response:

GEH accepts the changes that are proposed in Items 1, 2, 3 and 5 above.

For Item 4, the intent of the phrase referred to in the RAI was for a comparison of site-specific vs. Chapter 15 dispersion values to be performed. In order to clarify this point, GEH will replace "dose values" with "dispersion values" and retain the phrase as part of COL information Item 2.0-10-A in DCD Tier 2 Table 2.0-2.

DCD Impact:

DCD Tier 2, Table 2.0-1, Note 11, and Table 2.0-2 will be revised in DCD Revision 6 as noted in the attached markup.

Enclosure 2

MFN 08-792

**RAI Number 2.0-2
DCD Markup Pages**

- (9) Safe Shutdown Earthquake (SSE) design ground response spectra of 5% damping, also termed Certified Seismic Design Response Spectra (CSDRS), are defined as free-field outcrop spectra at the foundation level (bottom of the base slab) of the Reactor/Fuel and Control Building structures. For ground surface founded Firewater Service Complex structures, the CSDRS is 1.35 times the values shown in Figures 2.0-1 and 2.0-2.
- (10) Values reported here are actually design criteria rather than site design parameters. They are included here because they do not appear elsewhere in the DCD.
- (11) If a selected site has a X/Q value that exceeds the ESBWR reference site value, the COL applicant will address how the radiological consequences associated with the controlling design basis accident continue to meet the dose reference values provided in 10 CFR 50.3452.79(a)(1)(vi) and control room operator dose limits provided in General Design Criterion 19 using site-specific X/Q values.
- (12) If a selected site has X/Q values that exceed the ESBWR reference site values, the release concentrations in Table 12.2-17 would be adjusted proportionate to the change in X/Q values using the stack release information in Table 12.2-16. In addition, for a site selected that exceeds the bounding X/Q or D/Q values, the COL applicant will address how the resulting annual average doses (Table 12.2-18b) continue to meet the dose reference values provided in 10 CFR 50 Appendix I using site-specific X/Q and D/Q values.
- (13) Value was selected to comply with expected requirements of southeastern coastal locations.
- (14) Localized liquefaction potential under other than Seismic Category I structures is addressed per SRP 2.5.4 in Table 2.0-2.
- (15) Settlement values are long-term (post-construction) values except for differential settlement within the foundation mat. The design of the foundation mat accommodates immediate and long-term (post-construction) differential settlements after the installation of the basemat.
- (16) For sites not meeting the soil property requirements, a site specific analysis is required.

Table 2.0-2

Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design

Subsection	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.2.3	Evaluation of Potential Accidents	None considered in vicinity of plant.	COL applicant to identify and evaluate potential accidents emanating from those potential hazards identified in SRP 2.2.1 – 2.2.2 above, that have a probability of occurrence $> 10^{-7}$ per year which involve: (1) missiles more energetic than the tornado missile spectrum, or (2) pressure effects in excess of the design basis tornado, or (3) explosions, or (4) fires, or (5) aircraft impacts, or (6) release of flammable vapor clouds, or (7) release of toxic chemicals. (COL Item 2.0-6-A)
2.3.1	Regional Climatology	Per Table 2.0-1.	<div>COL applicant to supply site-specific information in accordance with SRP 2.3.1.</div> <div>COL applicant to determine basic speed of extreme wind for use in design of nonsafety related structures that are not included as part of the ESBWR Standard Plant design.</div> <div>COL applicant to confirm or reanalyze in accordance with SRP 2.3.1.</div> <div>(COL Item 2.0-7-A)</div>
2.3.2	Local Meteorology	None.	COL applicant to supply site-specific information in accordance with SRP 2.3.2. (COL Item 2.0-8-A)

Table 2.0-2

Limits Imposed on Acceptance Criteria in Section II of SRP by ESBWR Design

Subsection	Subject	ESBWR DCD Parameters, Considerations and/or Limits	COL Information
2.3.3	Onsite Meteorological Measurements Programs	None.	COL applicant to supply site-specific information in accordance with the SRP 2.3.3. (COL Item 2.0-9-A)
2.3.4	Short-Term Dispersion Estimates for Accidental Atmospheric Releases	Per Table 2.0-1. See also Chapter 15.	COL applicant to supply site-specific information in accordance with the SRP 2.3.4 to show that the site meteorological dispersion values as calculated in accordance with Regulatory Guides 1.145 and 1.194, and compared to dose <u>dispersion</u> values given in Chapter 15, result in doses less than stipulated in 10 CFR 50.34 <u>52.79</u> (a)(1)(vi) and the applicable portions of SRP Sections 11 and 15. (COL Item 2.0-10-A)
2.3.5	Long-Term Diffusion Estimates	Per Table 2.0-1. See Subsection 12.2.2.1 for a discussion of the generation of these values.	COL applicant to supply site-specific information in accordance with the SRP 2.3.5. (COL Item 2.0-11-A)
2.4.1	Hydraulic Description Maximum Ground Water Level	Per Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.1. (COL Item 2.0-12-A)
2.4.2	Floods	Per Table 2.0-1.	COL applicant to supply site-specific information in accordance with SRP 2.4.2. (COL Item 2.0-13-A)