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MFN 09-296, Supplement 1

Docket No. 52-010

June 18, 2009

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Revised Response to Portion of NRC Request for Additional Information Letter No. 328 Related to ESBWR Design Certification Application – Seismic Design for Piping - RAI Number 5.2-75**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) revised response to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent by NRC letter No. 328, dated April 16, 2009 (Reference 1).

GEH's original response to RAI Number 5.2-75 provided in Reference 2 is revised as addressed in Enclosure 1. Enclosure 2 contains the DCD markups associated with this revised response.

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

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

References:

1. MFN 09-273, Letter from U.S. Nuclear Regulatory Commission to Jerald G. Head, *Request for Additional Information Letter No. 328 Related to ESBWR Design Certification Application*, April 16, 2009
2. MFN 09-296, Letter from Richard E. Kingston to U.S. Nuclear Regulatory Commission, Response to Portion of NRC Request for Additional Information Letter No. 328 Related to ESBWR Design Certification Application – Seismic Design for Piping - RAI Number 5.2-75, May 4, 2009

Enclosures:

1. Revised Response to Portion of NRC Request for Additional Information Letter No. 328 Related to ESBWR Design Certification Application – Seismic Design for Piping - RAI Number 5.2-75
2. Revised Response to Portion of NRC Request for Additional Information Letter No. 328 Related to ESBWR Design Certification Application – Seismic Design for Piping - RAI Number 5.2-75 – DCD Markups

cc: AE Cabbage USNRC (with enclosures)
JG Head GEH/Wilmington (with enclosures)
DH Hinds GEH/Wilmington (with enclosures)
eDRF Section 0000-0101-0967, Rev. 1

Enclosure 1

MFN 09-296, Supplement 1

**Revised Response to Portion of NRC Request for
Additional Information Letter No. 328
Related to ESBWR Design Certification Application**

Seismic Design for Piping

RAI Number 5.2-75

NRC RAI 5.2-75:

ESBWR DCD Section 5.2.1.1, "Code Compliance with 10CFR50.55a" does not address the Code of record Edition and Addenda used for the design of the ESBWR Class 1, 2 and 3 piping and components. However, the 2001 Edition throughout and including 2003 Addenda of ASME Code was identified in DC Tier 2 Table 1.9-22 as the code of record. GEH noted in the table that all limitation and modifications specified in 10CFR50.55a are required to be met. However, staff notes that the 2001 Edition throughout and including the 2003 Addenda of ASME Code is excluded from the seismic design for piping by 10CFR50.55a (b)(1)(iii). GEH is requested to specify and document an acceptable Code, Code Editions and Addenda to be used for the design of ESBWR piping and components in accordance with the requirements of 10CFR50.55a. The staff notes that the code of record information is a Tier 2 information requiring NRC approval if the information must be changed in Tier 2 DCD FSAR, therefore it should be designated as Tier 2 information in the DCD.*

GEH Revised Response:

The ESBWR design will comply with the ASME Boiler and Pressure Vessel Code (Division 1), Section III, 1992 Edition with 1993 Addenda for seismic design of piping, and with the 1989 Edition with no Addenda for weld leg dimensions. These deviations from the Code Edition/Addenda stated in Table 1.9-22 are in order to comply with 10 CFR 50.55a (b)(1) limitations (ii) and (iii).

This code of record information, related to ASME Code Section III piping and components, has been designated as Tier 2* information.

This revised response provides additional specificity not provided in the original response. Although the revised response modifies Tier 2* information (not yet approved by NRC), the change is based on discussions with the NRC.

DCD Impact:

DCD Tier 2, Table 1.9-22 and Subsection 5.2.1.1, are revised to include the above exceptions and identification of Tier 2* information, as shown on the attached markups.

Enclosure 2

MFN 09-296, Supplement 1

**Revised Response to Portion of NRC Request for
Additional Information Letter No. 328
Related to ESBWR Design Certification Application**

Seismic Design for Piping

RAI Number 5.2-75

DCD Markups

5.2 INTEGRITY OF REACTOR COOLANT PRESSURE BOUNDARY

This section discusses measures employed to provide and maintain the integrity of the ~~reactor coolant pressure boundary (RCPB)~~.

5.2.1 Compliance with Codes and Code Cases

5.2.1.1 Compliance with 10 CFR 50.55a

The ESBWR meets the relevant requirements of the following regulations:

- 10 CFR 50, Appendix A, General Design Criterion (GDC) 1, as it relates to the requirement that safety-related structures, systems, and components are designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed.
- 10 CFR 50.55a, as it relates to establishing minimum quality standards for the design, fabrication, erection, construction, testing and inspection of components within the RCPB and other safety-related fluid systems, by requiring conformance with appropriate editions of specified published industry codes and standards [as indicated in Table 1.9-22](#).

Note: [For seismic design of piping, the ESBWR conforms to Articles NB-3200, NB-3600, NC-3600, and ND-3600 of the ASME Boiler and Pressure Vessel Code, Section III, 1992 Edition with 1993 Addenda. For weld leg dimensions, when applying paragraph NB-3683.4(c)(1), or applying Footnote 11 to Figure NC-3673.2(b)-1, or applying Figure ND-3673.2(b)-1, the ESBWR conforms to the ASME Boiler and Pressure Vessel Code, Section III, 1989 Edition with no Addenda. All limitations and modifications specified in 10 CFR 50.55a(b)(1) are met.]*

To meet the requirements of GDC 1 and 10 CFR 50.55a, Regulatory Guide (RG) 1.26, “Quality Group Classification and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants,” is used. This regulatory guide describes an acceptable method for determining quality standards for Quality Group B, C, and D water- and steam-containing safety-related components of water-cooled nuclear power plants.

Tables 3.2-1 and 3.2-3 show the Code applied to components. Code edition, applicable addenda, and component dates are in accordance with 10 CFR 50.55a.

Text sections that are bracketed and italicized with an asterisk following the brackets are designated as Tier 2. Prior NRC approval is required to change.

5.2.1.2 Applicable Code Cases

The ESBWR meets the relevant requirements of the following regulations:

- 10 CFR 50, Appendix A, GDC 1, as it relates to the requirement that safety-related structures, systems and components are designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed.
- 10 CFR 50.55a, as it relates to the rule that establishes minimum quality standards for the design, fabrication, erection, construction, testing, and inspection of certain components

Table 1.9-22

Industrial Codes and Standards¹ Applicable to ESBWR

Code or Standard Number	Year	Title
QME-1-2007	2007	Qualification of Active Mechanical Equipment Used in Nuclear Power Plants
BPVC Sec I	2001 including Addenda through 2003	Boiler & Pressure Vessel Code (BPVC) Section I, Rules for Construction of Power Boilers
BPVC Sec II	2001 including Addenda through 2003	BPVC Section II, Materials Part A Ferrous Material Specifications Part B Non-Ferrous Material Specifications Part C Specifications for Welding Rods, Electrodes, and Filler Metals Part D Properties
[BPVC Sec III]*	[2004]*	[BPVC Section III, Rules for Construction of Nuclear Facility Components <i>Division 1: NCA, NE</i> <i>Division 2: CC, NCA</i> <i>Code for Concrete Containments]*</i>
[BPVC Sec III]*	[2001 including Addenda through 2003]*	[BPVC Section III, Rules for Construction of Nuclear Facility Components <i>Division 1: NB, NC, ND, NF, NG</i> <i>Weld Leg Dimensions: The 1989 Edition, with no Addenda, is used when applying paragraph NB-3683.4(c)(1), or applying Footnote 11 to Figure NC-3673.2(b)-1, or applying Figure ND-3673.2(b)-1 to weld leg dimensioning.</i> <i>Seismic Design of Piping: The 1992 Edition with 1993 Addenda is used when applying Articles NB-3200, NB-3600, NC-3600, and ND-3600 (Class 1, 2, 3 Piping and Components) for seismic design of piping in lieu of later ASME Code, Section III, editions and addenda.</i> <i>Note: All limitations and modifications specified in 10 CFR 50.55a(b)(1) are required to be met.]*</i>
BPVC Sec V	2001 including Addenda through 2003	BPVC Section V: Nondestructive Examination
BPVC Sec VIII	2001 including Addenda through 2003	BPVC Section VIII: Rules for Construction of Pressure Vessels Div. 1 Div. 2 Alternative Rules
BPVC Sec IX	2001 including Addenda through 2003	BPVC Section IX, Welding and Brazing Qualifications

Table sections that are bracketed and italicized with an asterisk following the brackets are designated as Tier 2. Prior NCR approval is required to change.