



HITACHI

GE Hitachi Nuclear Energy

Richard E. Kingston
Vice President, ESBWR Licensing

PO Box 780 M/C A-55
Wilmington, NC 28402-0780
USA

T 910 675 6192
F 910 362 6192
rick.kingston@ge.com

MFN 06-407
Supplement 8

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Subject: **Response to Portion of NRC Request for Additional Information Letter No. 160 Related to ESBWR Design Certification Application – Seismic Category I Structures - RAI Number 3.8-28 S03**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to a portion of the U.S. Nuclear Regulatory Commission Request for Additional Information (RAI) sent by NRC Letter 160 (Reference 1). The GEH response to RAI Number 3.8-28 S03 is addressed in Enclosure 1.

The original RAI 3.8-28 was received from the NRC on June 23, 2006 (Reference 2), and the GEH response was transmitted to the NRC on November 8, 2006 (Reference 3).

RAI 3.8-28 S01 was received via NRC Assessment following the December 14, 2006 Audit (Reference 4), and the GEH response was transmitted to the NRC on February 1, 2007 (Reference 5).

RAI 3.8-28 S02 was received from the NRC via Email from Chandu Patel, dated May 24, 2007 (Reference 6) and the GEH response was transmitted to the NRC on November 28, 2007 (Reference 7).

DUG
NRC

If you have any questions about the information provided here, please contact me.

Sincerely,



Richard E. Kingston
Vice President, ESBWR Licensing

References:

1. MFN 08-221, Letter from the U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 160, Related To ESBWR Design Certification Application*, dated March 6, 2008
2. MFN 06-197, Letter from the U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 38, Related To ESBWR Design Certification Application*, dated June 23, 2006
3. MFN 06-407, Response to Portion of NRC *Request for Additional Information Letter No. 38 Related to ESBWR Design Certification Application – Structural Analysis - RAI Numbers 3.8-17, 3.8-24, 3.8-28, 3.8-32, 3.8-33 through 3.8- 38, 3.8-44, 3.8-59, 3.8-62, 3.8-65, 3.8-69, 3.8-73, 3.8-76, 3.8-77, 3.8-79, 3.8- 80, 3.8-81, 3.8-84, 3.8-85, 3.8-86, 3.8-88, 3.8-89, 3.8-92, 3.8-93 through 3.8-97, 3.8-99, 3.8-101, 3.8-102 and 3.8-103*, dated November 8, 2006
4. NRC Assessment Following the December 14, 2006 Audit
5. MFN 06-407 Supplement 1, Response to Portion of NRC *Request for Additional Information Letter No. 38 Related to ESBWR Design Certification Application – Structural Analysis - RAI Numbers 3.8-17 S01, 3.8-24 S01, 3.8-28 S01, 3.8-44 S01, 3.8-59 S01, 3.8-62 S01, 3.8-65 S01, 3.8-69 S01, 3.8-76 S01, 3.8-77 S01, 3.8- 79 S01, 3.8-80 S01, 3.8-84 S01, 3.8-95 S01, 3.8-97 S01, 3.8-101 S01, 3.8-102 S01 and 3.8-103 S01 – Supplement 1*, dated February 1, 2007
6. Email from Chandu Patel, dated May 24, 2007
7. MFN 06-407 Supplement 3, Response to Portion of NRC *Request for Additional Information Letter No. 38 Related to ESBWR Design Certification Application – DCD Tier 2 Section 3.8 – Seismic Category I Structures - RAI Numbers 3.8-28 S02, 3.8-76 S02, 3.8-93 S02, 3.8-94 S02, 3.8-96 S02, 3.8-101 S02, 3.8-102 S02 and 3.8-103 S02*, dated November 28, 2007

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 160, Related to ESBWR Design Certification Application – Seismic Category I Structures - RAI Number 3.8-28 S03

cc: AE Cabbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0082-9056 Revision 1

Enclosure 1

**MFN 06-407
Supplement 8**

**Response to Portion of NRC Request for
Additional Information Letter No. 160
Related to ESBWR Design Certification Application
Seismic Category I Structures
RAI Number 3.8-28 S03**

For historical purposes, the original text of RAIs 3.8-28, 3.8-28 S01, 3.8-28 S02 and the GE responses are included. These responses do not include any attachments or DCD mark-ups.

NRC RAI 3.8-28

Provide additional details for the containment mechanical and electrical penetrations (other than Main Steam and Feedwater), including the number, types, geometry, analytical models used, loading, summary of results, comparison to Code allowables, and the current status of the design. Is the design final for all penetrations, or is this a COL applicant responsibility? If a COL applicant responsibility, where is this identified in the DCD? Include this information in DCD Section 3.8.2 and/or Appendix 3G.

In addition, (1) identify the applicable detailed report/calculation (number, title, revision and date, and brief description of content) that will be available for audit by the staff, and (2) reference this report/calculation in the DCD.

GEH Response

Details for the containment mechanical and electrical penetrations (other than Main Steam and Feedwater) are not currently available and will be developed after the routing of piping and commodities, such as cable trays, ducts, etc., is laid out during detailed design. These containment penetrations will be designed to meet the ASME code.

DCD Impact

DCD Tier 2 Subsection 3.8.2.4.1.3 will be revised in the next update as noted in the attached markup.

NRC RAI 3.8-28 S01

NRC Assessment Following the December 14, 2006 Audit

Is this identified as a COL action item? Are any typical details available for staff review?

GEH Response

Typical details for the containment mechanical and electrical penetrations will be added to DCD Tier 2.

DCD Impact

DCD Tier 2 Subsection 3.8.2.1.3 will be revised in the next update as noted in the attached markup.

DCD Tier 2 Section 3.8 will be revised in the next update as noted in the attached markups to include Figures 3.8-6 through 3.8-11.

NRC RAI 3.8-28 S02

NRC Assessment from Chandu Patel E-Mail Dated May 24, 2007

The staff reviewed the applicant's proposed DCD changes and found them acceptable to address the design of typical mechanical and electrical penetrations. The staff confirmed that the proposed changes were incorporated in a formally submitted revision to the DCD. However, the staff is unclear how the typical design details will be implemented at the COL application stage. Therefore, the staff requests the applicant to identify and describe the COL action item to implement the typical mechanical and electrical penetration design details. This information needs to be documented in the DCD.

GEH Response

These mechanical and electrical penetrations are part of the containment boundary for which design commitment is an ITAAC as delineated in DCD Tier 1 Revision 4 Table 2.15.1-2, Item 2. Therefore, no COL action item is required in DCD Tier 2 for implementation of typical design details.

DCD Impact

No DCD change is required in response to this RAI Supplement.

NRC RAI 3.8-28 S03

Question Summary:

Revise DCD Tier 1, Rev. 4, Tables 2.15.1-1 and 2.15.2-2 to provide consistent information for all penetrations and to correct a typographical error.

Full Text:

In its response to RAI 3.8-28, Supplement 2, dated November 28, 2007, GEH stated that the mechanical and electrical penetrations are part of the containment boundary, for which design commitment is an ITAAC, as delineated in DCD Tier 1, Revision 4, Table 2.15.1-2, Item 2. Therefore, no COL action item is required.

The staff reviewed DCD Tier 1, Revision 4, Table 2.15.1-2, Item 2, and the referenced Tier 1, Table 2.15.1-1, to determine if there is sufficient information to address the staff's concern. The staff concluded that with some additional clarification in Tier 1, Table 2.15.1-1 and correction of a typographical error in Tier 1, Table 2.15.1-2, Item 2, the information will be sufficient to address the staff's concern. The staff requests GEH to address the following in the next revision of DCD Tier 1:

- a) DCD Tier 1, Table 2.15.1-1 lists 11 pages of containment penetrations, including the mechanical and electrical penetrations for which only typical design details currently exist. This table is referenced by DCD Tier 1, Table 2.15.1-2, Item 2, apparently defining a commitment that all applicable provisions of ASME Code Section III will be met, and will be documented in the Code Stress Report. However, the information included in Tier 1, Table 2.15.1-1, related to ASME Code Section III, Seismic Category I, and Safety-Related classifications is not consistently identified for all rows of the table. Revise DCD Tier 1, Table 2.15.1-1 to specifically identify the ASME Code Section III, Seismic Category I, and Safety-Related classifications for each row of the table, and add a note that the evaluation of all penetrations designated ASME Code Section III will be documented in the Code Stress Report.*
- b) Correct the typographical error in Tier 1, Table 2.15.1-2, Item 2. In the "Acceptance Criteria" column, "Table 2.1.51-1" should be "Table 2.1.15-1".*

GEH Response

- a) A note was not added to Table 2.15.1-1a, instead DCD Tier 1 Revision 5 of Table 2.15.1-2 has incorporated the requirement for ASME Code Section III component evaluations to be documented in ASME Code reports. Identification of seismic categories and safety-related classifications for each row of Table 2.15.1-1a have been incorporated in DCD Tier 1 Revision 5. Noted table items are 1, 2.a.i, 2.a.ii, 2.a.iii, 2.b.i, 2.b.ii, 2.b.iii, 2.c.i, 2.c.ii, 2.c.iii, 3.a, 3.b, 4, 8.
- b) Typographical error has been corrected for Table 2.15.1-2.

DCD Impact

No DCD changes will be made in response to this RAI.