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MFN 06-307
Supplement 6

Docket No. 52-010

November 5, 2008

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

Subject: **Response to Portion of NRC Request for Additional Information Letter No. 228 - Related to ESBWR Design Certification Application – Seismic and Dynamic Qualification of Equipment - RAI Number 3.10-5 S04**

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 228 (Reference 1). The GEH response to RAI Number 3.10-5 S04 is addressed in Enclosure 1.

The original RAI 3.10-5 through 3.10-5 S03 were received from the NRC and responded to by References 2 through 9.

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

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

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NRC

References:

1. MFN 08-623, *Letter from the U.S. Nuclear Regulatory Commission to Robert E. Brown, Request for Additional Information Letter No. 228, Related To ESBWR Design Certification Application*, dated August 6, 2008
2. MFN 06-629, *Letter from the U.S. Nuclear Regulatory Commission to David M. Hinds, Request for Additional Information Letter No. 46, Related To ESBWR Design Certification Application*, dated August 1, 2006
3. MFN 06-307, *Response to NRC Request for Additional Information Letter No. 46 Related to ESBWR Design Certification Application – Seismic and Dynamic Qualification of Equipment - RAI Numbers 3.10-1 through 3.10-6*, dated September 1, 2006
4. Email from Larry Rossbach, dated October 29, 2006
5. MFN 06-307 Supplement 1, *Response to Portion of NRC Request for Additional Information Letter No. 46 Related to ESBWR Design Certification Application – Seismic and Dynamic Qualification of Equipment - RAI Numbers 3.10-1 S01 through 3.10-5 S01*, dated March 26, 2007
6. Email from NRC (Chandu Patel), dated May 10, 2007
7. MFN 06-307 Supplement 3, *Response to Portion of NRC Request for Additional Information Letter No. 46 Related to ESBWR Design Certification Application – Seismic and Dynamic Qualification of Equipment – RAI Number 3.10-5 S02* dated August 28, 2007
8. MFN 07-659, *Letter from the U.S. Nuclear Regulatory Commission to Robert E. Brown, Request for Additional Information Letter No. 122, Related To ESBWR Design Certification Application*, dated December 6, 2008
9. MFN 06-307 Supplement 5, *Response to Portion of NRC Request for Additional Information Letter No. 122 Related to ESBWR Design Certification Application - Seismic and Dynamic Qualification of Equipment - RAI Number 3.10-5 S03*, dated February 15, 2008

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 228, Related to ESBWR Design Certification Application – Seismic and Dynamic Qualification of Equipment - RAI Number 3.10-5 S04

cc: AE Cubbage USNRC (with enclosure)
RE Brown GEH/Wilmington (with enclosure)
DH Hinds GEH/Wilmington (with enclosure)
eDRF 0000-0093-0013

Enclosure 1

**MFN 06-307
Supplement 6**

**Response to Portion of NRC Request for
Additional Information Letter No. 228
Related to ESBWR Design Certification Application
Seismic and Dynamic Qualification of Equipment
RAI Number 3.10-5 S04**

For historical purposes, the original text of RAIs 3.10-5, 3.10-5 S01, 3.10-5 S02 and 3.10-5 S03, and the GE responses are included. These responses do not include any attachments or DCD mark-ups.

NRC RAI 3.10-5

In Section 3.10.4 (Combined Operation License Information) of the ESBWR DCD/Tier 2, the application states that the qualification records including reports for equipment included in Subsection 3.10.2.1 and 3.10. 2.2 shall be maintained in a permanent file and shall be readily available for audit. However, the application did not address the qualification records for equipment included in Subsections 3.10.2.3 and 3.10.2.4, or their availability for audit. Please discuss the availability of qualification records and reports for equipment included in Subsections 3.10.2.3 and 3.10.2.4, for the purpose of staff review/audit.

GEH Response

The DCD Subsections 3.10.2.3 and 3.10.2.4 will be revised to include "Qualification Documentation" and "Documentation of Qualification" as noted in the attached markup.

The DCD Subsection 3.10.4 will also be revised to include sections 3.10.2.3 and 3.10.2.4 as noted in the attached markup.

NRC RAI 3.10-5 S01

The response states that GE does not use 'operating experience' for equipment qualifications. What does GE mean by 'operating experience'; does it include both earthquake and test experience? If you don't maintain any operating experience database, why was 'operating experience' left in DCD Section 3.10.2.4? If operating experience isn't used, why isn't DCD Section 3.10.2.4 deleted? If using test experience as a method for qualification, please respond to RAI's 3.10-3, -4 and -5 from that perspective including the last three items in RAI 3.10-4.

E-mail from Larry Rossbach: NRC can not approve the design certification with open ended answers. If "Qualification by Experience" is an option in the DCD, provide responses to RAIs 3.10-3, 4, and 5 in detail so that the staff can make a determination whether GE's approach is acceptable or not.

GEH Response

Please see response to RAI 3.10-3 S01.

DCD Impact

As described in response to RAI 3.10-3 S01.

NRC RAI 3.10-5 S02

RAI 3.10-5 S02 Comment on response to RAI 3.10-5 S01:

In response to RAI 3.10-5, GE stated that the DCD Subsection 3.10.4 will be revised to include subsection 3.10.2.3 for Equipment Qualification Records. However, it is not implemented in DCD, Tier 2, Revision 3. GE is requested to revise the DCD Subsection 3.10.4.

Furthermore, in DCD Subsection 3.10.4 of ESBWR DCD, Tier 2, Revision 2 and Revision 3, GE stated that COL holders shall prepare a Dynamic Qualification Report and shall maintain the equipment records including the reports in a permanent file readily available for audit. The COL holders should be revised to the COL applicant, and the COL information should be available for staff review/audit before the issuance of the COL.

GEH Response

The commitment to make available records of equipment qualification for staff audit is covered under DCD Tier 1. In Tier1, Equipment Qualification is included in the scope of the system Basic Configuration. Each system has an ITAAC requirement to validate the Basic Configuration which includes making the equipment qualification records available. As a result, the requirement to maintain records available for audit will be removed from Subsection 3.10.4.

DCD Tier 2, Subsection 3.10.4, is being revised to require the COL applicant to describe the requirements of the Dynamic Qualification Report (DQR) as shown in the attached markup. Specific requirements for the DQR are contained in Subsection 3.10.1.4. The results of this qualification will not be available at the time of COL application, so this information cannot be made available prior to issuance of the COL.

DCD Impact

DCD Tier 2, Section 3.10.1.4 and 3.10.4 will be revised as noted in the attached markup.

NRC RAI 3.10-5 S03

Revise the COL information for Dynamic Qualification Report to state that the COL applicant should submit an implementation program for seismic and dynamic qualification of ESBWR mechanical and electrical equipment, including milestones and completion dates with appropriate information to allow staff audit.

GEH Response

The COL item for providing a milestone to complete the Dynamic Qualification Report will be revised to include a milestone to submit an implementation schedule for seismic and dynamic qualification of ESBWR mechanical and electrical equipment.

The commitment to make available records of equipment qualification for staff audit is covered under DCD Tier 1. In Tier 1, a report for seismic qualification is included for each system containing seismic equipment. As a result, the requirement to provide appropriate information to allow for staff audit is not needed as part of a COL applicant item.

DCD Impact

DCD Tier 2, Section 3.10.4 will be revised in Revision 5 as noted in the attached markup.

NRC RAI 3.10-5 S04

Revise COL Information to follows the guidance of RG 1.206.

In reviewing GEH response to NRC RAI 3.10-5 S03 and ESBWR DCD, Tier 2, Revision 5, Subsection 3.10.4 (COL Information), the staff finds that the response to RAI 3.10-5 S03 and ESBWR DCD, Revision 5, Section 3.10 are not consistent with the guidelines delineated in RG 1.206. In particular, no specific timing was provided for the submittal of the qualification information.

Section C.I.3.10.4 of RG 1.206 indicates that, if the seismic and dynamic qualification data for mechanical and electrical equipment is incomplete at the time of COL application, the COL applicant should provide a seismic qualification implementation program, including implementation procedures, milestones, and completion dates with appropriate information submitted with sufficient time for staff review /audit and approval prior to installation of the equipment, not prior to fuel loading. GEH is requested to revise the ESBWR DCD accordingly.

GEH Response

The seismic and dynamic qualification program is implemented as part of ITAAC. NRC regulation 10 CFR 52.99 contains a requirement that the COL Holders submit to the NRC no later than 1 year after issuance of the combined license its schedule for completing the ITAAC. The submittal of information by the COL applicant will be consistent with the requirements of 10 CFR 52.99.

DCD Impact

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