HITACHI

GE Hitachi Nuclear Energy

Richard E. Kingston
Vice President, ESBWR Licensing

P.O. Box 780
3901 Castle Hayne Road, M/C A-65
Wilmington, NC 28402 USA

T 910.819.6192
F 910.362.6192
rick.kingston@ge.com

MFN 09-718 Docket No. 52-010

November 12, 2009

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

Subject: **Response to Staff Review Questions from Follow-up Actions from Summary Report of the July 20 to 24, 2009, Regulatory Audit Of Design Specifications Of Risk Significant ESBWR Components – GEH's Review of Applicability of RG 1.100 R3 to the ESBWR General Valve Specification.**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to follow-up questions on the applicability of Reg Guide 1.100 R3 to the ESBWR General Valve Specification received by Reference 1 after the staff's review of Reference 2. Reference 2 transmitted the GEH response to follow-up actions resulting from the Regulatory Audit Of Design Specifications of Risk Significant ESBWR Components held July 20 to 24 2009 in GEH offices in Wilmington NC by the U.S. Nuclear Regulatory Commission (NRC).

Enclosure 1 contains GEH's review of Revision 3 of NRC Regulatory Guide 1.100 and it's applicability to the ESBWR General Valve Specification (SR3-1-A11-TRD-5302). This review has been filed in the Engineering Design Record File for the ESBWR General Valve Specification, eDRF Section Number 0000-0109-0285. This review closes the staff questions transmitted by Reference 1.

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

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, ESBWR Licensing

References:

1. Email from Zahira Cruz (USNRC) to Yandow, Kingston and Upton (GEH), "Remaining items related to Response to Follow-up items from July 20 - 24 Risk Significant Component/EQ Audit," Dated September 29, 2009
2. MFN 09-604 from Richard E. Kingston (GEH) to USNRC Document Control Desk, "Response to Follow-up Actions from Summary Report of the July 20 to 24, 2009, Regulatory Audit Of Design Specifications Of Risk Significant ESBWR Components – Additional Information Provided for RAIs 3.2-6, 3.2-63 and 3.9-177" (verified in eDRF Section 0000-0107-2761).

Enclosure:

1. Review of Revision 3 of NRC Regulatory Guide 1.100 and it's Applicability to the ESBWR General Valve Specification

cc:	AE Cubbage	USNRC (with enclosures)
	JG Head	GEH/Wilmington (with enclosures)
	DH Hinds	GEH/Wilmington (with enclosures)
	HA Upton	GEH/San Jose (with enclosures)
	eDRF Section	0000-0109-0285 (Review of Revision 3 of NRC Regulatory Guide 1.100)

ENCLOSURE 1

MFN 09-718

Response to Follow-up Questions to

GEH Response to Summary Report Of the July 20 to 24, 2009,

Regulatory Audit Of Design Specifications Of Risk Significant ESBWR Components –

Review of Revision 3 of NRC Regulatory Guide 1.100 and Applicability to the ESBWR General Valve Specification

BACKGROUND AND PURPOSE

The NRC performed an audit of documentation associated with risk-significant components during the week of July 20-24, 2009. In the audit report (Reference 1), the NRC made the following comment on Revision 1 of the General Valve Requirements specification (SR3-1-A11-TRD-5302).

> Update the reference of Regulatory Guide (RG) 1.100 to Revision 3 (when issued) for acceptance of the use of ASME Standard QME-1-2007, and remove the reference to RG 1.148 (to be withdrawn by NRC when RG 1.100 updated).

In the response to follow-up items from the NRC audit report (Reference 2), GEH provided the following response to the comment above.

> Reg Guide 1.100, Revision 3, has not yet been issued and is not part of the licensing basis of the ESBWR. The ESBWR DCD discusses how ASME QME-1-2007, which will be endorsed by Reg Guide 1.100, Revision 3, will be used for valve and piping support qualification. Any reference to Reg Guide 1.100, Revision 3, would have to be by the COL applicant. Potential changes to specification SR3-1-A11-TRD-5302 will be addressed after RG 1.100, Revision 3, is issued.

GEH subsequently revised SR3-1-A11-TRD-5302 to address other comments made by the NRC during the audit. In an e-mail dated September 29, 2009 (Reference 3), the NRC identified the following "remaining item" from the audit.

> The GEH response to Item 2.b states that Revision 3 to RG 1.100 had not been issued. However, Revision 3 to RG 1.100 was issued in September. The response indicates that potential changes to the [General Valve Requirements] specification would be considered following issuance of the regulatory guide.

The purpose of this DRF section is to document the review of Revision 3 of NRC Regulatory Guide 1.100 (Reference 4) relative to Revision 2 of SR3-1-A11-TRD-5302 (Reference 5) to identify potential changes to SR3-1-A11-TRD-5302.

DISCUSSION

Attachment 1 documents the regulatory position in RG 1.100 (Reference 4) related to Functional Qualification of Active Mechanical Equipment (shown in black font). Attachment 1 also includes an evaluation of Revision 2 of the SR3-1-A11-TRD-5302 relative to the regulatory position (shown in red font). Based on this review, no changes to SR3-1-A11-TRD-5302 are needed in response to Revision 3 of Regulatory Guide 1.100.

REFERENCES

1. MFN 09-586 from Zahira Cruz Perez (USNRC) to GE Hitachi Nuclear Energy, "Summary of the July 20 to 24, 2009, Regulatory Audit of Design Specification of Risk Significant ESBWR Components at General Electric Hitachi (GEH) Office in Wilmington, NC" (see eDRF Section 0000-0107-2761).

2. MFN 09-604 from Richard E. Kingston (GEH) to USNRC Document Control Desk, "Response to Follow-up Actions from Summary Report of the July 20 to 24, 2009, Regulatory Audit Of Design Specifications Of Risk Significant ESBWR Components – Additional Information Provided for RAIs 3.2-6, 3.2-63 and 3.9-177" (verified in eDRF Section 0000-0107-2761).

3. Email from Zahira Cruz (USNRC) to Yandow, Kingston and Upton (GEH), "Remaining items related to Response to Follow-up items from July 20 - 24 Risk Significant Component/EQ Audit," Dated September 29, 2009.

4. NRG Regulatory Guide 1.100, "Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants," Revision 3, September 2009.

5. Specification SR3-1-A11-TRD-5302, "General Valve Requirements," Revision 2.

Attachment 1
Regulatory Position in Revision 3 of Reg Guide 1.100 (Black Font) and GEH Evaluation of the Impact on Revision 2 of the General Valve Specification (Red Font)

2. Functional Qualification of Active Mechanical Equipment

2.1 Regulatory Positions on ASME QME-1-2007

2.1.1 General NRC Staff Positions

In general, the NRC staff finds ASME QME-1-2007 acceptable for the functional qualification of (1) active mechanical equipment in new NPPs and (2) new or replacement active mechanical equipment in operating NPPs, subject to the following provisions:

GEH Evaluation: Specification SR3-1-A11-TRD-5302 (General Valve Specification, or GVS) requires that new valve designs be functionally qualified to QME-1-2007 and that a gap analysis (comparing valve qualification to QME-1-2007) be prepared for valve design that were previously qualified. No changes to the GVS are needed.

a. Appendices

In endorsing the use of ASME QME-1-2007, the staff acknowledged that several appendices are designated as either non-mandatory or mandatory (e.g., Non-mandatory Appendix QR-A; Nonmandatory Appendix QR-B; Non-mandatory Appendices QDR-A, QDR-B, and QDR-C; Nonmandatory Appendices QP-A, QP-B, QP-C, QP-D, and QP-E; and Mandatory Appendix QV-I and Non-mandatory Appendix QV-A). The staff position is that, if a licensee commits to the use of non-mandatory appendices in ASME QME-1-2007 for its qualification of active mechanical equipment in NPPs, then the criteria and procedures delineated in those non-mandatory appendices become part of the requirements for its qualification program, unless specific deviations are requested and justified.

GEH Evaluation: Non-mandatory Appendix QR-A (Seismic Qualification) is not invoked in the GVS; seismic qualification is required by Specification SR3-1-A11-TRD-4040 (EQ specification, which is invoked by the GVS) to meet IEEE-344, consistent with paragraph QV-7450(b) of QME-1-2007.

Non-mandatory Appendix QR-B (Qualification of Non-Metallic Parts) is not invoked in the GVS; environmental qualification is required by Specification SR3-1-A11-TRD-4040 (EQ specification, which is invoked by the GVS) to meet IEEE-323, consistent with paragraph QV-7420 of QME-1-2007. In addition, the GVS invokes IEEE-382.

Non-mandatory Appendices QDR-A, QDR-B and QDR-C relate to dynamic restraints and therefore do not impact the GVS. Non-mandatory Appendices QP-A through QP-E relate to pumps and therefore do not impact the GVS.

Mandatory Appendix QV-I (Qualification Specification requirements) was used in the development of the GVS and is being used in the development of valve purchase specifications.

Non-mandatory Appendix QV-A was used as guidance in the development of the GVS to help ensure that lessons learned from industry experience were included in the specification.

Based on the above, no changes to the GVS are needed.

b. Non-mandatory Appendix QR-B

This appendix recommends a methodology and describes the documentation that should be available in a user's files to demonstrate the qualification of nonmetallic parts, materials, or Rev. 3 of RG 1.100, Page 17 lubricants. It addresses the steps for the user of the active mechanical equipment to follow to qualify and maintain the qualification of the nonmetallic material that is part of the active mechanical equipment. The NRC staff considers Non-mandatory Appendix QR-B to provide a reasonable approach to the qualification of nonmetallic material in active mechanical equipment.

GEH Evaluation: This appendix is not invoked by the GVS.

c. Sections QDR and QP

The NRC staff considers Sections QDR and QP to provide a reasonable approach to the qualification of dynamic restraints and active pump assemblies, respectively. These sections have not changed from those in ASME QME-1-2002, and they still adequately document the state of the art of the nuclear industry in the qualification of dynamic restraints and active pump assemblies.

GEH Evaluation: These appendices are not applicable to the GVS.

d. Section QV

The revision to ASME QME-1 reflects valve performance information obtained from nuclear industry programs and the NRC's research since the development of ASME QME-1 in the 1980s. With the active involvement of industry personnel and the NRC staff in the development of ASME QME-1-2007, only a few NRC staff exceptions and clarifications are necessary for Section QV, as described in Section C.2.1.2 below.

2.1.2 Specific NRC Staff Positions

a. The definition of "valve assembly" in Section QV-4000, "Definitions," refers to power-operated valves. The NRC staff considers the power actuators for valve assemblies to include all types of power actuators, such as motor, pneumatic, hydraulic, solenoid, and other drivers. (The guidance in ASME QME-1-2007 may also be used, where applicable, in the qualification of manually operated valves.)

GEH Evaluation: The GVS invokes QME-1-2007 as discussed above. No changes to the GVS are needed.

b. Section QV-6000, "Qualification Specification," states that the owner or owner's designee is responsible for identifying the functional requirements for a valve assembly, and that these requirements shall be provided in a qualification specification prepared in accordance with Mandatory Appendix QV-I. The NRC staff considers Mandatory Appendix QV-I to be a necessary part of the implementation of Section QV of ASME QME-1-2007. For example, Mandatory Appendix QV-I provides the definitions of QV Category A and B valve assemblies used in Section QV of ASME QME-1-2007.

GEH Evaluation: As discussed above, mandatory Appendix QV-I (Qualification Specification requirements) was used in the development of the GVS and is being used in the development of valve purchase specifications.