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Subject: Response to Portion of NRC Request for Additional Information Letter No. 231 Related to the ESBWR Design Certification Application – Nuclear Boiler System - RAI Numbers 5.2-74 and 5.4-63

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) responses to the U.S. Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) sent by NRC letter 231 dated August 5, 2008 (Reference 1).

Enclosure 1 contains the GEH responses to RAI Numbers 5.2-74 and 5.4-63.

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

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, ESBWR Licensing

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NRO

Reference:

1. MFN 08-628, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, GEH, *Request For Additional Information Letter No. 231 Related To ESBWR Design Certification Application*, dated August 5, 2008

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 231 Related to ESBWR Design Certification Application – Nuclear Boiler System- RAI Numbers 5.2-74 and 5.4-63

cc:	AE Cubbage	USNRC (with enclosure)
	RE Brown	GEH/Wilmington (with enclosure)
	DH Hinds	GEH/Wilmington (with enclosure)
	eDRF	0000-0091-1685 - RAI 5.2-74
		0000-0091-1694 - RAI 5.4-63

Enclosure 1

MFN 08-739

Response to Portion of NRC Request for Additional Information Letter No. 231 Related to ESBWR Design Certification Application

Nuclear Boiler System

RAI Numbers 5.2-74 and 5.4-63

NRC RAI 5.2-74:

During the June 17, 2008 meeting, GEH informed that the staff that the SRV capacity was increased in Rev.5, however the safety relief valve (SRV) capacities shown in DCD Tier 2, Table 5.2-2 are unchanged. Please clarify.

GEH Response:

GEH intended to make clear that the ESBWR relief capacity requirement is unchanged from DCD Revision 4 to DCD Revision 5. In DCD Tier 2, Revision 5, Section 5.2, GEH added an explicit statement that the type of relief valve used is a spring-closed relief valve. Addition of this statement keeps GEH's November 2007 ACRS Subcommittee hearing on DCD Tier 2 Chapter 5 commitment to address the relief valve type in the DCD. The valve selection is based on experience with spring-closed type relief valves in earlier BWR designs, including the BWR-6 and ABWR, as stated in DCD Revision 5.

GEH wanted to also clarify at the June 17, 2008 meeting that the ABWR valve, although an example of the relief valve type chosen, is not the relief valve to be used in the ESBWR due to the greater total relief capacity required for the ESBWR design as compared to the ABWR design. Therefore, a relief valve of similar design, but with a greater discharge capacity than the ABWR relief valve, will be used in the ESBWR. This does not represent a change from the total relief capacity requirement for the ESBWR as specified in DCD Revision 5 than was reported in DCD Revision 4.

DCD Impact:

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

NRC RAI 5.4-63:

DCD Tier 2, Section 5.4.6-GDC 54, Piping systems penetrating containment, is deleted in DCD Rev. 5. ICS steam supply and condensate lines penetrate the containment. GDC-54 is applicable to the ICS as indicated in SRP Section 5.4.6 and hence should be included in the DCD.

GEH Response:

The passive ESBWR isolation condenser system (ICS) design is significantly different than the active reactor core isolation cooling (RCIC) system described in SRP Section 5.4.6. For the ESBWR design, General Design Criteria (GDC) 55, "Reactor Coolant Pressure Boundary Penetrating Containment," is the applicable GDC for the ICS steam and condensate piping. The ICS piping penetration design is not typical of most systems connected to the Reactor Coolant Pressure Boundary (RCPB) since the piping on the external side of each ICS containment penetration is submerged. As indicated on DCD Revision 5, Figures 5.4-4b and 5.1-3, and in keeping with the GDC 55 definition, the process piping is Quality Group A (ASME Code, Class 1) through the penetrations to the external side. The piping classification and isolation valve configuration is intended to satisfy, to the extent practical, a design with one automatic isolation valve inside and one automatic valve outside containment. Both isolation valve assemblies for each piping penetration are placed inside the containment as addressed in the responses to RAI 6.2-104 Supplement 01 and 6.2-109 Supplement 01, dated November 6, 2007.

The additional provisions stated in the third paragraph of GDC 55 implicitly require meeting all of the requirements of GDC 54, including "*leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems.*" Therefore, the guidance in SRP Section 5.4.6, with regard to GDC 54, has been met by referencing GDC 55 in the ESBWR DCD Tier 2, Revision 5, Subsection 5.4.6.

DCD Impact:

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