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Subject: **Response to Portion of NRC Request for Additional
Information Letter No. 201 Related to ESBWR Design
Certification Application – RAI Number 7.3-13**

Enclosure 1 contains GEH's response to the subject NRC RAI transmitted via the
Reference 1 letter.

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

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

DO68
N20

Reference:

1. MFN 08-499, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 201 Related To ESBWR Design Certification Application*, May 28, 2008

Enclosure:

1. MFN 08-249 - Enclosure 1 - Response to Portion of NRC Request for Additional Information Letter No. 201 Related to ESBWR Design Certification Application – RAI Number 7.3-13

cc:	AE Cubbage	USNRC (with enclosures)
	RE Brown	GEH/Wilmington (with enclosures)
	GB Stramback	GEH/San Jose (with enclosures)
	DH Hinds	GEH/Wilmington (with enclosures)
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Enclosure 1

**Response to Portion of NRC Request for Additional
Information**

Letter No. 201 Related to

ESBWR Design Certification Application –

RAI Number 7.3-13

NRC RAI 7.3-13

Tier 1 Section 2.1.2, "Nuclear Boiler System" item (8) b states that the main steam isolation valves (MSIVs) close upon any of the follow conditions:

- *Main Condenser Vacuum Low (Run mode)*
- *Turbine Area Ambient Temperature High*
- *MSL Tunnel Ambient Temperature High*
- *MSL Flow Rate High*
- *Turbine Inlet Pressure Low*
- *Reactor Water Level Low*

DCD Tier 2, Chapter 7 does not describe the instrumentation and control (I&C) requirements for these functions. DCD Tier 2, Section 5.4.5 describes the main steam isolation system and identifies but does not describe the above 6 closure signals. The discussion on instrumentation requirements refers to section 7.3. A minimal discussion is in section 7.3.5.2.2. This brief discussion is part of the Safety System Logic and Control/Engineered Safety Features (SSLC/ESF) system discussion (DCD Tier 2 Section 7.3.5) while the actual MSIV functions are implemented on the reactor trip and isolation function system (RTIF). The staff has two concerns: (1) All the Tier 1 information should be in Tier 2 sections. The above information is not described in DCD Tier 2, Chapter 7. Please provide a discussion of the I&C of the MSIVs in Chapter 7. (2) MSIV closure is a very important safety related function. All the inputs to the MSIV closure should be safety related signals. Please provide information in DCD Chapter 7 to demonstrate that all the above signals satisfy the safety-related requirements.

GEH Response

DCD Tier 2, Rev. 5, Subsection 5.4.5.2.3 identifies the above six closure signals for main steam isolation valves (MSIVs).

- (1) All the Tier 1 information should be in Tier 2 sections. The above information is not described in DCD Tier 2, Chapter 7. Please provide a discussion of the I&C of the MSIVs in Chapter 7.*

DCD Tier 2, Chapter 7, Rev. 5 subsection 7.3.3.5 references Chapters 5 and 6, which include Tables 5.2-6 and 6.2-15 through 6.2-20 that describe isolation of MSIV and Main Steam Line (MSL) drains. The containment isolation functions accomplished by valves and control signals required for the isolation of process lines penetrating the containment are summarized in Tables 6.2-15 through 6.2-45. Table 5.2-6 also summarizes MSIV isolation condition versus the monitored closure signals described above. Therefore, Chapter 7 does not repeat the same information contained in Chapters 5 and 6.

- (2) MSIV closure is a very important safety related function. All the inputs to the MSIV closure should be safety related signals. Please provide information in DCD Chapter 7 to demonstrate that all the above signals satisfy the safety-related requirements.*

DCD Tier 2, Rev. 5, Subsection 7.3.3 states that the Leak Detection and Isolation System (LD&IS) functions are performed in two safety-related platforms with the MSIV logic being performed by the Reactor Trip and Isolation Function (RTIF). The LD&IS safety-related interfacing sensor parameters including the MSIV closure signals are listed in Table 7.3-5. Also the LD&IS design configuration, as shown in Figure 7.3-3, contains the functional block diagram of the system and how the isolation signals interact.

DCD Impact

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