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MFN 08-706

Docket No. 52-010

September 18, 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. 224 Related to ESBWR Design Certification Application - Containment Systems - RAI Number 6.2-192

Enclosure 1 contains the GE Hitachi Nuclear Energy (GEH) 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

Richard E. Kingston
Vice President, ESBWR Licensing

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NRO

Reference:

1. MFN 08-576, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 224 Related to ESBWR Design Certification Application*, July 10, 2008

Enclosures:

1. MFN 08-706 - Response to Portion of NRC Request for Additional Information Letter No. 224 Related to ESBWR Design Certification Application - Containment Systems - RAI Number 6.2-192
2. MFN 08-706 - Response to Portion of NRC Request for Additional Information Letter No. 224 Related to ESBWR Design Certification Application - Containment Systems - RAI Number 6.2-192 - DCD Markup

cc:	AE Cubbage	USNRC (with enclosures)
	DH Hinds	GEH/Wilmington (with enclosures)
	RE Brown	GEH/Wilmington (with enclosures)
	eDRF	0000-0090-9429

Enclosure 1

MFN 08-706

Response to Portion of NRC Request for Additional Information Letter No. 224 Related to ESBWR Design Certification Application

Containment Systems

RAI Number 6.2-192

NRC RAI 6.2-192:

In Section 6.2.5.2, DCD Tier 2, Rev. 5, "Combustible Inerting System" (CIS), the CIS design limit to maintain the containment oxygen concentration below the maximum permissible limit has been changed from "3%" in Revision 4 to "5%" in Revision 5. The design of the CIS to maintain the containment oxygen concentration below the maximum permissible limit should be 4% as per 10 CFR 50.44 for an inerted atmosphere.

Please make the correction.

GEH Response:

The Containment Inerting System (CIS) is a non-safety related system, and is not required to function during accident conditions. It is designed to maintain containment oxygen concentration at less than 4% oxygen by volume during normal power operations. Therefore, DCD Tier 2, Subsection 6.2.5.2.1, will be revised as requested.

DCD Impact:

DCD Tier 2, Subsection 6.2.5.2.1, will be revised as shown in the attached markup.

Enclosure 2

MFN 08-706

Response to Portion of NRC Request for Additional Information Letter No. 224 Related to ESBWR Design Certification Application

Containment Systems

RAI Number 6.2-192

DCD Markup

6.2.5.2.1 Design Bases

Safety (10 CFR 50.2) Design Bases

The CIS does not perform any safety-related function. Therefore, the CIS has no safety design bases other than provision for safety-related containment penetrations and isolation valves, as described in Subsection 6.2.4.

Power Generation Design Bases

- The CIS is designed to establish an inert atmosphere (i.e., less than 4% oxygen by volume) throughout the containment in less than 4 hours and less than 2% oxygen by volume in the next 8 hours following an outage.
- The CIS is designed to maintain the containment oxygen concentration below the maximum permissible limit (~~5~~4%) during normal~~, abnormal, and accident conditions~~ power operations to assure an inert atmosphere.
- The CIS is designed to maintain a positive pressure in the primary containment during normal, abnormal, and accident conditions to prevent air (oxygen) in-leakage into the inerted spaces from the Reactor Building. The CIS nitrogen gas makeup supply line is designed for the normal daily operating capacity to maintain approximately 4.8 kPaG (0.7 psig) positive pressure within the containment. The system has the capability to replenish containment atmosphere leakage at a design value of 0.4% per day based on containment operating pressure.
- The inerting auxiliary steam vaporizer is sized to provide at least 2.5 times the containment (WW and DW) free volume of nitrogen within the allotted 4 hours. The temperature of the injected nitrogen is within the range of 10°C (50°F) to 65°C (150°F).
- The CIS is designed to permit de-inerting the containment for safe operator access without breathing apparatus in less than 12 hours.
- The CIS is designed to perform continuous containment leakage rate monitoring and detect gross leakage of containment atmosphere during normal reactor operation.
- The CIS is also designed to release containment pressure before uncontrolled containment failure could occur. (Subsection 6.2.5).