HITACHI

GE Hitachi Nuclear Energy

James C. Kinsey
Vice President, ESBWR Licensing

PO Box 780 M/C A-55
Wilmington, NC 28402-0780
USA

T 910 675 5057
F 910 362 5057

MFN 07-009 Supplement 2

Docket No. 52-010

December 10, 2007

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. 85 Related to ESBWR Design Certification Application - Containment Systems - RAI Number 6.2-150 S02

Enclosure 1 contains the GE Hitachi Nuclear Energy (GEH) response to the subject NRC RAI originally transmitted via the Reference 1 letter and supplemented by an NRC request for clarification in Reference 2.

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

Sincerely,

James C. Kinsey

James C. Kinsey
Vice President, ESBWR Licensing

D068
NRO

References:

1. MFN 07-054, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 85 Related to ESBWR Design Certification Application*, January 19, 2007
2. E-Mail from Shawn Williams, U.S. Nuclear Regulatory Commission, to George Wadkins, GE Hitachi Nuclear Energy, dated May 22, 2007 (ADAMS Accession Number ML071430342)

Enclosure:

1. MFN 07-009 Supplement 2 - Response to Portion of NRC Request for Additional Information Letter No. 85 - Related to ESBWR Design Certification Application - Containment Systems - RAI Number 6.2-150 S02

cc:	AE Cubbage	USNRC (with enclosures)
	DH Hinds	GEH/Wilmington (with enclosures)
	GB Stramback	GEH/San Jose (with enclosures)
	RE Brown	GEH/Wilmington (with enclosures)
	eDRF	0000-0076-0633

Enclosure 1

MFN 07-009 Supplement 2

Response to Portion of NRC Request for

Additional Information Letter No. 85

Related to ESBWR Design Certification Application

Containment Systems

RAI Number 6.2-150 S02

NRC RAI 6.2-150 S02:

In response to RAI 6.2-150 Supplement 1, MFN 07-009 Supplement 1, dated May 21, 2007, GE proposed a revision to the DCD. In addition to the proposed revision, please include the following statement to the DCD. {This statement was provided by GE provided in the original RAI response, MFN 07-009, dated April 4, 2007.}

"For the feedwater line and main steam line break scenarios, the analyses assume that the manual drywell spray injection is initiated at the worst possible time, which is the point in time when there is a low air content in the drywell relative to the wetwell."

GEH Response:

DCD Tier 2, Subsection 6.2.1.1.4 will be revised to include the appropriate information.

DCD Impact:

DCD Tier 2, Subsection 6.2.1.1.4 will be revised as shown in the attached markup.

6.2.1.1.4 Negative Pressure Design Evaluation

[DCD Tier 2, Section 6.2.1.1.4, 2nd paragraph]

Drywell depressurization following a LOCA is expected to produce the most severe negative pressure transient condition in the DW. The results of the MSL break analysis show that the containment does not reach negative pressure relative to the RB, and the maximum wetwell-drywell differential pressure is within the design capability. This calculation assumes one available wetwell-drywell vacuum breaker with an area of 0.2 m^2, (2.16 ft^3), which is conservative with respect to the planned installed vacuum breaker area. An evaluation of the effect of drywell spray on containment integrity for a main steam line break and a feedwater line break was performed to determine the maximum negative differential pressures (drywell to wetwell, and drywell to reactor building). This evaluation assumed that a drywell spray flow rate of 454 m^3/hr (2000 gpm) at a temperature of 293°K is initiated at the worst possible moment for a drywell spray, at the point in time when there is low non-condensable gas content in the DW relative to the WW (i.e., when the drywell pressure has peaked just prior to the opening of the drywell-wetwell vacuum breakers), and verified that the maximum negative differential pressures remain within the design criteria. For additional conservatism and to account for uncertainties in the design of the drywell spray piping system, including drywell spray flow limiting design features, a value of 227 m^3/hr (1000 gpm) has been established as the maximum design operating limit (see Subsection 9.1.3).