GE-Hitachi Nuclear Energy Americas LLC

James C. Kinsey
Project Manager, ESBWR Licensing

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

T 910 675 5057
F 910 362 5057
jim.kinsey@ge.com

MFN 06-284 Supplement 1

Docket No. 52-010

August 21, 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. 18 - Containment Systems - RAI Number 6.2-11 S01**

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

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

Sincerely,

Kathy Sedney for

James C. Kinsey
Project Manager, ESBWR Licensing

D068

NRO

Reference:

1. MFN 06-113, Letter from U.S. Nuclear Regulatory Commission to David Hines, *Request for Additional Information Letter No. 18 Related to ESBWR Design Certification Application*, April 24, 2006

Enclosure:

1. MFN 06-284 Supplement 1 - Response to Portion of NRC Request for Additional Information Letter No. 18 - Related to ESBWR Design Certification Application - Containment Systems - RAI Number 6.2-11 S01

cc:

AE Cubbage	USNRC (with enclosures)
GB Stramback	GEH/San Jose (with enclosures)
RE Brown	GEH/Wilmington (with enclosures)
eDRF	0000-0056-6812

Enclosure 1

MFN 06-284 Supplement 1

Response to Portion of NRC Request for

Additional Information Letter No. 18

Related to ESBWR Design Certification Application

Containment Systems

RAI Number 6.2-11 S01

NRC RAI 6.2-11 S01:

The information provided in this response is necessary to support the basis for a reasonable assurance finding. Thus, please revise DCD, Tier 2 to include information provided in response to RAI 6.2-11.

GEH Response:

Drywell depressurization due to inadvertent initiation of drywell spray during a loss-of-coolant accident (LOCA) was reanalyzed as described in DCD Tier 2, Revision 2, to confirm the previous response to RAI 6.2-11. Additional sentences will be inserted into the last paragraph of DCD, Tier 2, Subsection 6.2.1.1.4, to include the information necessary to describe the results of this reanalysis demonstrating that a Feedwater Line (FWL) break and a Main Steam Line (MSL) break are the bounding LOCA events.

DCD Impact:

The last paragraph of 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

[Last Paragraph]

Drywell depressurization following a LOCA is expected to produce the most severe negative pressure transient condition in the DW. Among the four design basis LOCA break types analyzed, a Feedwater Line (FWL) break results in the highest peak DW pressure and a Main Steam Line (MSL) break results in the lowest peak DW pressure during the initial 2000 seconds after the break. The peak pressure of a GDCS Injection Line (GDL) or a Bottom Drain Line (BDL) break falls between those of the FWL and MSL breaks. DW temperatures for these four break types differ by less than 20°C after 800 seconds. It is therefore adequate to analyze FWL and MSL break scenarios to provide diverse DW environmental conditions, which envelope other break locations, for determining the minimum DW pressure and the pressure differential between WW and DW as consequence of inadvertent initiation of drywell spray. The results of the Main Steam Line break analysis show that the containment does not reach negative pressure relative to the reactor building, and the maximum Wetwell-Drywell differential pressure is within the design capability. This calculation assumes one available vacuum breaker with an area of 0.2 m^2, which is conservative with respect to the planned installed vacuum breaker area. In order to prevent excessive negative pressure the drywell spray flow rate must be less than 227 m^3/hr (1000 gpm) (see Subsection 9.1.3).