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MFN 06-364 Supplement 4

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**Subject: Response to Portion of NRC Request for Additional
Information Letter No. 33 Related to ESBWR Design
Certification Application - Containment Systems -
RAI Number 6.2-61 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
Vice President, ESBWR Licensing

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References:

1. MFN 06-167, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 33 Related to ESBWR Design Certification Application*, June 1, 2006
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 06-364 Supplement 4 - Response to Portion of NRC Request for Additional Information Letter No. 33 - Related to ESBWR Design Certification Application - Containment Systems – RAI Number 6.2-61 S02

cc: AE Cabbage USNRC (with enclosures)
DH Hinds GEH/Wilmington (with enclosures)
GB Stramback GEH/San Jose (with enclosures)
RE Brown GEH/Wilmington (with enclosures)
eDRF 0000-0055-8855R3

Enclosure 1

MFN 06-364 Supplement 4

Response to Portion of NRC Request for

Additional Information Letter No. 33

Related to ESBWR Design Certification Application

Containment Systems

RAI Number 6.2-61 S02

NRC RAI 6.2-61 S02:

DCD, Tier 2, Revision 3, Table 6.2-5 lists the break area for MSLB and FWLB as 0.09832 m² and 0.07420 m², and a footnote to this table states that for FWLB, "the total break area from the turbine building side is limited at the two parallel [venturi] sections, with flow area of 0.04997 m² each." However, the total area of the two parallel venturi of 0.09994 m² does not match with the FWLB area of 0.07420 m² used. Please explain this discrepancy.

In response to RAI 6.2-61_Part 1, GENE lists the effective total break area for MSLB as 0.9832 m² for both RPV and BOP sides. This value is 31% of the pipe cross sectional area of 0.3167 m², which was calculated using the pipe internal diameter of 0.63501 m. Please explain the difference.

Please update the DCD to include the response.

GEH Response:

The feedwater line (FWL) break area as listed in DCD Tier 2, Revision 3, Table 6.2-5 is 0.07420 m² (115 sq. in.), which corresponds to the flow area of the feedwater sparger in the feedwater loop piping. The feedwater sparger flow area is less than the flow area of the total venturi flow area, so the flow area of the feedwater sparger in the feedwater loop limits the venturi flow area. Therefore, the flow area of the feedwater sparger is used. The main steam line (MSL) break area as listed in Table 6.2-5 is 0.09832 m² (152.4 sq. in.), which corresponds to the flow area of the MSL nozzle from the reactor pressure vessel. The flow area of the MSL nozzle limits the cross-sectional flow area of the MSL. Therefore, the flow area of the MSL nozzle is used.

The footnotes in DCD Tier 2, Table 6.2-5, will be revised as shown below:

⁺⁺ For the feedwater line break, the total break area from the turbine building side is limited at the two parallel venturi sections, with flow area of 0.04997 m² each. The break area from the RPV side of the break is limited by the feedwater sparger piping, which has a flow area of 0.07420 m². The analysis assumes feedwater lines are completely isolated in 52 seconds after the LOCA initiation (isolation valves start to close at 42 s with closure time of 10 s).

⁺⁺⁺ Main Stream Line Break, at level 34, 2 GDSCS vent paths. The break area from the RPV side of the break is limited by the MSL nozzle, which has a flow area of 0.09832 m².

DCD Impact:

DCD Tier 2, Table 6.2-5, footnotes ⁺⁺ and ⁺⁺⁺ will be revised as shown in the above response.