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MFN 07-209

Docket No. 52-010

April 17, 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 - Containment - RAI Numbers 6.2-152 and 6.2-153**

Enclosure 1 contains GE's response to the subject NRC RAIs transmitted via the Reference 1 letter.

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

Sincerely,

Kathy Sedney for

James C. Kinsey
Project Manager, ESBWR Licensing

D068

Reference:

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

Enclosure:

1. MFN 07-209 - Response to Portion of NRC Request for Additional Information Letter No. 85 - Related to ESBWR Design Certification Application - Containment - RAI Numbers 6.2-152 and 6.2-153

cc: AE Cubbage USNRC (with enclosures)
BE Brown GE/Wilmington (with enclosures)
GB Stramback GE/San Jose (with enclosures)
eDRF 0000-0066-4192

Enclosure 1

MFN 07-209

Response to Portion of NRC Request for

Additional Information Letter No. 85

Related to ESBWR Design Certification Application

Containment

RAI Numbers 6.2-152 and 6.2-153

NRC RAI 6.2-152:

DCD, Tier 2, Revision 2, Section 6.2.1.1.10.2 state that "Once the [gravity driven cooling system] GDCS pools are drained, the total volume of the GDCS pools are added to the volume of the drywell airspace." The Staff believes that adding volume to the drywell airspace is not possible because the water removed from the GDCS pools would occupy the drywell volume. Please explain this statement or correct the DCD.

GE Response:

GE concurs that this statement is misleading. There is no net gain of drywell airspace resulting from the draining of the GDCS pools. This statement will be deleted from DCD Tier 2 in Revision 4.

DCD Impact:

DCD Tier 2, Section 6.2.1.1.10.2, will be revised in DCD Tier 2, Revision 4, as shown in the attached markup.

NRC RAI 6.2-153:

Please correct the following typographical errors in DCD, Tier 2, Revision 2:

- *In Section 6.2.3.3: "Calculated pressure responses have been considered in order to define the peak pressure, of the RB compartments, for structural design purposes" to "Calculated pressure responses have been considered in order to define the peak pressure of the RB compartments for structural design purposes"*
- *On Table 6.2-3: "Suppression Pool Depth at Low Water Level 5.4 m (17.7)" to "Suppression Pool Depth at Low Water Level 5.4 m (17.7 ft)"*
- *On Table 6.2-9: "Automatic Depression System (ADS)" to "Automatic Depressurization System (ADS)"*

GE Response:

GE concurs that these are typographical errors. These errors were either corrected in DCD Tier 2, Revision 3, or will be corrected in DCD Tier 2 in Revision 4.

DCD Impact:

DCD Tier 2, Section 6.2.3.3 and Table 6.2-3, will be revised in DCD Tier 2, Revision 4, as shown in the attached markup

DCD Tier 2, Table 6.2-9, was revised in DCD Tier 2, Revision 3, to correct this typographical error.

6.2.1.1.10.2 ESBWR Design Features for Severe Accident Control

(10) GDCS Configuration

The GDCS pools are placed above the reactor pressure vessel with their air space connected to the drywell. ~~Once the GDCS pools are drained, the total volume of the GDCS pools are added to the volume of the drywell airspace.~~

A line with normally closed valves connects the GDCS pools to the vessel downcomer for low pressure injection. After the GDCS pools are exhausted following LOCA injection, coolant flow to keep the core covered is supplied from the suppression pool through an equalizing line, which branches from the GDCS line.

6.2.3.3 Design Evaluation

Compartment Pressurization Analysis

RWCU pipe breaks in the Reactor Building and outside the containment were postulated and analyzed. For compartment pressurization analyses, HELB accidents are postulated due to piping failures in the RWCU system where locations and size of breaks result in maximum pressure values. Calculated pressure responses have been considered in order to define the peak pressure, of the RB compartments, for structural design purposes. The calculated peak compartment pressures, which include a 10% margin, are listed in Table 6.2-12a, out of which the maximum is 32.6 kPag which is below the reactor building compartment pressurization design requirement as discussed in Subsection 3G.1.5.2.1.11.

Table 6.2-3

Containment Major Configuration Data

Drywell	
Upper Drywell Free Gas Volume	6016 m^3 (~212500 ft^3)
Lower Drywell Free Gas Volume	1190 m^3 (~42020 ft^3)
Wetwell	
Free gas space volume Normal water level	5432 m^3 (~191800 ft^3)
Suppression Pool Volume (includes vents) at normal water level	4424 m^3 (~156200 ft^3)
Suppression Pool surface area	
Pool surface only	799 m^2 (86000 ft^2)
Vertical vents (Total of 12 vents)	13.6 m^2 (146 ft^2)
Suppression Pool Depth at High Water Level	5.5 m (18 ft)
Suppression Pool Depth at Nominal Water Level	5.45 m (17.9 ft)
Suppression Pool Depth at Low Water Level	5.4 m (17.7 ft)
GDCS Pools	
Total Water Volume (per pool for pools at 90 and 270 degrees) at Normal water level	560 m^3 (~19800 ft^3)
Total Water Volume (for pool at 180 degrees) at Normal water level	739 m^3 (~26100 ft^3)
Non-Drainable Water Volume (per pool for pools at 90 and 270 degrees)	91 m^3 (3214 ft^3)
Non-Drainable Water Volume (for pool at 180 degrees)	78 m^3 (2755 ft^3)
Pool Surface Area (per pool for pools at 90 and 270 degrees)	84.8 m^2 (913 ft^2)
Pool Surface Area (for pool at 180 degrees)	112 m^2 (1206 ft^2)