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MFN 06-245 Supplement 1

Docket No. 52-010

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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. 34 - Gravity Driven Cooling System - RAI Number 6.3-4 S01**

Enclosure 1 contains GHNEA's 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 06-198, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 34 Related to ESBWR Design Certification Application*, June 22, 2006

Enclosure:

1. MFN 06-245 Supplement 1 - Response to Portion of NRC Request for Additional Information Letter No. 34 - Related to ESBWR Design Certification Application - Gravity Driven Cooling System - RAI Number 6.3-4 S01

cc:	AE Cubbage	USNRC (with enclosures)
	BE Brown	GHNEA/Wilmington (with enclosures)
	GB Stramback	GHNEA/San Jose (with enclosures)
	eDRF	0000-0068-5231

Enclosure 1

MFN 06-245 Supplement 1

Response to Portion of NRC Request for

Additional Information Letter No. 34

Related to ESBWR Design Certification Application

Gravity Driven Cooling System

RAI Number 6.3-4 S01

NRC RAI 6.3-4:

Even though some of the design basis parameters for GDCS are given in Table 6.3-2, it is not complete. Provide a diagram showing the GDCS design and operating parameters: pressure, temperature and flow rates. Submit the GE standard process diagram.

GHNEA Response:

Comment accepted. A process flow diagram for the GDCS will be provided by September 29, 2006.

NRC RAI 6.3-4 S01:

Please submit the GDCS process flow diagram as indicated in your original response and include it in the next revision of the DCD.

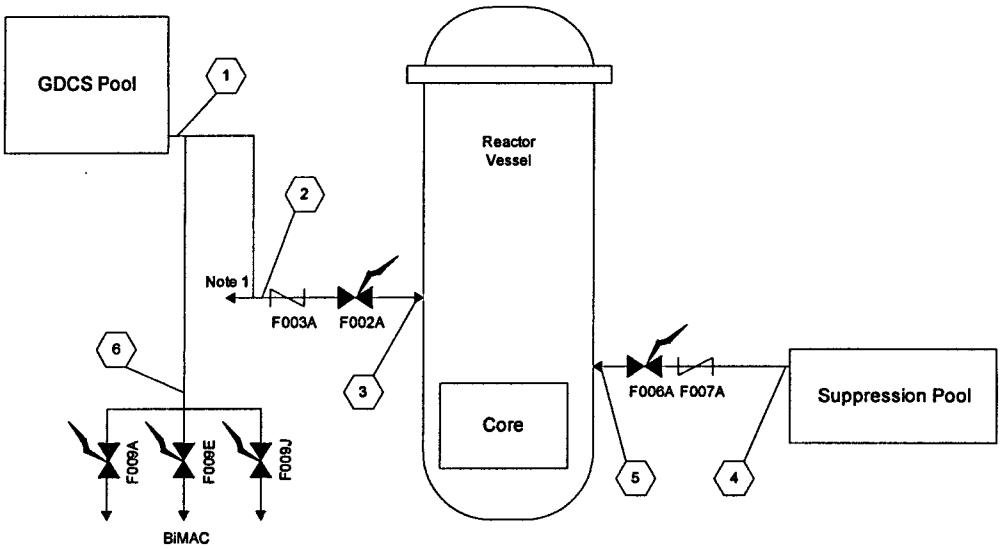
In the original RAI 6.3-4, staff further requested the GDCS design and operating parameters, pressure, temperatures, and flow rates. During a conference call dated March 26, 2007, GE committed to provide GDCS operating data similar to the what was provided for the ICS, SLCS, and CRD systems in response to the original RAI 6.3-4. This requested information should be included in the DCD.

GHNEA Response:

The Gravity Driven Cooling System (GDCS) process flow diagram will be added in DCD Tier 2, Chapter 6, Revision 4, as new Figure 6.3-1a, "GDCS Typical Process Flows." The design basis flow rates shown for the injection line (nodes 1, 2, and 3) are taken from the TRACG loss-of-coolant accident (LOCA) analysis of a GDCS injection line break with one GDCS squib valve failure. Deluge/BiMAC flows will not be shown in the diagram. A reference will be made to DCD Tier 2, Chapter 21, for flow parameters for severe accidents in the notes of the new diagram.

DCD Impact:

DCD Tier 2, Figure 6.3-1a, will be added in DCD Tier 2, Revision 4, as shown in the attached markup.



Mode A: Standby						
Position ⬡	1	2	3	4	5	6
Temperature °C (°F)	43 (110)	43 (110)	288 (550)	43 (110)	288.0 (550)	43.4 (110)
Pressure kPa(d) (psid)	162 (23.5)	256 (37.1)	7241 (1050.7)	16.2 (2.3)	7256 (1052.4)	162 (23.5)

Mode B: Design Basis (Note 2)						
Position ⬡	1	2	3	4	5	6
Flow kg/s (lb/hr)	115 (912704)	57.5 (456352)	57.5 (456352)	27.8 (201623)	27.8 (201623)	0 0
Temperature °C (°F)	47 (117)	47 (117)	47 (117)	61 (142)	61 (142)	43.4 (110)
Pressure kPa(d) (psid)	318 (46.2)	386 (56.0)	329 (47.8)	223 (32.3)	225 (32.6)	161.988 (23.5)

Mode C: Severe Accident	
Position ⬡	6
Flow kg/s (lb/hr)	Note 3
Temperature °C (°F)	Note 3
Pressure kPa(d) (psid)	Note 3

Valve Position	Mode A	Mode B	Mode C
F002A	C	O	C
F003A	O	C/O	O
F006A	C	O	C
F007A	O	C/O	O
F009A,E,J	C	C	O

O=Open, C=Closed, C/O=Initially closes then opens based on system back pressure

Notes:

1. To parallel injection line nozzle with equal flow rate at node 3.
2. Flow rates vary with drywell, wetwell, and reactor vessel pressures which are time dependent and vary with the type of postulated design basis accident.
3. Severe accident parameters are discussed in DCD Tier 2, Chapter 21.

Figure 6.3-1a. GDCS Typical Process Flows