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Subject: **Response to Portion of NRC Request for Additional Information Letter No. 81 Related to ESBWR Design Certification Application – Passive Containment Cooling System - RAI Number 14.3-102**

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

If you have any questions or require additional information regarding the information provided here, please contact me.

Sincerely,

Kathy Sedney for

James C. Kinsey
Project Manager, ESBWR Licensing

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Reference:

1. MFN 06-462, Letter from U.S. Nuclear Regulatory Commission to David Hinds, *Request for Additional Information Letter No. 81 Related to ESBWR Design Certification Application*, November 14, 2006

Enclosure:

1. MFN 07-146 - Response to Portion of NRC Request for Additional Information Letter No. 81 Related to ESBWR Design Certification Application – Passive Containment Cooling System - RAI Number 14.3-102

cc:

AE Cubbage	USNRC (with enclosures)
DH Hinds	GE (with enclosures)
RE Brown	GE (w/o enclosures)
eDRF	0000-0062-8056

Enclosure 1

MFN 07-146

Response to Portion of NRC Request for

Additional Information Letter No. 81

Related to ESBWR Design Certification Application

Passive Containment Cooling System - RAI Number 14.3-102

NRC RAI 14.3-102

In Item 2, "Acceptance Criteria," of Table 2.15.4-1, provide the specific sections of ASME, Section III, that contain the requirements for hydrostatic tests of ASME Code Components.

GE Response

Since the PCCS system components are designed to ASME Code Section III, Class 2, the appropriate Subsection for the hydrostatic test is NC-6000. To be consistent with the format of other safety related systems in Tier 1, the ASME Code classification and Quality group will be added to the text of Subsection 2.15.4. From this information, the applicable ASME code requirements for the ITAACs that appear in Table 2.15.4-1 can be determined.

DCD Impact

DCD Tier 1, Section 2.15.4 will be revised as noted in the attached markup.

2.15.4 Passive Containment Cooling System

Design Description

The Passive Containment Cooling System (PCCS) maintains the containment within its pressure limits for DBAs such as a LOCA, by condensing steam from the Drywell atmosphere and returning the condensed liquid to the Gravity Driven Cooling System (GDCS) pools. The system is entirely passive, with no moving parts. No action is required for the PCCS to begin operation.

The PCCS consists of six low pressure, totally independent loops, each containing a steam condenser (passive containment cooling condenser) that condenses steam on tube side and transfers heat to water in a large cooling pool (IC/PCC pool) located outside the primary containment, which is vented to atmosphere.

Each PCCS condenser is located in a subcompartment of the IC/PCC pool. The IC/PCC pool subcompartments on each side of the reactor building communicate at their lower ends to enable full use of the collective water inventory, independent of the operational status of any given PCCS loop. There is no cross connection between the IC/PCC pools.

Each loop, which is open to the containment, contains a drain line to one of the three GDCS pool, and a vent discharge line the end of which is submerged in the pressure suppression pool.

The PCCS loops are driven by the pressure difference created between the containment drywell and the suppression pool during a LOCA, and as such require no sensing, control, logic or power actuated devices for operation.

The PCCS is classified as safety-related and Seismic Category I, and designed to ASME Code Section III, Class 2, Quality Class B.

Together with the pressure suppression containment system, the six PCC condensers limit containment pressure to less than its design pressure. The Dryer/Separator pool and Reactor Well shall be designed to have sufficient water volume to provide makeup water to the IC/PCC pools for the initial 72 hours of a LOCA. The PCC condensers are closed-loop extensions of the containment pressure boundary. Therefore, there are no containment isolation valves and they are always in "ready standby".

The PCCS can be periodically pressure-tested as part of the overall containment pressure testing program. The PCC loops can be isolated for individual pressure testing during maintenance.

During refueling outages, in-service inspection (ISI) of PCC condensers can be performed, if necessary. Ultrasonic testing of tube-to-heater welds and eddy current testing of tubes can be done with PCCs in place.