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MFN 07-340

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Subject: **Response to Portion of NRC Request for Additional Information  
Letter No. 98 –Auxiliary Systems– RAI Numbers 9.1-31 and 9.1-32**

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

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

Sincerely,



James C. Kinsey  
Project Manager, ESBWR Licensing

*DO68*

*NR0*

Reference:

1. MFN 07-317, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 98 Related to the ESBWR Design Certification Application*, May 29, 2007.

Enclosure:

1. MFN 07-340 – Response to Portion of NRC Request for Additional Information Letter No. 98 – RAI Numbers 9.1-31 and 9.1-32.

cc: AE Cabbage                    USNRC (with enclosure)  
BE Brown                        GHNEA/Wilmington (with enclosure)  
LE Fennern                      GHNEA/San Jose (with enclosure)  
GB Stramback                  GHNEA/San Jose (with enclosure)  
eDRF: 0000-0069-5278

**Enclosure 1**

**MFN 07-340**

**Response to Portion of NRC Request for  
Additional Information Letter No. 98  
Related to ESBWR Design Certification Application**

**Auxiliary Systems**

**RAI Numbers 9.1-31 and 9.1-32**

**NRC RAI 9.1-31**

*In its response to RAIs 9.1-14, the applicant stated that the value for the boil-off rate in the spent fuel pool is calculated based on the most limiting condition, which includes the decay heat from 10 years of accumulated spent fuel in the spent fuel pool as well as the shutdown power from the full core discharged to the ICS immediately following a scram. However, the DCD Tier 2, Rev. 3, Section 9.1.3.2 states that the maximum SFP heat load conditions are from a full core off-load plus irradiated fuel resulting from 20 years of operation. Please clarify the discrepancy and revise the DCD accordingly.*

**GHNEA Response**

At the time the response to RAI 9.1-14 was submitted, the reference to 10 years of spent fuel was correct. Since then a design change augmented the cooling requirements for the spent fuel pool such that under its most limiting conditions it now has the capacity to dissipate the decay heat from 20 years of spent fuel plus one full core offload. The change to a 20-year cooling capacity was not significant enough to affect the values for rate of boil-off and makeup that were contained in the response to RAIs 9.1-14 and 9.1-12.

**DCD Impact**

No DCD changes will be made in response to this RAI.

**NRC RAI 9.1-32**

*DCD Tier 2, Section 9.1.3 states that pipes equipped with normally closed manual valves are provided for establishing flow paths from off-site emergency water supplies or the Fire Protection System to refill the isolation condenser/passive containment cooling system (IC/PCCS) pools and spent fuel pool following a design basis loss of coolant accident. DCD Tier 2, Rev. 3, Section 6.2.2 states that the fuel and auxiliary pool cooling system (FAPCS) provides safety-related dedicated make-up piping, which provides an attachment connection at grade elevation in the station yard outside the reactor building, whereby a post-LOCA water supply can be connected.*

*Clarify how many FAPCS make-up lines discharge into the IC/PCCS pools since there are two expansion pools which are not normally connected. If only one line is provided, clarify how the redundancy requirements as related to GDC 38 are met to ensure long term cooling. In addition, revise Tier 1, Figure 2.6.2-1 and Tier, Figure 9.1-1 to reflect this information.*

**GHNEA Response**

GDC 38 is satisfied as described in the response to RAI 9.1-13.

The arrangement shown in DCD Tier 2, Rev. 3, Figure 9.1-1 and Tier 1, Rev. 3, Figure 2.6.2-1 is correct. There is only one common header that feeds only one side of the IC/PCCS expansion pools. As stated in the RAI, the IC/PCCS expansion pools are not normally connected. However, during an accident in which pool water is boiling off, a low level set point in either of the IC/PCC expansion pools causes safety-related connections to the Dryer/Separator pool to open. These connections allow water to flow freely between both expansion pools as well as the Dryer/Separator pool and Reactor Well. Therefore, even though there is only one makeup line provided to only one of the expansion pools, this line is sufficient to supply additional coolant to both pools following an accident.

**DCD Impact**

No DCD changes will be made in response to this RAI.