

MFN 06-001  
Enclosure 1

**ENCLOSURE 1**

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**GE Responses to NRC Request for Additional Information  
Letter No. 2 for the ESBWR Design Certification Application  
Hydrology, Seismic Analysis Method,  
Containment Performance and Seismic Margin Assessment**

**2.4.1-1** *The design control document (DCD) states that the ESBWR does not need any safety-related service water, but it does not clarify if it needs a water cooled ultimate heat sink (UHS). General Design Criteria (GDC) 44 has detailed criteria for a system to transfer heat to a UHS. Please revise the DCD to clearly state if a water cooled UHS is needed.*

GE Response:

In the ESBWR design, the ultimate heat sink (UHS) is the atmosphere, which receives steam generated by boiling in the Isolation Condenser (IC) and Passive Containment Cooling (PCC) System pools and the Spent Fuel Pool. A separate safety-related service water system with a dedicated UHS reservoir is not required. The water volumes needed to ensure operation of the IC and PCC Systems and to keep the Spent Fuel Pools filled for cooling are described in Subsection 9.2.5, Ultimate Heat Sink.

DCD Table 2.0-1 and Subsection 2.4.8 will be updated in DCD Chapter 2 Revision 2 to refer to Subsection 9.2.5 for discussion of the ESBWR's Ultimate Heat Sink. The DCD markup is contained in Enclosure 2.

**2.4.1-2** *Identify the inventory and release categories for accidental release on the ground for radioactive transport in ground water.*

GE Response:

The accidental release of liquid effluents in groundwater is addressed in DCD Subsection 2.4.13. In this section, reference to the Chapter 15 liquid containing tank failure radiological analysis (Section 15.3.16) is provided. The radiological analysis assumes no liquid release to the ground water due to the mitigation capabilities of the Liquid Waste Management System (LWMS) and the Radwaste Building, and concludes that no liquid or significant ground contamination is expected.

DCD Section 11.2 describes the features and characteristics of the LWMS. Subsection 11.2.1 states that the LWMS is designed so that no potentially radioactive liquids can be discharged to the environment unless they have first been monitored and diluted as required. It is further stated in the Subsection that each collection tank room is designed to contain the maximum liquid inventory in the event that the tank ruptures. Lastly, the LWMS is designed to meet the requirements of Regulatory Guide (RG) 1.143. This RG imposes design criteria to prevent uncontrolled releases of radioactive materials caused by spillage in the Radwaste Building.

Per DCD Subsection 3.8.4.1.5, the Radwaste Building substructure (consisting of foundation and walls up to the spill height of the building housing the LWMS) is designed to the most stringent criteria of RG 1.143. It can be concluded that there is no radiological liquid release to the ground water due to a failure of the LWMS.

**3.7.2.1** *Specify in the DCD the analysis method for seismic analysis for Category II structures.*

GE Response

The analysis method for seismic analysis for Category II structures is the same as Category I. It will be specified in DCD Revision 01 with the changes to Section 3.7 as shown in Enclosure 2.

**19.5.2-1** *Provide a table in DCD Chapter 19 of high confidence low probability of failure (HCLPF) values for the seismic margins evaluation. Provide a discussion of seismic fragility evaluations methods. Also, provide a commitment to perform as-built HCLPF verification of equipment and components within the scope of the ESBWR.*

GE Response

The information describing the seismic margins evaluation has been provided in Section 15 of NEDC-33201P, which was submitted as part of the DCD application. GE does not agree that this information belongs in DCD Chapter 19. GE will add a COL Holder action item to verify the as-built HCLPF values for equipment installed in the ESBWR. This commitment will be located in Chapter 19 of the DCD. The text of the commitment is as follows:

“The COL Holder referencing the ESBWR certified design shall compare the as-built SSC HCLPFs to those assumed in the ESBWR seismic margin analysis contained in Section 15 of NEDC-33201P. Deviations from the HCLPF values or other assumptions in the seismic margins evaluation shall be analyzed to determine if any new vulnerabilities have been introduced.”

**19.5.2-2** *Discuss in DCD Chapter 19 the ultimate capacity fragility evaluation of the containment structure.*

GE Response

The information describing the seismic margins evaluation has been provided in Section 8 of NEDC-33201P, which was submitted as part of the DCD application. GE does not agree that this information belongs in DCD Chapter 19.