

**Request for Additional Information (RAI)
ESBWR Design Control Document (DCD), Revision 4**

RAI Number	Reviewer	Question Summary	Full Text
19.2-92	Xu J	Clarify the COL Holder item in DCD Tier 2, Rev 4, Section 19.2.3.2.4, regarding the definition of SSE in Note 1.	<p>DCD Tier 2, Rev 4, Section 19.2.3.2.4 states that “The COL Holder referencing the ESBWR certified design shall compare the as-built SSC HCLPFs to those assumed in the ESBWR seismic margin analysis shown in Table 19.2-4. Deviation from the HCLPF values or other assumptions in the seismic margins evaluation shall be analyzed to determine if new vulnerabilities have been introduced.” This statement can be interpreted as allowing COL Holder to analyze the as-built SSC HCLPFs with respect to the site ground motion response spectral input (GMRS). Without a clearly delineated process to verify all SSC in Table 19.2-4 to possess HCLPF capacity equal to 1.67 times the ESBWR CSDRS, the staff can not conclude that the ESBWR certified design has met SECY-93-087 seismic margin expectation.</p> <p>The staff seismic margin requirement arose from the Commission’s SRM (Staff Requirements Memorandum) to SECY 93-087, Section II.N and is quoted here for clarification:</p> <p>“The Commission approves the following staff recommendation, as modified:</p> <p>PRA insights will be used to support a margins-type assessment of seismic events. A PRA-based seismic margins analysis will consider sequence-level High Confidence, Low Probability of Failures (HCLPFs) and fragilities for all sequences leading to core damage or containment failures up to approximately one and two-thirds the ground motion acceleration of the Design Basis SSE.”</p> <p>It is clear that the spectra required by SRM are the design basis spectra, which for the certified designs, are the CSDRS.</p> <p>To address this issue, the staff requests that: (a) GEH states that the seismic margin earthquake (SME) for the PRA-based seismic margin assessment for</p>

Enclosure

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			<p>ESBWR is the ESBWR CSDRS; (b) Note 1 to Table 19.2-4 be modified as “A minimum HCLPF value of $1.67 \times SSE$, where SSE is the ESBWR CSDRS as provided in DCD Tier 1, rev. 4, Figures 5.1-1 and 5.1-2;” (c) In addition, verification of as-built design features is more appropriate as an ITAAC rather than a COL Holder item. The staff requested that ITAAC be provided for HCLPFs in previous RAIs, i.e., 19.2-43 and 19.5-4. Please provide an ITAAC for this verification.</p>
22.5-5 S01 (MFN 08-336)	Shum D	Flood protection for RTNSS SSCs.	<p>GEH’s response to RAI 22.5-5 did not provide sufficient details to demonstrate that RTNSS systems have been adequately protected from flood-related effects associated with both natural phenomena and system and component failures.</p> <p>Specifically, GEH indicated that for RTNSS systems located in Reactor Bldg (RB), Control Bldg (CB), Fuel Bldg (FB), Fire Pump Enclosure Bldg (FPE), Electrical Bldg (EB), Service Water Bldg (SF), and Turbine Bldg (TB), the design/installation of RTNSS equipment included protection from the effects of internal flooding. However, GEH did not provide description/discussion for the design/installation of the RTNSS equipment or discuss how this design/installation will protect RTNSS from the effects of internal flooding.</p> <p>Similarly, for the plant service water (PSW) system located outdoors onsite (OO), GEH did not describe/discuss how the design/installation of RTNSS equipment will be protected from the effects of external flooding.</p> <p>Provide detailed description of the design/installation requirements for RTNSS SSCs and discuss how this design/installation will provide the protection for the RTNSS SSCs from the effects of internal flooding and/or external flooding.</p>

<p>22.5-9 S01 (MFN 08-336)</p>	<p>Shams M</p>	<p>Describe hurricane wind design parameters and missile characteristics for the design of RTNSS SSCs (DCD Section 19A.8.3)</p>	<p>GEH's response to RAI 22.5-9 did not provide sufficient details about the design of RTNSS SSCs with respect to hurricanes. Additionally, the information provided in GEH's response to RAI 22.5-5 requires additional clarifications. The staff requests the following information to be provided in the DCD:</p> <ul style="list-style-type: none"> a - Identify the 3-second gust wind speed used in the design for the Category 5 hurricane. b - Confirm that the procedures used for calculating and distributing the wind pressure and all the associated parameters that account for the physical and geometrical conditions of the structures are in accordance with the DCD Tier 2, Rev. 4, Section 3.3.1. Otherwise, fully describe the alternative procedure used. c - Confirm that the hurricane missile spectrum is consistent with the tornado missile spectrum identified in DCD Tier 2, Rev. 4, Table 2.0-1. Otherwise, fully describe the alternative missile spectrum used. d - Explain how the design of the Turbine Building for tornado winds without missiles will envelop the demands of a Category 5 hurricane wind with missiles. If hurricane missiles are assumed to penetrate the building, describe the protection provisions implemented to protect RTNSS systems from missile damage as stated in Table 19A-4.
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<p>22.5-21 S01 (MFN 08-336)</p>	<p>Shams M</p>	<p>Identify the seismic design criteria applicable to RTNSS SSCs meeting Criterion B and designated as Regulatory Oversight Support (DCD Section 19A.8.3)</p>	<p>The staff considers GEH’s response to RAI 22.5-21 in Letter No. MFN 08-336 incomplete, because it did not address seismic design. The first sentence in DCD Tier 2, Rev. 4 Section 19A.8.3 states that all systems that meet RTNSS Criterion B require augmented design standards. The following sentence excludes more than half of these systems based on their categorization as Regulatory Oversight “Support”. Irrespective of the regulatory oversight level, the fundamental question here is: Are these systems required to function following an accident? And if so, what design standards are used to achieve that goal?</p> <p>The staff requests the following information to be provided in the DCD:</p> <ol style="list-style-type: none"> 1. Confirm that the augmented seismic design standards in DCD Section 19A.8.3 is applicable to all RTNSS systems and components that meet Criterion B including those designated as Regulatory Oversight “Support”. Otherwise, describe the alternative seismic design criteria used and justify its adequacy. 2. Confirm that the augmented seismic design standards in DCD Section 19A.8.3 are applicable to the non-seismic structures that house and support all RTNSS systems and components that meet Criterion B including those designated as Regulatory Oversight “Support”. Otherwise, describe the alternative seismic design criteria used and justify its adequacy. <p>This RAI should not be construed as an approval of the augmented design standard proposed by GEH. This issue is still under review in other RAIs.</p>
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