

Issue: Seismic Category (“SC”) RW-IIa Radwaste (“RW”) Building. Level of design information necessary for certification.

Safety Significance: The purpose of analyzing SC II buildings is for assuring that the buildings will not fail and adversely impact a SC I structure, system, or component (i.e., seismic interaction concerns). Completing the seismic and natural phenomena analysis is not necessary for assuring the safety of the standard design; rather, NRC guidance suggests including information in the DCD regarding location of non-seismic buildings, information on the design, description of analyses methods, and seismic design criteria that will be applied for these buildings (*see* below). Also, for the RW Building, RG 1.143 (Rev. 2, 2001) indicates that the “safety classifications” for the RW management facilities “were developed primarily for natural phenomena and man-induced hazard design” and that “the impact of these [radwaste management] systems on safety is limited.” Finally, the SRP in effect at the time of ESBWR DC application submittal includes limited information regarding SC II buildings, and essentially no information in Chapter 3.8 that addresses FSAR content for non-SC I buildings, such as the RW building.

NRC Staff Position: In RAIs 3.8-79S03 and 3.8-80S03, the NRC requests that GEH include in the DCD additional description of seismic analyses and design of the RW building and provide the results of the seismic analysis.

Applicable NRC Guidance: NRC guidance in NUREG-0800, Section 3.7.2 (Rev. 2, 1989), suggests that the staff review the “design criteria to account for the seismic motion of non-Category I structures” and “procedures that are used to protect Category I structures from the structural failure of non-Category I structures, due to seismic effects.” Regarding level of detail to include in the DCD, RG 1.70, Section 3.7.2.8 (Rev. 3, 1978) states:

3.7.2.8 Interaction of Non-Category I Structures with Seismic Category I Structures. Provide the design criteria used to account for the seismic motion of non-Category I structures or portions thereof in the seismic design of Seismic Category I structures or portions thereof. In addition, describe the design criteria that will be applied to ensure protection of Seismic Category I structures from the structural failure of non-Category I structures due to seismic effects.

Regarding the descriptive information for structures, RG 1.70, Section 1.2, suggests that the “general arrangement of major structures and equipment should be indicated by the use of plan and elevation drawings in sufficient number and detail to provide a reasonable understanding of the general layout of the plant.” Other sections of RG 1.70 generally address safety-related structures. Specific to the RW building, RG 1.143 provides NRC guidance regarding the design, construction, installation, and testing of RW management facilities. Under the criteria in RG 1.143, the RW building is a “safety class” RW-IIa. In RG 1.143, earthquakes and other natural phenomena design criteria are listed as applicable to radwaste management safety class RW-IIa..

Applicant Position: As noted in the RAIs, GEH has provided certain design description and has indicated in the DCD that SC I methods and criteria will be the basis for seismically analyzing the RW buildings as part of completing the detailed design for the ESBWR. GEH clearly considers the RW building as part of the standard ESBWR design. GEH proposes, in accordance with NRC guidance in effect at the time of ESBWR DCA submittal and to address RAIs 3.8-79S03 and 3.8-80S03, to include additional description of the general design, seismic and natural phenomena analyses methods, and acceptance criteria to be used to ensure that the as-built RW building will conform to the criteria set forth in NRC guidance. GEH proposes to analyze the RW building to the full SC I requirements, which is conservative, and address the other phenomena at the time that the SC I analyses is performed as part of detailed design completion. In addition, GEH proposes to include two ITAAC in Tier 1 that will (1) require a report that concludes the seismic and natural phenomena analyses are consistent with the DCD and (2) require verification that the as-built RW building conforms to the results of the analyses (similar to ITAAC on SC I buildings).

Proposed Action: GEH has completed seismic analyses for all SC I buildings and included the results in the DCD, as per NRC guidance. For the RW-IIa building, the DCD will include information on the design and analysis criteria that will be used when the seismic and natural phenomena analyses are performed, consistent with NRC guidance. Although GEH has not completed the analyses, GEH proposes to add information in the DCD. GEH has discussed draft RAI responses with the NRC staff and is preparing the final responses that will show the additional information to be included in the DCD, consistent with NRC guidance. GEH requests NRC feedback on the approach for the RW building.