REQUEST FOR ADDITIOANL INFORMATION

Global Nuclear Fuels - Americas

License Number: SNM-1097

Docket Number: 70-1113

Global Nuclear Fuel Dry Conversion Process Building (DCP) and Fuel Manufacturing Operation (FMO) Building Evaluation Basis Analysis

Regulatory Basis:

The regulations in 10 CFR 70.62(c)(1), require, in part, that each licensee shall conduct and maintain an ISA that is of appropriate detail for the complexity of the process that identifies, among other things, "potential accident sequences caused by process deviations or other events internal to the facility and credible external events, including natural phenomena." The regulations in 10 CFR 70.62(c)(1) also require, in part, identification of the consequence and the likelihood of occurrence of each potential accident sequence, and the methods used to determine the consequences and likelihoods.

Global Nuclear Fuel DCP Building and FMO Building Evaluation Basis Analysis

1. Section 2.2.3.2 of the ISA summary states that the main building structures were evaluated using the 2008 USGS seismic hazards. The DCP and FMO building evaluation report provides the methodology used to calculate the seismic base shear for the structural analyses in Appendix 6.10. Seismic loads for the Evaluation Basis Earthquake were calculated by obtaining a spectral acceleration corresponding to a seismic hazard with a probability of exceedance of 10% in 50 years. The calculation shows that the spectral response acceleration was then reduced by a factor of 2/3. This reduced value was used as the design spectral acceleration. Reducing the ground motions obtained from a seismic hazard with a probability of exceedance of 10% in 50 years by a factor of 2/3 is an incorrect method to obtain the design spectral acceleration assumed in the ISA summary for the qualitative screening of accident sequences. This is inconsistent with the provisions of the building code referenced in the structural analysis. The utilization of this methodology is not acceptable to evaluate the performance of the building under seismic loads. Provide a structural analysis that is consistent with the building code of reference or provide a technical justification to support the basis for the methodology used.

   The following statements arise from the question described above:

   a. The results of the structural analyses have identified deficiencies in the structures, such as, overstressed roof trusses, overstressed braced frames and potential failures of internal partition walls. Because of the utilization of the methodology mentioned above, the assumptions made in the ISA Summary for the assessment of the likelihood of a seismic induced accident sequence are unconservative.

b. Because of the utilization of the methodology mentioned above, the categorization of the seismic design category of the structures is impacted.

2. Section 2.5.7 of the report indicates that the DCP building can withstand seismic loads associated with a probability of exceedance of 2% in 50 years (2012 NCBC). Provide the basis for this conclusion and state if the conclusion is based on the results of structural analysis or based on engineering judgement.

3. Describe the method used to determine the seismic weight utilized in the structural analysis.

CALC 900-007

1. Section 5.1.3

   a. Return frequency calculated from the USGS maps (10% in 50 years) corresponds to the mean frequency of exceedance not the upper bound frequency. Provide a justification to conclude that the frequency of 2.1 X 10-3/year is an upper bound.

   a. The code assigns importance factors to increase seismic demands based on the significance of the facility. These importance factors cannot be used to imply an increased in return period. Provide the technical basis for this statement.

2. Identify any rows in Table A-1 of CALC-900-007 in which there is more than a critical mass of uncontained SNM in the form of powder, pellets, or solution, that could credibly be released in the event of a postulated seismic event. Describe the form and quantity of material involved, as well as any sources of moderator (e.g., fire sprinklers, piping, or tanks) that could credibly be released in the vicinity. Provide the criticality analysis justifying that support the 401-UO2 Press and 503-Gad Press.

3. Table 2.3 describes several areas where criticality hazards exist due to loss of geometry or a breach of moderation barriers. Provide the criticality analysis to support the 405-UO2 Grind, 504-Gad Sinter, and 801-Can Storage Conveyors (Wet) areas. Describe how the SSCs in those areas were evaluated for seismic hazards, as stated in Table 5.1-1 of CALC-900-007.

4. Section 2.2.3.3 states that because the main process building ground floors are at least 20 feet above the 500-year flood plain, further evaluation is not needed. The frequency of a 500-year flood is 2x10-3/year, which is not alone sufficient to ensure criticality is highly unlikely. Demonstrate that criticality due to flooding is at least highly unlikely, or describe measures to be taken to secure licensed materials, render operations safe, and protect workers from the consequences of a flood-induced criticality.

5. Partition walls in FMO/FMOX are stated to marginally survive the 10% in 50 years, or a 500-year return earthquake. Because of the statements made in question 1 above, the conditional probabilities associated with seismic induced criticality events should be described.