SMR, LLC (Holtec) SMR-160
NRC Staff Questions and SMR (Holtec) Responses Regarding the
Public Meeting on Risk Significance Methodology
October 25, 2023

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the October 25, 2023, Pre-submittal public meeting materials regarding Risk Significance Methodology for the SMR-160 design. After reviewing this information, on October 23, 2023, the NRC staff provided SMR (Holtec) with questions, and on October 24, 2023 SMR (Holtec) provided responded with answers, some of which were discussed during the meeting. These questions and responses are listed below.

1. Although not stated, it appears that Holtec's proposed risk significance determination methodology is similar to the approved risk significance determination methodology from NuScale Topical Report TR-0515-13952-NP-A (ML16284A016).

    a. Are there any differences between NuScale's approved risk significance determination methodology and Holtec's proposed methodology?

        SMR (Holtec) response: There are no differences between Holtec's proposed risk significance determination methodology and NuScale's approved risk significance determination methodology.

    b. Is Holtec familiar with the limitations and conditions that the NRC staff placed on the approval of NuScale's risk significance determination methodology? These limitations and conditions may be applicable to Holtec's risk significance determination methodology approval. Does Holtec have any concerns related to this?

        SMR (Holtec) response: Holtec has reviewed the limitations and conditions placed on the approval of NuScale's risk significance determination methodology. Holtec believes the limitations and conditions apply to Holtec's risk significance determination methodology as well. Holtec has no concerns with the limitations and conditions.

        i. Describe the applicability of the methodology based on the baseline risk since the baseline risk is not yet available to the NRC.

            SMR (Holtec) response: Based on current PSA models (including at-power and LPSD Level 1 and 2 models of internal and external events), the Holtec SMR baseline CDF is expected to be on the order of 10-7/yr and the baseline LRF is expected to be on the order of 10-8/yr. This is significantly smaller than the typical CDF and LRF of the current operating fleet and is similar to the NuScale reactor module CDF and LRF. This supports Holtec's determination that the methodology is applicable to the Holtec SMR design.

ii.   Describe inputs to the determination of risk significance that ensure the process is risk-informed and not risk-based (e.g., defense-in-depth, safety margins, performance monitoring).

SMR (Holtec) response: PRA risk insights will be considered along with deterministic approaches and defense-in-depth concepts such that Holtec is utilizing a "risk-informed" rather than a solely "risk-based" approach. In short, these new criteria will be implemented in the same way the traditional RG 1.200 relative risk criteria would have been.

2.   The approved risk significance determination methodology in NuScale Topical Report TR-0515-13952-NP-A is based, in part, on a CDF on the order of 1E-7 per year.

a.   What are the estimated baseline CDF and LRF values for the Holtec SMR-160+ design?

SMR (Holtec) response: Based on current PSA models (including at-power and LPSD Level 1 and 2 models of internal and external events), the Holtec SMR baseline CDF is expected to be on the order of 10-7/yr and the baseline LRF is expected to be on the order of 10-8/yr.

3.   Are the risk thresholds selected by Holtec based on the cumulative risk from all hazards, or will risk thresholds be based on risks from individual hazards?

SMR (Holtec) response: The criteria apply to the full-scope PRA, including all hazards and operating modes, and both CDF and LRF. The thresholds are applied at the single unit level; the absolute RAW thresholds apply to the aggregated risk across all hazards, and the FV thresholds apply individually to each hazard group and mode of plant operation, and individually to CDF and LRF.