

U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE OCTOBER 25, 2023,
OBSERVATION PREAPPLICATION PUBLIC MEETING
WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY)
TO DISCUSS THE SMR-160+ RISK SIGNIFICANCE METHODOLOGY

Meeting Summary

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on October 25, 2023, with SMR, LLC (SMR), a Holtec International Company (Holtec), to discuss the SMR-160+ Risk Significance Methodology (RSM).¹ SMR (Holtec) provided presentation slides to support the discussion during the public meeting.² This meeting summary satisfies the SMR (Holtec)'s request for review and feedback on its preapplication meeting materials.

This virtual observation preapplication meeting had attendees from SMR (Holtec) and NRC staff. There were no members of the public observing the meeting.

Preapplication engagements, including this meeting, provide an opportunity for the NRC staff to engage in early discussions with a prospective applicant to offer licensing guidance and to identify potential licensing issues early in the licensing process. No decisions or commitments were made during the preapplication meeting.

In preparation for this meeting, the NRC staff provided SMR (Holtec) with clarification questions and subsequently SMR (Holtec) provided responses (Enclosure 4), some of which were discussed during the meeting.

The following summarizes the discussion during the open session of the meeting:

The open session started at 1:30 PM.

- Following the NRC staff's opening remarks and introductions, SMR (Holtec) opened its presentation with the meeting agenda, purpose, and desired outcome of the meeting. The purpose was to provide the NRC staff with a high-level overview of the SMR-160+ RSM, and the desired outcome was to provide information to the NRC staff in preparation for their review of the associated licensing topical report (LTR).
- SMR (Holtec), in their presentation, provided an overview of relevant guidance used in developing their proposed risk significance determination methodology including, Regulatory Guides (RGs) 1.200, RG 1.174, Advisory Committee on Reactor Safeguards (ACRS) observations on NUREG-0800, Chapter 19 and Section 17.4, Nuclear Energy

¹ Letter from A. Brenner, "Submittal of SMR, LLC Preapplication Meeting Materials for October 25, 2023," dated October 10, 2023, Agencywide Documents and Access Management System (ADAMS) Accession No. ML23283A283.

² SMR, LLC, Enclosure 1: "SMR, LLC Preapplication Meeting Materials for October 25, 2023," October 25, 2023, ML23283A284.

Institute (NEI) NEI 00-04, and RG 1.201.^{3, 4, 5, 6, 7, 8} As detailed in the presentation slides, SMR (Holtec) explained why absolute risk significance criteria were necessary, provided details and basis for their proposal, and listed benefits for their risk significance criteria.

- SMR (Holtec) clarified that the Fussell-Vesely (FV) criterion is applied to each hazard based on the hazards-specific core damage frequency (CDF) and provided the basis for the selected value.
- SMR (Holtec) clarified that conditional CDF and conditional Large Release Frequency (LRF) criteria are applied to total plant CDF and provided the corresponding basis for the selected values.
- SMR (Holtec) clarified that conditional CDF (CCDF) is equal to the Risk Achievement Worth multiplied by the baseline CDF.
- SMR (Holtec) stated that the RSMs for the NuScale, Economic Simplified Boiling-Water Reactor, and other designs across the industry were reviewed, and that there are no significant differences between the NuScale RSM and that of the SMR 160+ design. SMR (Holtec) added that the SMR 160+ CDF is expected to be on an order of magnitude appropriate for use of the NuScale RSM.⁹ Holtec stated that they also reviewed the limitations and conditions the NRC staff placed on the NuScale RSM Topical Report approval and stated that they would expect the NRC staff to place the same or similar limitations and conditions on the approval of the Holtec RSM.
- NRC staff pointed out that for the limitations and conditions applied to the NuScale RSM, the 4th condition provided that the base CDF or LRF be very low, approximately 1×10^{-7} per year, or less. SMR (Holtec) indicated that they are aware of the limitation and condition identified by the staff.
- SMR (Holtec) clarified that that the SMR 160+ RSM topical report will be submitted at the end of the month (estimated October 31, 2023), will be a stand-alone document for

³ U.S. NRC Regulatory Guide, RG 1.200, Revision 3, "Acceptability of Probabilistic Risk Assessment Results for Risk-Informed Activities," December 31, 2020, ML20238B871.

⁴ U.S. NRC Regulatory Guide, RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis, January 2018, ML17317A256.

⁵ U.S. NRC NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/index.html>

⁶ Letter from J. W. Stetkar "Standard Review Plan Chapter 19 and Section 17.4," July 16, 2014, ML14196A119.

⁷ Nuclear Energy Institute, NEI 00-04, "10 CFR 50.69 Structures, Systems and Components Categorization Guideline," July 2005, ML052910035.

⁸ U.S. NRC Regulatory Guide, RG 1.201, Revision 1, "Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to Their Safety Significance," May 2006, ML061090627.

⁹ NuScale Power Topical Report, "NuScale Power, LLC, Submittal of the Accepted Version of Licensing Topical Report: TR-0515-13952-NP-A, "Risk Significance Determination," Revision 0, (TAC No. RN6110)," October 10, 2016, ML16284A016.

the SMR 160+, and will follow the same logical arguments as the NuScale RSM topical report.

- NRC staff commented that references RG 1.200 and RG 1.174 cited on slides 5 and 6 are guidance documents, not regulations. The NRC staff added that references NEI 00-04 and RG 1.201 on slide 8 are guidance for the 10 CFR 50.69 process. SMR (Holtec) confirmed it will not be following NEI 00-04 and RG 1.201, but rather used these references as background information for system level risk criteria.¹⁰
- SMR (Holtec) confirmed that the FV can be considered a “backstop” to the absolute risk metrics. The backstop reference for the SMR 160+ RSM uses a FV of .2, versus the RG 1.200 FV of .005. Looking at fractional risk is equally important as looking at conditional CDF and LRF.
- SMR (Holtec) requested the SMR 160+ RSM topical report review be completed by the end of 2024 in order to support design decisions from a risk informed perspective.

The open session ended at 2:10 PM.

The closed session was cancelled as all discussions and presentation materials were non-proprietary and discussed in the open session.

¹⁰ Title 10 of the Code of Federal Regulations (10 CFR) 50.69, “Risk-informed categorization and treatment of structures, systems and components for nuclear power reactors.”