

**U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE JANUARY 11, 2023,**  
**OBSERVATION PREAPPLICATION PUBLIC MEETING**  
**WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY)**  
**TO DISCUSS THE SMR-160 REACTOR COOLANT MAKEUP SYSTEM DESIGN AND**  
**GENERAL DESIGN CRITERION 33**

**Meeting Summary**

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on January 11, 2023, with SMR, LLC (SMR), a Holtec International Company, to discuss preapplication information related to the SMR-160 reactor coolant makeup system design and General Design Criterion (GDC) 33.<sup>1</sup> Specifically, SMR (applicant) requested the meeting to discuss the submitted meeting materials including its White Paper on Reactor Coolant Makeup and to receive NRC staff feedback.<sup>2</sup> The applicant provided presentation slides for the public meeting.<sup>3</sup> This meeting summary satisfies the applicant's request for review and feedback on its preapplication meeting materials.

This virtual observation preapplication meeting had attendees from SMR, LLC, Holtec International, LLC, and a member of the public. There was no closed session and/or proprietary discussion associated with this meeting.

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

- The applicant provided an overview of the normal and safety-related reactor coolant makeup methods for the SMR-160 design. In describing the makeup methods during normal operations on Slide 5, the NRC staff requested, and the applicant confirmed that flow rate through a 3/8-inch pipe is approximately 100 to 120 gal/min.
- In its discussion of Slide 6, the applicant described that the small break is a slow loss-of-coolant accident (LOCA) with no credit for the chemical and volume control system (CVCS) and that the reactor core remains covered for the duration of the event. In response to the staff's question, the applicant confirmed that all safety systems will be actuated in the absence of the CVCS. The applicant confirmed that the small break is considered a prolonged LOCA because the leakage is very slow to reach safe shutdown conditions.

Separate from GDC 33, the NRC staff noted that its guidance, such as Standard Review Plan Chapter 15.0, provides a criterion to prevent event escalation (e.g., an anticipated operational occurrence (AOO) should not progress into an accident without other

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<sup>1</sup> Letter from J. Hawkins, "Submittal of SMR, LLC Preapplication Meeting Materials for January 11, 2023 (Project No. 99902049)," dated December 19, 2022, Agencywide Documents and Access Management System (ADAMS) Accession No. ML22353A292, part of ML22353A291.

<sup>2</sup> SMR, LLC, "SMR-160 Reactor Coolant Makeup White Paper," dated December 19, 2022, ML22353A294, part of ML22353A291.

<sup>3</sup> SMR, LLC, "NRC Meeting: SMR-160 Reactor Coolant Makeup Capabilities & GDC 33 (Presentation Slide)," dated December 19, 2022, ML22353A293, part of ML22353A291.

incidents occurring independently or result in a consequential loss of a fission product barrier) and requested the applicant to consider whether the actuation of the automatic depressurization system is an escalation.<sup>4</sup>

- The applicant described the layout of the reactor coolant makeup methods in Slide 7 noting that the CVCS is outside containment and not safety-related while all the components and piping (red lines in picture) in containment are safety-related.
- With respect to the applicant's description of the NuScale Exemption on Slide 9, the NRC staff noted that its evaluation of the NuScale design certification application considered both normal and off-normal operations. The NRC staff review of the NuScale design concluded that the CVCS had capability to meet GDC 33 for non-AOO normal operations and satisfied GDC 33, in part. Safety-related systems should be credited for AOO conditions. The NRC staff determined that for AOO conditions, the safety-related emergency core cooling system maintained core inventory and the CVCS was not needed for the NuScale design, thus the underlying purpose of GDC 33 was satisfied.
- In response to the applicant's question on Slide 12, the NRC staff confirmed that SMR-160 design can be considered in compliance with GDC 33 if the safety functions are performed by safety-related systems and the analyses demonstrates that the specified acceptable fuel design limits are met. The NRC staff noted that GDCs 33 and 35 are related in that GDC 33 is limited to breaks and leaks associated with normal operation and AOO frequencies while GDC 35 is for a larger, less likely, losses of coolant. Both GDCs address losses of reactor coolant for a spectrum of pipe break sizes. The NRC staff would look at leakage consistent with the technical specifications potentially as an initial condition in the safety analysis for design-basis event mitigated for up to 72 hours.
- There were no comments or questions from members of the public.
- Before adjourning the open session of the public meeting, the applicant and the NRC staff confirmed that a closed session to discuss proprietary information was not needed.

The meeting was adjourned at 1:54 pm.

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<sup>4</sup> US NRC, NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Chapter 15, "Transient and Accident Analysis."  
<https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/ch15/index.html>