

U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE OCTOBER 18, 2022,
OBSERVATION PREAPPLICATION PUBLIC MEETING
WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY)
TO DISCUSS SPENT FUEL POOL MAKEUP
TO SUPPORT THE CONSTRUCTION PERMIT APPLICATION OF THE SMR-160 DESIGN

Meeting Summary

The U.S. Nuclear Regulatory Commission (NRC) held a preapplication public meeting on October 18, 2022, with SMR, LLC (SMR), a Holtec International Company, regarding spent fuel pool (SFP) makeup for the SMR-160 design. Specifically, SMR (applicant) requested the meeting to provide an overview of the design of the SMR-160 SFP and safety-related makeup methods in comparison with the NRC-approved NuScale and AP1000 designs, and to receive staff feedback. The submittal included the SMR-160 SFP makeup white paper (Agencywide Documents and Access Management System (ADAMS) Accession No. ML22279A006) and meeting presentation slides (ML22279A005) covering the SMR-160 preliminary design of their SFP makeup system.

The applicant stated that the SFP cooling system is not safety-related because it is not relied on as a cooling system during accident conditions.

The NRC staff noted that with respect to SFP cooling the worst-case scenario for a design may not be during normal routine refueling when a partial core is offloaded to the SFP but may be when the plant has been operating at full power and conditions require the plant to be shutdown. Or a lower heat load may coincide with limited water makeup and create a worst-case cooling scenario. The staff identified that the application should evaluate all possible scenarios and clearly identify the worst-case scenario for cooling requirements.

The staff asked a question about makeup water isolation valves in the line from passive core makeup water tank to the SFP. The applicant clarified that, although the diagram shows two valves in series, the design is still evolving.

Regarding the questions asked by SMR in their presentation package, the following was discussed.

- For demonstrating compliance with General Design Criteria (GDC) 61, (Fuel Storage and Handling and Radioactivity Control), without meeting the guidelines of Standard Review Plan (SRP) Section 9.1.3, "Spent Fuel Pool Cooling and Cleanup System," and Regulatory Guide (RG) 1.13, "Spent Fuel Storage Facility Design Basis," NRC staff stated that an applicant could propose alternatives to meet the regulations, with justification, because some aspects of the SRP or RG may not be entirely applicable for use with a small modular reactor design. Also, SRPs and RGs are not regulations but recommended guidelines. An applicant should look at the GDC to determine how the regulations can be met. The staff also noted that there are different criteria for open and closed cooling water systems. The NuScale and AP1000 designs had different coping times and capabilities, so there were different requirements for when makeup water is needed. An application might describe safety-related, non-safety-related, and/or RTNSS (per Standard Review Plan 19.3, "Regulatory Treatment of NonSafety Systems for

Passive Advanced Light-Water Reactors) components to address cooling requirements in its design. In addition, the application should be clear on the controls or features of associated water tanks regarding their availability when crediting them for providing a cooling water supply.

- Regarding what is meant by "physically separate and independent" backup systems as stated in SRP Section 9.1.3, the NRC staff stated that the systems should be designed to be redundant, separated, and independent where one active failure or one accident will not take out both sources of makeup water. Sources of power would also be considered in the design if power is needed to supply makeup water. Staff also noted that for the NuScale design, the ultimate heat sink is a seismic Category I component that provides makeup water. There was no credible scenario to drain the pool or require makeup within 30 days. So, a redundant makeup water supply was not required. SMR pointed out that the SMR-160 is currently designed with one safety-related makeup source to the SFP that they consider to be inherently safer than other plant designs given the SFP is located inside containment and a portion of the water that boils off after a loss of SFP cooling will condense on containment walls and return to the SFP. NRC staff stated that this would be evaluated during the design review once an application is submitted.

Members of the public had the following comments and questions related to the subject meeting topic.

- A member of the public requested clarification on why the SFP cooling is not safety-related and how the staff can accept this designation. The NRC staff responded that the NRC does not have an application under review and that the NRC is engaged in preapplication activities with the applicant. The design will be reviewed for acceptability when received.
- A member of the public asked whether the applicant and the NRC both have a quality assurance program and requested that the NRC quality assurance program be made publicly available. The NRC staff responded that the applicant has submitted a quality assurance program description.
- A member of the public noted that if the meeting call-in information should be posted with the notice to make it easier for public participation. The NRC staff responded that the meeting notices include a note for interested members of the public as to how to obtain additional information from the meeting contacts. The NRC staff makes this request to ensure an accurate list of meeting attendees, to adjust the meeting agenda to allow for more public comments with increased interest, and to reserve a larger room for in-person attendees.

The public portion of the meeting was adjourned and followed by a brief closed session to provide proprietary information related to the SFP makeup system components located inside containment. This virtual preapplication meeting had attendees from SMR and the NRC staff. Members of the public participated in the public portion of the meeting.