

U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE FEBRUARY 26, 2024,
OBSERVATION PREAPPLICATION PUBLIC MEETING
WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY) TO DISCUSS CONFORMANCE
WITH REGULATORY GUIDE 1.189, REVISION 5, "FIRE PROTECTION"

Meeting Summary

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on February 26, 2024, with SMR, LLC (SMR), a Holtec International Company (Holtec), to discuss conformance with Regulatory Guide (RG) 1.189, Revision 5, "Fire Protection."¹ SMR (Holtec) provided presentation slides to support the discussion during the public meeting.² This meeting summary satisfies the SMR (Holtec) request for review and feedback on its preapplication meeting materials.

This virtual observation preapplication meeting had attendees from SMR (Holtec) and their contractors, NRC staff, and members of the public.

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.

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

The open session started at 3:00 p.m.

- 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 present an overview of fire protection program (FPP) and associated preliminary safety analysis report (PSAR) content and discuss planned deviations from RG 1.189. The desired outcome was to obtain preliminary feedback on RG 1.189 compliance and associated PSAR Chapter 9 content.³
- SMR (Holtec) partnered with Jensen Hughes, who performed the SMR (Holtec) fire protection preliminary safety analysis. To date, the SMR (Holtec) FPP development includes a draft of PSAR Chapter 9, a regulatory compliance analysis, a fire safe shutdown analysis, and a fire hazards analysis (FHA). It was noted that the program was initially based on the initial SMR-160 single unit design, and is being modified to incorporate the revised SMR-300 dual unit design. SMR (Holtec) clarified that the new design is not simply a tandem use of two original SMR-160 single units but encompasses more significant technological changes.

¹ Letter from A. Brenner, "SMR, LLC, Preapplication Meeting Materials for February 26, 2024," dated February 13, 2024, Agencywide Documents and Access Management System (ADAMS) Accession No. (ML24044A241), part of (ML24044A240).

² SMR, LLC, Enclosure 1: "SMR, LLC, SMR-300 Fire Protection Program Status" February 26, 2024, (ML24044A242), part of (ML24044A240).

³ U.S. Nuclear Regulatory Commission, RG 1.189, Revision 5, "Fire Protection for Nuclear Power Plants," October 2023, (ML23214A287).

- SMR (Holtec) plans to detail the fire protection equipment and operational program closer to the construction permit application stage. The FPP would be put in place prior to receiving initial fuel on site. The NRC staff clarified that for the equipment required for safe shutdown, a safe shut down analysis and identification of success path should be performed in the design stage. SMR (Holtec) clarified that a safe shut down analysis was completed for the original design and will be revised to incorporate design changes. The analysis included use of the Nuclear Energy Institute (NEI) 00-01 Multiple Spurious Operation (MSO) methodology, with two-thirds of the scenarios being applicable to the SMR (Holtec) design.⁴ SMR (Holtec) added that performing analysis such as the Loss of Large Area and Aircraft Impact Analysis resulted in significant changes to the civil and structural designs, and that the SMR (Holtec) design significantly captures design specific MSOs, as opposed to relying on current fleet generic MSOs.
- SMR (Holtec) listed planned deviations from RG 1.189 for specific automatic fire suppression positions justified by their FHA. One deviation, position 3.2.1.j, related to the absence of a seismically-qualified water supply (e.g., emergency service water system) to supply the Seismic Category I standpipes and hose connections for manual firefighting. This position relates to providing a fire suppression water supply to the subject standpipes that is assured to remain functional following a seismic event. The SMR (Holtec) design will still have the required firefighting redundant equipment, such as fire water storage tanks and pumps, and these features will be designed consistent with the earthquake design and construction constraints imposed by the applicable industry standards (e.g., NFPA). The NRC staff clarified that RG 1.189 does not require water system cross connects if the primary firefighting system is connected full time to a seismically qualified water supply system. Manual access or operation is not mandatory, but rather assurance of adequate fire water supply after a seismic event is.
- For RG 1.189, position 4.1.3.6, the SMR (Holtec) deviation is not to have automatic fire suppression for select electrical cabinet rooms as informed by their FHA and probability risk analysis (PRA). The NRC staff asked for and received clarification that SMR (Holtec) is not crediting any equipment in these rooms for post-fire safe shutdown for a fire in these rooms, and that these fire areas assume full room burn out. The NRC staff acknowledged that the RG 1.189 position is a holdover from the fire protection backfit on the operating reactor fleet.
- For RG 1.189, position 6.1.2, SMR (Holtec) indicated there will be peripheral rooms in the Control Room Complex, but automatic fire suppression will not be globally employed, as informed by the FHA and PRA, and the fact that fire detection systems are to be employed around the whole facility.
- For RG 1.189, position 6.1.3 SMR (Holtec) indicated that automatic fire suppression and dual entrances or exits for redundant Cable Spreading Rooms will not be provided. SMR (Holtec) added that these rooms are fitted with fire rated doors, their redundant nature makes them fire area levels that can tolerate full burn out, and due to the configuration of these rooms it would be difficult to provide secondary entrances or exits. Similarly, these design features are informed by FHA and PRA.
- The NRC staff noted that since the design does not rely on facility wide fire suppression, cable routing is important, and careful attention needs to be placed on cable redundancy

⁴ Nuclear Energy Institute, NEI 00-01, Revision 4, "Guidance for Post Fire Safe Shutdown Circuit Analysis," December 2019 (ML19351D276).

and separation. SMR (Holtec) acknowledged that these considerations are being incorporated early into the design, including cable tray layout, cable routing pinch points (such as at the control room and containment), and construction quality assurance and control.

- NRC staff inquired about the concept of automatic suppression for alternate shut down, and SMR (Holtec) indicated that it refers to the lack of suppression for the alternate shut down panel room, which instead would have detection but not automatic suppression, as is common practice. Additionally, the control room does not have automatic suppression.
- It was noted that the NRC staff had no immediate concerns with the deviations presented, but the staff cautioned that no decisions were being made at this point, and that the details of the justifications would need to be submitted and properly reviewed by the staff.

The open session ended at 3:29 p.m.

There was no closed session for the meeting.