U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE FEBRUARY 7, 2024, OBSERVATION PREAPPLICATION PUBLIC MEETING WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY) TO DISCUSS A POTENTIAL EXEMPTION TO GENERAL DESIGN CRITERION 17 AND RELATED GENERAL DESIGN CRITERIA

Meeting Summary

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on February 7, 2024, with SMR, LLC (SMR), a Holtec International Company (Holtec), to discuss a potential exemption to General Design Criterion (GDC) 17, "Electric Power Systems" and related GDCs.[1, 2] SMR (Holtec) requested the meeting to discuss and receive NRC staff feedback on its White Paper and presentation on the topic.[3, 4] 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, LLC, Holtec, NRC staff, and members of the public. The NRC staff and SMR (Holtec) discussed non-proprietary information during this meeting and did not conduct a closed session.

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 meeting:

- After brief opening remarks, SMR (Holtec) described the purpose of the meeting to provide an overview of the SMR-300 electrical design and its application to achieve and maintain safe shutdown, to discuss implications for the GDCs requiring offsite power, and to gain alignment on the proposed exemption covering GDCs 17, 33, 34, 35, 38, 41 and 44.[5]

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1 Letter from A. Brenner, "Submittal of SMR, LLC, Preapplication Meeting Materials for February 7, 2024," dated January 26, 2024, Agencywide Documents and Access Management System (ADAMS) Accession No. ML24026A029, part of ML24026A028.

2 Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion 17, "Electric Power Systems."

3 SMR, LLC, "SMR, LLC, GDC 17 Exemption Request White Paper," dated January 26, 2024, ML24026A031, part of ML24026A028.

4 SMR, LLC, "SMR, LLC, Meeting Presentation Materials for February 7, 2024," dated February 7, 2024, ML24026A030, part of ML24026A028.

5 Appendix A to 10 CFR Part 50 provides the General Design Criteria.

- SMR (Holtec) provided an overview of the dual unit approach to its design, the Class 1E electrical distribution system, and the SMR-300 electrical safe shutdown approach. SMR (Holtec) noted that it is following Electric Power Research Institute guidelines for its design.

- SMR (Holtec) stated that its design supports an exemption to GDC because the SMR-300 meets the underlying purpose of GDC 17 and will be compliant with the proposed Principal Design Criterion (PDC) 17 for its design.

- The highlighted text on Slide #8 identified the information in GDC 17 that is modified in the proposed SMR-300 PDC 17 on Slide #10. The NRC staff noted that the White Paper summary stated that the exemption request is because offsite power is not required to perform safety functions. The NRC staff asked what the difference between the SMR-300 design and a typical large light-water reactor (LLWR) design is because GDC 17 requires offsite power that is capable of powering safety-related equipment to meet the criteria for Specified Acceptable Fuel Design Limits and core cooling without challenging onsite Class 1E power systems. SMR (Holtec) responded its design includes passive safety systems where the typical LLWR design has active systems that require power. SMR (Holtec) further stated that the passive systems in its design have a one-time actuation to cool the reactor as needed and to keep the reactor cool during the coping periods. Therefore, SMR (Holtec) concluded that reliance on having redundant offsite power source is reduced. The NRC staff noted that offsite power is typically considered important to safety, has regulatory controls, and is considered to be inherently more reliable than the onsite power systems. SMR (Holtec) noted that its proposed PDC 17 focuses on having the onsite power system available and redundant onsite power systems for the safety system performance.

- Although the presentation material did not specifically address GDC 33 related to reactor coolant makeup, SMR (Holtec) discussed this criterion in its White Paper. The NRC staff noted that GDC 33 is different from the other GDCs referenced in the White Paper because it addresses small leaks and breaks and requires makeup water for the reactor coolant system for both normal and off-normal conditions. Typically, for pressurized-water reactors, a chemical and volume control system provides makeup water to address the leakage and relies on offsite power to provide the electrical power during normal operation. The NRC staff also referenced an exemption to GDC 33 for the NuScale design. While this exemption request was for different reasons, the NRC staff's evaluation of the NuScale exemption is found in Section 9.3.4 of its Final Safety Evaluation Report of the NuScale Design Certification Application and may be helpful in understanding the NRC staff's interpretation of GDC 33. [6]

- SMR (Holtec) asked whether an important to safety electrical power system would require a Class 1E designation. The NRC staff responded that the designation would depend on the system referenced. For example, onsite power systems are typically Class 1E safety-related, or non-safety-related, whereas offsite systems are important to safety. The NRC has not evaluated any onsite power systems that are classified as important to safety and as such, an onsite power system classified as important to safety would require adequate justification.

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[6] U.S. NRC, "NuScale US 600 Safety Evaluation," Chapter 9, August 28, 2020. https://www.nrc.gov/docs/ML2020/ML20205L407.pdf

- At the end of the business portion of the meeting, members of the public were welcomed to make comments on the topic or ask questions of the staff. The following summarizes the comments and questions received from a member of the public as well as the NRC staff responses.

    - Will the intended application be submitted under 10 CFR Part 50, 10 CFR Part 52 or 10 CFR Part 53?

      The NRC staff responded that it anticipates a Construction Permit Application submitted under 10 CFR Part 50.

    - Has there been a consideration of a system wide loss of power due to meteorological phenomena recently experienced such as derechos, tsunamis, earthquakes, and atmospheric rivers?

      The NRC staff responded that the NRC has not received an application for review, and it expects that these aspects will be addressed as part of the application. In addition, the NRC staff noted that there are requirements for natural phenomenon and loss of offsite power including beyond-design-basis events and guidelines that would need to be addressed in either the construction permit application or operating license application depending on the specific regulation.

    - The application should include how the operators will get to the small modular reactors when there is an accident at the Palisades plant that is planned to be restarted.

      The NRC staff did not provide a response to this comment.

The meeting ended at 9:09 AM.