U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE JUNE 5, 2024, OBSERVATION PREAPPLICATION PUBLIC MEETING WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY) TO DISCUSS THE SMR-300 INSTRUMENTATION AND CONTROL, ELCTRICAL DESIGN, AND HUMAN FACTORS ENGINEERING

Meeting Summary

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on June 5, 2024, with SMR, LLC (SMR), a Holtec International Company (Holtec), to discuss the Instrumentation and Control (I&C), Electrical Design, and Human Factors Engineering (HFE) aspects of the SMR-300 design that were postponed from the May 8, 2024, public meeting.[1] SMR (Holtec) provided presentation slides for the closed session of the May 8, 2024, public meeting, that were discussed during the June 5, 2024, meeting.[2,] This meeting summary satisfies the applicant's request for review and feedback on these topics.[3]

This virtual observation preapplication meeting had attendees from SMR, (Holtec), NRC staff, and members of the public. While the presentation slides were proprietary, this meeting offered a brief open session to allow members of the public to ask questions of the NRC staff before proceeding with the proprietary 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:

- During the open session, a member of the public asked if SMR (Holtec) provided a public version of the May 8 presentation. The NRC staff provided a link to the May 8 public meeting notice that contains the public meeting slides.[4,5]

The open session ended at 9:36 am.

- After opening remarks and introductions, SMR (Holtec) proceeded with the proprietary presentation of the I&C, HFE and Electrical Design aspects of the SMR-300 design.

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1 Letter from A. Brenner, "SMR, LLC Preapplication Meeting Materials for May 8, 2024 (Project No. 99902049)," dated May 1, 2024, Agencywide Documents and Access Management System (ADAMS) Accession No. ML24122C700 part of ML24122C699.

2 SMR, LLC, "Enclosure 2: SMR, LLC Meeting Closed Presentation Materials for May 8, 2024, (P)" dated May 8, 2024, ML24122C702, part of ML24122C699.

3 The meeting summary of the May 8, 2024, public meeting with SMR (Holtec) has not yet been issued.

4 U.S. NRC, "05/08/2024 Preapplication meeting with SMR, LLC (A Holtec International Company)," dated May 6, 2024, ML24127A215.

5 SMR, LLC, "Enclosure 1: SMR, LLC Meeting Public Presentation Materials for May 8, 2024, (NP)," dated May 8, 2024, ML24122C701, part of ML24122C699.

- Instrumentation and Control

    - SMR (Holtec) stated that there were no significant changes in I&C architecture from the SMR-160 design. The meetings previously held to discuss topics related to I&C still apply to the SMR-300 design.

    - In response to a question from NRC staff, SMR (Holtec) confirmed that it plans to incorporate its white paper on functional independence into a future topical report for its I&C architecture.

    - In response to a question from NRC staff, SMR (Holtec) stated that the timeline depicting the Mitsubishi Electric Company (MELCO) topical report and the Holtec I&C topical report has changed slightly and will be updated in the future.

    - The NRC staff asked if SMR (Holtec) intends for the NRC to provide a safety evaluation report (SER) for the SMR (Holtec) I&C topical report or would it be included in the SER for the SMR-300 application. SMR (Holtec) confirmed that its intention is to have a separate SER for the topical report.

    - The NRC staff recommended that SMR (Holtec) coordinate with MELCO to ensure each topical report addresses the proper requirements, and both topical reports are consistent with each other.

    - In response to a question from the NRC staff, SMR (Holtec) confirmed its awareness of the two supplements MELCO recently submitted to address the revised RG 1.152 and its endorsed IEEE Std. 7-4.3.2. SMR (Holtec) stated its plan to review the MELCO topical report once the NRC completes its review, and that the SMR (Holtec) topical report will focus on the implementation of the MELCO topical report for the SMR-300 design.[6,7,8,9]

- Human Factors Engineering and Operator Licensing

    - SMR (Holtec) discussed its HFE program development, the status of its HFE implementation plans, and its proposed timeline to complete its HFE functional requirements analysis.
    - The NRC staff asked how SMR (Holtec) plans to submit its HFE implementation plans, such as by embedding the plans within a construction permit application (CPA) or by submitting a topical report on Chapter 18 material. SMR (Holtec) stated that its implementation plans would be submitted in conjunction with the CPA, with the possible use of a topical report being considered. The NRC staff

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6 U.S. NRC, Regulatory Guide 1.152, "Criteria for Programmable Digital Devices in Safety-Related Systems of Nuclear Power Plants," Revision 4, July 2023. https://www.nrc.gov/docs/ML2305/ML23054A463.pdf

7 Mitsubishi Electric Corporation, "Enclosure 2: Summary of Compliance to the Regulatory Guide 1.152 Revision 4," dated April 24, 2024, ML24117A212, part of ML24117A208.

8 Mitsubishi Electric Corporation, "Mitsubishi Electric Corp., Summary of Compliance to IEEE Std. 603 and IEEE St. 7-4.3.2," dated March 8, 2024, ML24075A313, part of ML24075A310.

9 Mitsubishi Electric Corporation, "JEXU-1041-2146-NP, 'Collection of Editorial Changes on MELTAC LTR and its Supporting Documents by Revision of Regulatory Guide 1.152 and IEEE Std. 7-4.3.2,'" dated May 16, 2024, ML24137A154, part of ML24137A150.

stated that a pre-submittal readiness assessment is an option that can be considered.

- The NRC staff provided the ADAMS Accession number for a publicly available HFE program plan topical report that was recently submitted by TerraPower, per the request of SMR (Holtec).[10]

- The NRC staff asked SMR (Holtec) if it envisions any sharing of safety systems and non-safety-related systems. SMR (Holtec) responded that there would be no sharing of these systems at the architecture level.

- SMR (Holtec) stated that it is in the process of updating its simulator and provided a rough timeline for certain milestones.

- The NRC staff shared a link to frequently asked questions (FAQs) that is posted on the NRC public site which includes operator licensing and HFE-related information gleaned from past public meeting summaries.[11]

- The NRC staff stated that HFE is not within the scope of its review of the MELCO topical report.

- Electrical

  - SMR (Holtec) stated that no significant changes to electrical have been made from the SMR-160 design.

  - The NRC staff asked if SMR (Holtec) has picked a battery vendor yet and if there will be a battery monitoring system. The NRC staff requested that these details be made clear in the subsequent Construction Permit and Operating License applications.

  - The NRC staff asked if there would be shared power between the Palisades switchyard. SMR (Holtec) stated that these details are still under review.

  - The NRC staff asked SMR (Holtec) if it has looked at the NuScale design for post accident monitoring and referenced RG 1.97.[12] The NRC staff stated that some post accident monitoring variables require safety-related power supplies.

The closed session adjourned at 10:40 am.

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[10] TerraPower, "TerraPower Human Factors Engineering Program Plan and Methodologies Topical Report," dated April 26, 2023, ML23116A226, part of ML23116A225.

[11] U.S. NRC website, "FAQs for New Reactor Operator Licensing," FAQs For New Reactor Operator Licensing | NRC.gov

[12] U.S. NRC, Regulatory Guide 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants," Revision 5, April 2019. https://www.nrc.gov/docs/ML1813/ML18136A762.pdf