UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 9, 2024

MEMORANDUM TO: Michelle W. Hayes, Chief
Licensing and Regulatory Infrastructure Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

FROM: Jordan D. Glisan, Project Manager ***/RA/***
Licensing and Regulatory Infrastructure Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 8, 2024, PREAPPLICATION MEETING WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY) TO DISCUSS AN OVERVIEW OF THE SMR-300 DESIGN

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on May 8, 2024, with SMR, LLC (SMR), a Holtec International Company (Holtec), to discuss preapplication information related to an overview of the SMR-300 design. Specifically, SMR (Holtec) requested the meeting to discuss and receive NRC staff feedback on the SMR-300 design described in its presentation materials located at Agencywide Documents and Access Management System (ADAMS) Accession No. ML24122C701. This meeting summary satisfies the SMR (Holtec) request for review and feedback on its preapplication meeting materials.

This hybrid, partially closed, preapplication public meeting had in-person and remote attendees from SMR (Holtec), and NRC staff to discuss both public and proprietary information related to the SMR-300 design.

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Carolyn L. Lauron, NRR/DNRL
301-415-2736

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 NRC issued the public meeting notice (ML24127A215) on March 18, 2024, and posted it on the NRC public website. The detailed agenda is included in the presentation materials referenced above.

Enclosed are the list of participants for the meeting (Enclosure 1), and a summary of the meeting (Enclosure 2). Although a portion of the meeting was closed, a high-level summary of the discussion of both sessions is found in Enclosure 2.

Docket No. 99902049

Enclosures:
1. List of Attendees
2. Summary of Meeting

cc w/enclosure: Holtec ListServ

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 8, 2024, PREAPPLICATION MEETING WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY) TO DISCUSS AN OVERVIEW OF THE SMR-300 DESIGN DATED: AUGUST 9, 2024

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**U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 8, 2024, PREAPPLICATION MEETING WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY) TO DISCUSS AN OVERVIEW OF THE SMR-300 DESIGN**

**Meeting Attendees**

| Name | Organization |
|---|---|
| Jean Fleming | SMR (Holtec) |
| Rick Trotta | SMR (Holtec) |
| David Lewis | SMR (Holtec) |
| Justin Hawkins | SMR (Holtec) |
| Andrew Brenner | SMR (Holtec) |
| Clay Lietwiler | SMR (Holtec) |
| Kevin Hickey | SMR (Holtec) |
| Pat Essner | SMR (Holtec) |
| Rick Rosas | SMR (Holtec) |
| Mike Protesto | SMR (Holtec) |
| Joelle Starefos | SMR (Holtec) |
| Jan Mazza | SMR (Holtec) |
| Sean McCloskey | SMR (Holtec) |
| Anveshan Bommareddi | SMR (Holtec) |
| Laith Zaidan | SMR (Holtec) |
| John Salyers | SMR (Holtec) |
| Sarah Horacek | SMR (Holtec) |
| Ed Gallagher | SMR (Holtec) |
| James Binns | SMR (Holtec) |
| Jean-Philipe Ohanessian | SMR (Holtec) |
| Abhijeet Shivhare | SMR (Holtec) |
| Monica Sachs | SMR (Holtec) |
| Steven Mitchell | SMR (Holtec) |
| Jordan Cook | SMR (Holtec) |
| Sebastian Zawlocki | SMR (Holtec) |
| Sophia McLaughlin | SMR (Holtec) |
| Ahsan Sallman | U.S. Nuclear Regulatory Commission (NRC) |
| Amitava Ghosh | NRC |
| Amy D'Agostino | NRC |
| Andrea Kock | NRC |
| Angelo Stubbs | NRC |
| Angie Buford | NRC |
| Anne-Marie Grady | NRC |
| Antonio Barrett | NRC |
| Ata Istar | NRC |

| Name | Organization |
|---|---|
| Barbara Hayes | NRC |
| Bernard Litkett | NRC |
| Brad Baxter | NRC |
| Brian Green | NRC |
| Brian Smith | NRC |
| Brian Wittick | NRC |
| Calvin Cheung | NRC |
| Carol Moyer | NRC |
| Carolyn Lauron | NRC |
| Carolyn Wolf | NRC |
| Charles Moulton | NRC |
| Charles Murray | NRC |
| Chris Van Wert | NRC |
| Christopher Brown | NRC |
| Cory Parker | NRC |
| Dan Widrevitz | NRC |
| Diane Jackson | NRC |
| Edward Robinson | NRC |
| Edward Stutzcage | NRC |
| Gary Purdy | NRC |
| George Wang | NRC |
| Glenn Tuttle | NRC |
| Greg Makar | NRC |
| Hossein Esmaili | NRC |
| Ian Tseng | NRC |
| Ismael Garcia | NRC |
| Jason Tokey | NRC |
| Jay Robinson | NRC |
| Jenise Thompson | NRC |
| Jesse Seymour | NRC |
| Joe Staudenmeier | NRC |
| John Budzynski | NRC |
| John Honcharik | NRC |
| John Lehning | NRC |
| John Russell | NRC |
| John Tsao | NRC |
| Joseph Ashcraft | NRC |
| Joshua Miller | NRC |
| Kamal Manoly | NRC |
| Keith Tetter | NRC |
| Kenneth Armstrong | NRC |
| Kent Wood | NRC |
| Logan Gaul | NRC |

| Name | Organization |
|---|---|
| Madhumita Sircar | NRC |
| Malcolm Patterson | NRC |
| Marie Pohida | NRC |
| Mario Fernandez | NRC |
| Matthew Yoder | NRC |
| Michael Brown | NRC |
| Michelle Hayes | NRC |
| Milton Valentin | NRC |
| MJ Ross-Lee | NRC |
| Paul Klein | NRC |
| Peter Lien | NRC |
| Raj Iyengar | NRC |
| Raul Hernandez | NRC |
| Rebecca Patton | NRC |
| Reena Boruk | NRC |
| Richard Turtil | NRC |
| Rosie Sugrue | NRC |
| Ryan Nolan | NRC |
| Santosh Bhatt | NRC |
| Scott Burnell | NRC |
| Shanlai Lu | NRC |
| Shaun Anderson | NRC |
| Shawn Campbell | NRC |
| Sheila Ray | NRC |
| Shiattin Makor | NRC |
| Shilp Vasavada | NRC |
| Stacey Rosenberg | NRC |
| Stephanie Garza | NRC |
| Steve Bloom | NRC |
| Steven Alferink | NRC |
| Sunwoo Park | NRC |
| Suzanne Ani | NRC |
| Ted Smith | NRC |
| Theresa Buchanan | NRC |
| Thomas Scarbrough | NRC |
| Zhe Yuan | NRC |
| Zhian Li | NRC |
| Jacob Fakory | NJ Department of EP |
| Mike Webley | Environment Agency – UK |
| Addison Hall | Dominion Energy |
| Stephen Wardle | Office of Nuclear Regulation (ONR) – U.K. |
| Jerry Humphreys | NJ Department of EP |
| Mary Judnich | U.S. Senate for Sen. Debbie Stabenow |

| Name | Organization |
|---|---|
| Jeffrey Quinn | Energy Planning and Management, Inc. |
| Leigh Lloveras | Breakthrough Institute |
| Michael Keegan | Public |
| Dominik Muszynski | Public |
| Palash Kumar Bhomik | Idaho National Laboratory |
| Joshua Gordon | ONR – U.K. |
| Sukjoon Kim | Argonne National Laboratory |
| Jonathan Zeitz | NJ Department of EP |

**U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 8, 2024, PREAPPLICATION MEETING WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY) TO DISCUSS AN OVERVIEW OF THE SMR-300 DESIGN**

## Meeting Summary

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on May 8, 2024, with SMR, LLC (SMR), a Holtec International Company (Holtec), to discuss preapplication information related to an overview of the SMR-300 design.[1] Specifically, SMR (Holtec) requested the meeting to discuss and receive NRC staff feedback on the SMR-300 design described in its presentation materials.[2, 3] This meeting summary satisfies the SMR (Holtec) request for review and feedback on its preapplication meeting materials.

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.

This hybrid preapplication meeting had in-person and remote attendees from SMR (Holtec), and NRC staff to discuss proprietary information related to the SMR-300 design. There was an open session for members of the public to observe and make comments as well as a closed session where proprietary information was discussed.

The following topics were covered across both sessions:

- SMR-300 at Palisades
- Core Design
- Reactor Coolant System
- Engineered Safety Features
- Auxiliary Systems and Balance of Plant Design
- Plant Layout, Structures, and Modularity
- Safety Analyses

The following topics were not covered due to time constraints and were tabled for future public and potentially non-public engagements:

- Instrumentation and Controls and Electrical Design (June 5, 2024, public meeting)[4]

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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 package ML24122C699.

2 SMR, LLC, "Enclosure 1: SMR, LLC Meeting Public Presentation Materials for May 8, 2024 (NP)," dated May 1, 2024, ML24122C701 – Non-Proprietary, part of package ML24122C699.

3 SMR, LLC, "Enclosure 2: SMR, LLC Meeting Closed Presentation Materials for May 8, 2024 (P)," dated May 1, 2024, ML24122C702 – Proprietary, part of package ML24122C699.

4 U.S. NRC, Public Meeting Notice, "Preapplication Meeting with SMR, LLC (A Holtec International Company) regarding Instrumentation & Control (I&C), Electrical Design, and Human Factors Engineering," (ML24144A046)

- Licensing and Timelines (July 19, 2024, public meeting)[5]

The following summarizes the questions and feedback from the NRC, and SMR (Holtec)'s responses where applicable, on the presentations from both open and closed sessions:

- The NRC staff expressed appreciation of SMR (Holtec) presenting a design overview of the SMR-300 design, stating that engagements like these reduce risk in the review process.

- The NRC staff requested the power density value regarding the SMR-300 core design. SMR (Holtec) responded with the value as well as some supporting discussion.

- While discussing fuel cycles for the design, the NRC staff requested the maximum fuel enrichment of the fuel being used.

- The NRC staff asked for clarification on the use of poisons.

- In response to an NRC staff question regarding safe shutdown and cold standby, SMR (Holtec) detailed specifics on the design's shutdown margins and passive safety systems.

- The NRC staff asked for clarification on how SMR-300 will "meet technical specifications."

- In response to a question of the NRC staff regarding neutron fluence, SMR (Holtec) shared details on the methods for calculation and provided that more details would be available in the future.

- The NRC asked a question regarding the fuel shuffle after each fuel cycle.

- The NRC staff asked a question about how the step length of the control rods will affect the design given the overall plant design. SMR (Holtec) responded by saying they are still evaluating these considerations.

- The NRC staff asked if the SMR-300 is designed to load follow. The response to this was that load following is something they are still discussing internally.

- The NRC staff asked about the material being used for the control rods.

- The NRC staff asked if SMR (Holtec) identified a steam generator vendor as well as the tubing material.

- The NRC staff asked about the dimensions of the steam generators.

- The NRC staff asked if the SMR-300 design will be informed by operating experience related to steam generator degradation.

[5] U.S. NRC, Public Meeting Notice, "SMR-300 intended Limited Work Authorization (LWA) scope, overall licensing strategy, and timeline," (ML24194A043).

- The NRC staff inquired about the materials used for the steam generators.
- The NRC staff asked about the risk analysis of the reactor coolant pump seals.
- The NRC staff asked a question about the feedwater header penetrations.
- The NRC staff asked a few questions regarding the refueling tanks.
- The NRC staff requested more discussion on the valves for the design.
- The NRC staff made a comment to SMR (Holtec) to consider acoustic resonance.
- The NRC staff asked for more information regarding neutron detectors.
- The NRC staff asked when SMR (Holtec) would be able to have discussions on cybersecurity for digital components. In response, SMR (Holtec) confirmed plans to engage the NRC staff on cybersecurity in the future.
- The NRC staff asked a question about the residual heat removal system and its design for the plant design.
- The NRC staff asked about the efficiency of the plant.
- The NRC staff asked for more information about the plant's main steam isolation valve and the analysis regarding the component.
- The NRC staff asked for details related to the design being in compliance with NRC Regulatory Guide (RG) 1.115.[6] After the meeting, the NRC staff clarified that to demonstrate acceptability of an unfavorable turbine orientation, consistent with RG 1.115, the applicant could:

  1) use a probability-based argument (consistent with RG 1.115 with P1 demonstrated to be below 10-5 per year), or

  2) use analysis to demonstrate acceptability of barriers to protect the equipment, or

  3) relocate the ISFSI pad.
- The NRC staff asked a few questions concerning the spent fuel pool.
- The NRC staff asked for more information regarding post-accident return to criticality. SMR (Holtec) provided that they have a post-accident monitoring systems and shared a few details.
- The NRC staff asked a question regarding the maintenance of the spent fuel pool.

[6] U.S. NRC, RG 1.115, "Protection Against Turbine Missiles," Revision 2, dated January 2012. https://www.nrc.gov/docs/ML1016/ML101650675.pdf

- Next, the NRC staff engaged SMR (Holtec) on their containment structure design. SMR (Holtec) acknowledged areas of further internal discussion and consideration in regard to this discussion.

- The NRC staff made Holtec aware that the draft revision 4 to Standard Review Plan Section 15.0 includes additional information on single failures and the treatment of normally operating equipment.

- During the event identification and classification discussion, the NRC staff commented that SMR (Holtec) should take particular note of the Three Mile Island action items. SMR (Holtec) responded that they have kept these action items in mind.

- The NRC staff sought confirmation of a few items related to Chapter 15 safety analysis at a high level.

The meeting adjourned at 2:00 p.m.