U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 10, 2023, OBSERVATION PREAPPLICATION PUBLIC MEETING WITH SMR, LLC (A HOLTEC INTERNATIONAL COMPANY) TO DISCUSS THE SMR-160 FUEL QUALIFICATION AND TESTING

Meeting Summary

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on May 10, 2023, with SMR, LLC (SMR), a Holtec International Company (Holtec), to discuss preapplication information related to the SMR-160 fuel qualification and testing.[1] Specifically, SMR (Holtec) requested the meeting to discuss and receive NRC staff feedback on its questions related to these topics in its presentation materials.[2, 3] 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), Framatome, NRC staff, and members of the public. The NRC staff and SMR (Holtec) discussed proprietary information during the 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 open session:

- After opening remarks and introductions, SMR (Holtec) described the purpose of the meeting to provide a high-level overview of the fuel qualification and testing program, and a desired outcome of obtaining NRC staff feedback and identification of specific topics for future engagements.

- SMR (Holtec) provided background on its plans to use Framatome GAIA fuel in its design and leverage the analysis methods, engineering expertise, test facilities, and licensing experience to support the SMR-160 fuel qualification and testing program.

- With respect to the applicability assessment described in Slide 11, the NRC staff requested additional information on how SMR (Holtec) plans to document the assessment and whether a topical report would be submitted. SMR (Holtec) responded

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1 Letter from J. Hawkins, "SMR, LLC Preapplication Meeting Materials for May 10, 2023," dated March 1, 2023, Agencywide Documents and Access Management System (ADAMS) Accession No. ML23114A027, part of ML23114A026.

2 SMR, LLC, "NRC Meeting: Fuel Qualification and Testing on May 10, 2023," dated March 1, 2023, ML23114A029 – Public, part of ML23114A026.

3 SMR, LLC, "NRC Meeting: Fuel Qualification and Testing," dated March 1, 2023, ML23114A028 – Proprietary, part of ML23114A026.

that it is working to finalize the best way to document the assessment and will consider the NRC staff feedback. The NRC staff described the benefits of a topical report documenting the assessment including a focused review prior to receipt of a large application and the availability of an approved topical report for future applicants to reference. The NRC staff noted that it is open for further discussion on this topic. SMR (Holtec) responded that it plans to work with Framatome to determine a plan and will re-engage the NRC staff in the future.

- In discussing the applicability assessment details on Slide 12, the NRC staff commented that SMR (Holtec) should consider what information is in the Framatome topical reports, what data is available and within what range, as well as what data would be needed for the SMR-160 design.

- There were no questions or comments from members of the public observing the meeting.

The open session ended at 1:55 PM.

The following provides a non-proprietary summary of the discussion during the closed session of the meeting:

- With respect to critical heat flux testing discussed on Slide 17, the NRC staff requested more details on whether SMR (Holtec) considered the correlations more representative of currently operating reactors and whether other data will be used or determined later with conservatisms.

- In reference to the list of key areas identified on Slide 10, the NRC staff asked whether more information on these areas would be provided to support the SMR-160 safety analysis.

- In response to the NRC staff's question, SMR (Holtec) noted that the selected fuel performance code, COPERNIC, was the best fit for the SMR-160 design.

- The NRC staff observed that additional seismic analyses of the fuel assemblies may be needed, and that the stiffness of the assemblies will depend on the number assembly grids and the spacing between the grids.

- In response to the NRC staff's question, SMR (Holtec) described the testing planned on the GAIA fuel assemblies including with and without the intermediate GAIA mixing grids (IGMs). The NRC staff noted that SMR (Holtec) should ensure the testing covers not only the entire range of anticipated operation but consider any changes to that range from any possible near-term power uprates if desired in the future.

- In discussing seismic analysis, the NRC staff observed differences between the SMR-160 design and the referenced report on Slide 11 that would need to be addressed.

- The NRC staff noted that a seismic evaluation is not limited to the reactor core and if the SMR-160 design includes storage of the fuel assemblies, a seismic analysis for this

condition and location would need to be completed. SMR (Holtec) noted that this topic will be discussed in a future engagement regarding fuel management.

- SMR (Holtec) confirmed that a control rod drop transient will be analyzed in Chapter 15 of its preliminary safety analysis report accompanying its construction permit application.

- The NRC staff provided feedback regarding 2-phase computational fluid dynamics methodologies including obtaining measurements for a full set of conditions, and consideration of heat transfer in the analysis, timing of thermal couple insertion, and flow rate conditions in the reactor core. SMR (Holtec) noted that it is in the planning stages and no testing has been completed.

The meeting adjourned at 2:22 PM.