



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

April 3, 2024

Andrew Brenner, Licensing Director
SMR, Holtec International
1 Holtec Boulevard
Camden, NJ 08104

SUBJECT: SMR, LLC WHITE PAPER ON THE SMR (HOLTEC) SOIL-STRUCTURE
INTERACTION ANALYSIS (PROJECT NO. 99902049)

Dear Mr. Brenner:

On December 18, 2023, SMR, LLC, A Holtec International Company (Holtec), submitted a revised White Paper on its soil-structure interaction analysis and responses to NRC staff questions after the November 8, 2023, public meeting.^{1, 2, 3, 4, 5}

The NRC staff has completed its review and assessment of the subject white paper and has: (1) researched the topic provided in the white paper, (2) conducted a public meeting to provide appropriate feedback to SMR (Holtec), and (3) identified concerns regarding the assumption of minimal sloshing of the fluids in the containment enclosure structure.

Because a nonlinear time-domain soil-structure interaction or soil-structure-fluid interaction methodology is not generally used in nuclear reactor design, the NRC staff will conduct a detailed review of the characterization and modeling of the nonlinear behavior of different materials of the reactor and its surrounding in any future licensing application utilizing the nonlinear time-domain approach. The enclosure of this letter provides the NRC staff detailed observations for SMR (Holtec) to consider.

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- ¹ Letter from A. Brenner to US NRC, "SMR, LLC, Request for Written Assessment of White Paper Concerning Soil Structure Interaction Analysis Method," dated December 18, 2023. (Agencywide Documents Access and Management System (ADAMS) Accession No. ML23352A398, Package ML23352A397)
 - ² Letter from A. Brenner to US NRC, "Enclosure 1: SMR, LLC, White Paper on Soil Structure Interaction Analysis Method (proprietary)," dated December 18, 2023. (ML23352A399, Package ML23352A397)
 - ³ Letter from A. Brenner to US NRC, "Enclosure 2: SMR, LLC, White Paper on Soil Structure Interaction Analysis Method (non-proprietary)," dated December 18, 2023. (ML23352A400, Package ML23352A397)
 - ⁴ Letter from A. Brenner to US NRC, "Enclosure 3: SMR, LLC, Responses to NRC Questions Concerning Soil-Structure Interaction (SSI) Analysis Method (non-proprietary)," dated December 18, 2023. (ML23352A401, Package ML23352A397)
 - ⁵ US NRC, "11-08-23 Meeting Summary with SMR, LLC, a Holtec International Company, to Discuss SMR-160 Update SSI Methodology," dated December 18, 2023. (Package ML23339A038).

Upon dispatch of this letter to SMR (Holtec), the NRC staff considers the subject white paper closed. If you have questions regarding this matter, please contact Carolyn Lauron at (301) 415-2736 or Carolyn.Lauron@nrc.gov.

Sincerely,



Signed by Hayes, Michelle
on 04/03/24

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

Docket No. 99902049

Enclosures:
NRC Feedback

cc: Brian Smith
Samuel Lee
Holtec ListServ

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