NuScaleTRRaisPEm Resource

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Sent:	Sunday, August 06, 2017 8:34 AM
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Cc:	NuScaleTRRaisPEm Resource; Lee, Samuel; Skarda, Raymond; Karas, Rebecca; Schmidt, Jeffrey; Chowdhury, Prosanta; Bavol, Bruce
Subject:	Request for Additional Information Letter No. 9019 (eRAI No. 9019) Topical Report Nuclear Performance Code
Attachments:	Request for Additional Information No. 9019 (eRAI No, 9019).pdf

Attached please find NRC staff's request for additional information concerning review of the NuScale Topical Report.

Please submit your response within 60 days of the date of this RAI to the NRC Document Control Desk.

If you have any questions, please contact me.

Thank you.

Hearing Identifier: NuScale_SMR_DC_TR_Public
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Subject: Request for Additional Information Letter No. 9019 (eRAI No. 9019) Topical Report Nuclear Performance Code
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From: Cranston, Gregory

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Request for Additional Information No. 9019 (eRAI No. 9019)

Issue Date: 07/30/2017
Application Title: NuScale Topical Report
Operating Company: NuScale
Docket No. PROJ0769
Review Section: 01 - Introduction and Interfaces
Application Section: 1

QUESTIONS

01-29

In accordance with 10 CFR 50 Appendix A GDC 10, "Reactor design," the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences. The Standard Review Plan (SRP) 15.0.2 acceptance criteria with respect to evaluation models specifies that the chosen mathematical models and the numerical solution of those models must be able to predict the important physical phenomena reasonably well from both qualitative and quantitative points of view.

The topical report, TR-0516-49417-P, states that there is an inherent adiabatic assumption in the riser component. However, the riser flow will likely cool due to heat conduction to the downcomer, meaning that riser outlet temperature may be lower than core exit temperature, while subcooled boiling in the core may produce a source of heat for the riser fluid due to bubble condensation above the active core.

In order to make an affirmative finding associated with the above regulatory requirement important to safety,NRC staff requests NuScale to justify the adiabatic assumption in the riser and include a quantitative discussion of heat transfer, provide a disposition of possible heating of the riser flow due to heating from control rod activation products, and discuss the impact that void condensation can have to riser fluid heating and the propensity for flashing.