NuScaleDCRaisPEm Resource

From:	Chowdhury, Prosanta
Sent:	Monday, April 30, 2018 3:13 PM
To:	Request for Additional Information
Cc:	Lee, Samuel; Cranston, Gregory; Franovich, Rani; Karas, Rebecca; Schmidt, Jeffrey; NuScaleDCRaisPEm Resource
Subject:	Request for Additional Information No. 440 eRAI No. 9487 (15)
Attachments:	Request for Additional Information No. 440 (eRAI No. 9487).pdf

Attached please find NRC staff's request for additional information (RAI) concerning review of the NuScale Design Certification Application.

The NRC Staff recognizes that NuScale has preliminarily identified that the response to one or more questions in this RAI is likely to require greater than 60 days. NuScale is expected to provide a schedule for the RAI response by email within 14 days.

If you have any questions, please contact me.

Thank you.

Prosanta Chowdhury, Project Manager
Licensing Branch 1 (NuScale)
Division of New Reactor Licensing
Office of New Reactors
U.S. Nuclear Regulatory Commission
301-415-1647

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Created By: Prosanta.Chowdhury@nrc.gov

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Request for Additional Information No. 440 (eRAI No. 9487)

Issue Date: 04/30/2018
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 15 - Introduction - Transient and Accident Analyses
Application Section:

QUESTIONS

15-5

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, Section 47 require a final safety analysis report (FSAR) to analyze the design and performance of the structures, systems, and components (SSCs). Safety evaluations, performed to support the FSAR, include accident analyses to (1) demonstrate that specified acceptable fuel design limits (SAFDLs) are not exceeded during normal operation, including the effects of anticipated operational occurrences (AOOs), and (2) determine the number of fuel failures associated with critical heat flux (CHF) that need to be included in the radiological consequences for postulated accidents.

As the return to power analysis in FSAR 15.0.6 can occur, assuming a stuck rod, within a few hours from either an AOO or postulated accident initiating event, the AOO acceptance criteria of General Design Criterion (GDC) 10 applies. GDC 10, Reactor design, requires that the reactor core and associated coolant, control, and protection systems be designed with appropriate margin to assure that SAFDLs are not exceeded during any condition of normal operation, including the effects of AOOs.

The LOCA NRELAP5 model uses a bottom skewed axial power shape to evaluate minimum critical heat flux ratio (MCHFR). The staff notes the hot channel axial power shape would likely be top peaked in the return to power analysis (calculated in EE-0000-4820 to support FSAR 15.0.6) in the stuck rod location. A top peaked axial power shape in the hot channel is usually more limiting when evaluating the MCHFR. The staff is requesting that the applicant evaluate the potential change in MCHFR with an axial shape representing the worst rod stuck out, or provide justification for the assumed power shape so that the staff can confirm the analysis conditions are appropriate.