NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Tuesday, May 1, 2018 3:39 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Franovich, Rani; Karas, Rebecca; Thurston, Carl; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 452 eRAI No. 9518 (15.06.05)
Attachments: Request for Additional Information No. 452 (eRAI No. 9518).pdf

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

Please submit your technically correct and complete 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.

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

Hearing Identifier: NuScale_SMR_DC_RAI_Public
Email Number: 483

Mail Envelope Properties (BN7PR09MB2609557254855089F29DCD7C9E810)

Subject: Request for Additional Information No. 452 eRAI No. 9518 (15.06.05)
Sent Date: 5/1/2018 3:39:29 PM
Received Date: 5/1/2018 3:39:34 PM
From: Chowdhury, Prosanta

Created By: Prosanta.Chowdhury@nrc.gov

Recipients:
"Lee, Samuel" <Samuel.Lee@nrc.gov>
Tracking Status: None
"Cranston, Gregory" <Gregory.Cranston@nrc.gov>
Tracking Status: None
"Franovich, Rani" <Rani.Franovich@nrc.gov>
Tracking Status: None
"Karas, Rebecca" <Rebecca.Karas@nrc.gov>
Tracking Status: None
"Thurston, Carl" <Carl.Thurston@nrc.gov>
Tracking Status: None
"NuScaleDCRaisPEm Resource" <NuScaleDCRaisPEm.Resource@nrc.gov>
Tracking Status: None
"Request for Additional Information" <RAI@nuscalepower.com>
Tracking Status: None

Post Office: BN7PR09MB2609.namprd09.prod.outlook.com

Files	**Size**	**Date & Time**	
MESSAGE	556	5/1/2018 3:39:34 PM	
Request for Additional Information No. 452 (eRAI No. 9518).pdf			74344

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Request for Additional Information No. 452 (eRAI No. 9518)

Issue Date: 05/01/2018
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 15.06.05 - Loss of Coolant Accidents Resulting From Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary
Application Section:

QUESTIONS

15.06.05-7

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix A, General Design Criterion (GDC) 35, “Emergency Core Cooling,” requires that a system to provide abundant emergency core cooling shall be provided. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant at a rate such that (1) fuel and clad damage that could interfere with continued effective core cooling is prevented and (2) clad metal-water reaction is limited to negligible amounts. DSRS Section 15.6.5 provides guidance for complying with GDC 35. It requires that evaluation models meet the requirements of 10 CFR 50.46, which states that the evaluation model must include sufficient supporting justification to show that the analytical technique realistically describes the behavior of the reactor system during a loss-of-coolant accident.

FSAR Chapter 15.6.5 and Section 9 of the “Loss-of-Coolant Accident Evaluation Model,” TR-0516-49422-P, Rev. 0, a topical report supporting the DCD Chapter 15 analyses, indicates that a stable natural recirculation flow pattern with the reactor recirculation valves and steam venting through the reactor vent valves (RVVs) is relied upon to remove decay heat passively via boiling in the core. The staff noted that the applicant did not evaluate the flows in the RRVs for potential vortex forces in the flow during this recirculation phase. Further, in RAI 9486, Question 31454, the staff noted a similar issue relative to the Station Blackout calculation.

Please provide an evaluation of the occurrence of vortex forces in the valves nozzles, such as through analysis, and show that adverse effects are precluded in the NPM design.