

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Monday, April 30, 2018 3:31 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. 442 eRAI No. 9479 (15.06.05)
Attachments: Request for Additional Information No. 442 (eRAI No. 9479).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

Hearing Identifier: NuScale_SMR_DC_RAI_Public
Email Number: 471

Mail Envelope Properties (BN7PR09MB2609F1E2A5EAE7F77C9EBCE29E820)

Subject: Request for Additional Information No. 442 eRAI No. 9479 (15.06.05)
Sent Date: 4/30/2018 3:31:23 PM
Received Date: 4/30/2018 3:31:27 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	675	4/30/2018 3:31:27 PM
Request for Additional Information No. 442 (eRAI No. 9479).pdf		12713

Options

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

Request for Additional Information No. 442 (eRAI No. 9479)

Issue Date: 04/30/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 15.06.05 - Loss of Coolant Accidents Resulting From Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary

Application Section:

QUESTIONS

15.06.05-5

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.

Section 5.3.2 of the Long-Term Cooling Methodology (LTC) technical report, TR-0916-51299-P, Rev. 0, a technical report referenced in the DCD Chapter 15 analyses, describes input model changes where it was necessary to isolate heat transfer to the secondary side (SG tubes and DHRS) in order to facilitate code convergence. The applicant admits that this modeling is not consistent with biasing for needed maximum cooldown, and indicated that the effect was negligible based on sensitivity calculations. Based on review of EC-A010-4270 (a calculation supporting the DCD Chapter 15 analyses), staff noted that DHRS was being isolated upon ECCS actuation but did not find any sensitivity analysis or discussions or discussions to justify these changes as being appropriate for the maximum cooldown LTC cases.

Please revise the methodology to include DHRS cooling or provide an analysis justification for DHRS isolation that is appropriate for post-LOCA long-term cooling, and provide markups of any necessary changes to the technical report.