

NuScaleDCRaisPEm Resource

From: Cranston, Gregory
Sent: Monday, May 08, 2017 9:53 AM
To: RAI@nuscalepower.com
Cc: NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Karas, Rebecca; Thomas, Matt; Schmidt, Jeffrey; Franovich, Rani
Subject: Request for Additional Information No. 18 (eRAI No. 8767) Section 15.06.06 (SRSB)
Attachments: Request for Additional Information No. 18 (eRAI No. 8767).pdf

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

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.

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301-415-0546

Hearing Identifier: NuScale_SMR_DC_RAI_Public
Email Number: 26

Mail Envelope Properties (0e2ad88da19344708f944218c6b8068b)

Subject: Request for Additional Information No. 18 (eRAI No. 8767) Section 15.06.06 (SRSB)
Sent Date: 5/8/2017 9:53:19 AM
Received Date: 5/8/2017 9:53:25 AM
From: Cranston, Gregory

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Post Office: HQPWMSMRS08.nrc.gov

Files	Size	Date & Time	
MESSAGE	522	5/8/2017 9:53:25 AM	
Request for Additional Information No. 18 (eRAI No. 8767).pdf			39624

Options

Priority: Standard

Return Notification: No

Reply Requested: No

Sensitivity: Normal

Expiration Date:

Recipients Received:

Request for Additional Information No. 18 (eRAI No. 8767)

Issue Date: 05/08/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 15.06.06 - Inadvertent Operation of the Emergency Core Cooling System (ECCS)

Application Section: 15.6

QUESTIONS

15.06.06-1

In accordance with 10 CFR 50, Appendix A, General Design Criterion (GDC) 35, "Emergency Core Cooling," the emergency core cooling system (ECCS) 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. Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities, shall be provided to ensure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure. The staff notes that the applicant departs from GDC 35 by adopting Principle Design Criterion (PDC) 35 presented in the Final Safety Analysis Report (FSAR) Tier 2, Section 3.1.

To meet the requirements mentioned above, as they relate to the ECCS system providing abundant core cooling during the inadvertent ECCS actuation event, the accident analysis should show that fuel and clad damage that could interfere with continued effective core cooling is prevented.

In FSAR Tier 2, Section 15.6.6, "Inadvertent Operation of Emergency Core Cooling System," the applicant does not provide a plot of minimum critical heat flux ratio (MCHFR). In accordance with DSRs Section 15.6.6, Review Procedure 7, the staff cannot determine if the MCHFR is acceptable for this event. The staff recognizes that the MCHFR is reported in FSAR Tier 2, Section 15.6.6.6, "Conclusions." However, this does not allow the staff to assess the MCHFR throughout the transient to verify when and where the MCHFR occurs. Based on the docketed information, the staff cannot determine if abundant core cooling is provided during the accident and will prevent fuel and clad damage that could interfere with continued effective core cooling. The staff requests the applicant to provide additional plots in the FSAR of MCHFR for the entire transient ("zoomed-in" and "zoomed-out") that show how the MCHFR behaves as the transient progresses.