

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Sunday, March 18, 2018 10:43 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Murray, Demetrius; Kent, Lauren; D'Agostino, Amy; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 390 eRAI No. 9371 (18)
Attachments: Request for Additional Information No. 390 (eRAI No. 9371).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

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From: Chowdhury, Prosanta

Created By: Prosanta.Chowdhury@nrc.gov

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Options

Priority: Standard
Return Notification: No
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Request for Additional Information No. 390 (eRAI No. 9371)

Issue Date: 03/19/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 18 - Human Factors Engineering

Application Section:

QUESTIONS

18-24

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 52.47(a)(8) requires an applicant for a design certification to provide a final safety analysis report (FSAR) that must include the information necessary to demonstrate compliance with any technically relevant portions of the Three Mile Island requirements set forth in 10 CFR 50.34(f), except paragraphs (f)(1)(xii), (f)(2)(ix), and (f)(3)(v). Section 10 CFR 50.34(f)(2)(iii) requires an applicant to "Provide, for Commission review, a control room design that reflects state-of-the-art human factor principles prior to committing to fabrication or revision of fabricated control room panels and layouts." Chapter 18, "Human Factors Engineering," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," and NUREG-0711, "Human Factors Engineering Program Review Model," identify criteria the staff uses to evaluate whether an applicant meets the regulation. The applicant stated in the FSAR, Tier 2, Section 18.0, "Human Factors Engineering - Overview," that its human factors engineering (HFE) program incorporates accepted HFE standards and guidelines including the applicable guidance provided in NUREG-0711, Revision 3.

Criterion 11.4.3.4 (1) states, "Participants in the applicant's validation tests should be representative of plant personnel who will interact with the HSI (e.g., licensed operators, rather than training personnel or engineers)." In addition 11.4.3.4 (4) states, "The applicant should prevent bias in the sample of participants by avoiding the use of participants who:

- are members of the design organization
- participated in prior evaluations
- were selected for some specific characteristic, such as crews identified as good performers or more experienced

The Human Factors Verification and Validation Implementation Plan, Section 4.4, "Individual operating crews participating in the ISV may be previously licensed commercial reactor or senior reactor operators, operators with Navy nuclear experience, or design engineering staff members familiar with the NuScale Power plant design."

As members of the design engineering staff are cited as potential ISV participants, please clarify how they are representative of the anticipated plant personnel who will interact with the HSI and explain how bias is prevented. Also, please clarify whether ISV participants have participated in prior evaluations (e.g. staffing plan validation, etc).