

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Tuesday, March 20, 2018 9:11 AM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Murray, Demetrius; Kent, Lauren; Scheetz, Maurin; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 393 eRAI No. 9401 (18)
Attachments: Request for Additional Information No. 393 (eRAI No. 9401).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.

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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

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Request for Additional Information No. 393 (eRAI No. 9401)

Issue Date: 03/20/2018

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

18-34

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 FSAR, Tier 2, Section 18.0, "Human Factors Engineering - Overview," indicates that the HFE program incorporates the applicable guidance provided in NUREG-0711, Revision 3.

Chapter 18, "Human Factors Engineering," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," lists NUREG-0711, "Human Factors Engineering Program Review Model," and NUREG-0700, "Human-System Interface Design Review Guidelines," as the sources of acceptance criteria the staff uses to evaluate whether an applicant meets the regulation.

NUREG-0711, Section 8.4.4.5(1) states that

The applicant should describe how the HSI provides a design capability for remote shutdown of the reactor outside the MCR. [10 CFR Part 50, Appendix A, GDC 19]

DCD Tier 2, Section 7.1.1.2.3, "Remote Shutdown Station," states that the Remote Shutdown Station (RSS) provides an alternate location to monitor the NuScale Power Module (NPM) status and to operate the Module Control System (MCS) and Plant Control System (PCS) during a Main Control Room (MCR) evacuation. The MCS equipment in the RSS provides a set of MCS and PCS displays identical to the MCS and PCS displays in the MCR for the process variables necessary to monitor safe shutdown of each NPM.

HSI RSR Section 4.6.3, "Locations outside of the Module Control System," states that the HSIs in the locations out of the MCR (Technical Support Center (TSC), Emergency Operations Facility (EOF) and the RSS) are all MCR derivatives and that these HSIs are for information display only, which the staff interprets to mean that no control functions are provided in any of

the emergency response facilities. While the staff recognizes that the RSS is not an emergency response facility, the staff believes that this sentence contradicts the information in DCD Tier 2, Section 7 which states that NPM can be operated via MCS and PCS displays in the RSS. Additionally, the title of this Section 4.6.3, may contain an error since the section concerns the MCS.

1. Please describe whether and what specific HSIs are available in the RSS, and as appropriate how multiple modules can be monitored and controlled in the RSS using the HSIs that are available.
2. Please revise HSI RSR Section 4.6.3 so that it is consistent with the information in DCD Tier 2 Section 7 regarding operation/control of NPM at the RSS or explain why it does not need to be changed.