

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Wednesday, March 21, 2018 4:37 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Markley, Anthony; Dias, Antonio; Hernandez, Raul; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 396 eRAI No. 9328 (09.01.02)
Attachments: Request for Additional Information No. 396 (eRAI No. 9328).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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Request for Additional Information No. 396 (eRAI 9328)

Issue Date: 03/21/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 09.01.02 - New and Spent Fuel Storage

Application Section: Section 9.1.2 and 9.2.5

QUESTIONS

09.01.02-36

Appendix A to 10 CFR Part 50 -General Design Criteria for Nuclear Power Plants Criterion 61 – “Fuel storage and handling and radioactivity control,” states that the fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed with a capability to permit appropriate periodic inspection and testing of components important to safety.

NUREG-800, SRP 9.1.2, “New and Spent Fuel Storage,” Section III.2.K instructs the staff to verify that the detection and collection of spent fuel pool liner leaks are incorporated into the design with capability to collect pool liner leaks (e.g. drains and sumps) to prevent uncontrolled releases of radioactive material to the environment and to keep radiation exposure as low as reasonably achievable for personnel.

In RAI 03.08.05-23, the staff requested the applicant to describe the leak chase system in detail. In its response to the RAI dated October 17, 2017, the applicant stated that pool leakage detection system (PLDS) consists of floor leakage channels, perimeter leakage channels, channel drainage lines, leak collection headers, leakage rate measuring lines, and valves. The floor leakage channels are embedded in the concrete beneath the field welded seams of the pool floor liner plates in the UHS pools and the dry dock. A perimeter channel is embedded in concrete at the wall and floor liner joint area.

The guidance provided in SRP 9.1.2 states that the SFP should be provided with a leakage detection system. A typical leakage detection system monitors all wetted surfaces (walls and floor welds). The applicant’s PLDS does not monitor leakage through the wall welds; therefore, the staff finds that the applicant’s design of the PLDS does not follow the recommendations of SRP 9.1.2.

Operational experience has shown that slow, undetected leakage of borated water has the capability of degrading reinforced concrete. Without a leakage detection system on the walls of the UHS/SFP, it is not clear to the staff how the applicant is capable of detecting slow leakages capable of compromising the structural integrity of the concrete walls (which are safety-related and risk-significant) of the UHS/SFP.

The staff requests the applicant to modify the design of the PLDS, to include monitoring of the pool wall leakage, or to provide a justification as to how the current design of the PLDS is capable of detecting pool leakage, preventing degradation of the safety-related concrete structure of the pools and the spread of contamination.