RAIO-0518-59895

May 07, 2018

Docket No. 52-048

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Response to NRC Request for Additional Information No. 396 (eRAI No. 9328) on the NuScale Design Certification Application

REFERENCE: U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 396 (eRAI No. 9328)," dated March 21, 2018

The purpose of this letter is to provide the NuScale Power, LLC (NuScale) response to the referenced NRC Request for Additional Information (RAI).

The Enclosure to this letter contains NuScale's response to the following RAI Question from NRC eRAI No. 9328:

- 09.01.02-36

This letter and the enclosed response make no new regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions on this response, please contact Carrie Fosaaen at 541-452-7126 or at cfosaaen@nuscalepower.com.

Sincerely,

Zackary W. Rad
Director, Regulatory Affairs
NuScale Power, LLC

Distribution: Samuel Lee, NRC, OWFN-8G9A
Anthony Markley, NRC, OWFN-8G9A
Prosanta Chowdhury NRC, OWFN-8G9A

Enclosure 1: NuScale Response to NRC Request for Additional Information eRAI No. 9328

Enclosure 1:

NuScale Response to NRC Request for Additional Information eRAI No. 9328

Response to Request for Additional Information
Docket No. 52-048

eRAI No.: 9328
Date of RAI Issue: 03/21/2018

NRC Question No.: 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.

NuScale Response:

Please refer to the response to RAI 12.03-43.

Reference:

NuScale Letter RAIO-0418-59443, dated April 09, 2018, NuScale Power, LLC Response to NRC Request for Additional Information No. 366 (eRAI No. 9292) on the NuScale Design Certification Application.

Impact on DCA:

There are no impacts to the DCA as a result of this response.