

NuScaleDCRaisPEm Resource

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Sent: Friday, August 11, 2017 9:41 AM
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Subject: Request for Additional Information No. 163, RAI 8907 (9.3)
Attachments: Request for Additional Information No. 163 (eRAI No. 8907).pdf

Attached please find NRC staff's request for additional information 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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Hearing Identifier: NuScale_SMR_DC_RAI_Public
Email Number: 185

Mail Envelope Properties (5112aa409a104926819540bbcbf5b1c1)

Subject: Request for Additional Information No. 163, RAI 8907 (9.3)
Sent Date: 8/11/2017 9:40:30 AM
Received Date: 8/11/2017 9:40:31 AM
From: Cranston, Gregory

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Post Office: HQPWMSMRS08.nrc.gov

Files	Size	Date & Time
MESSAGE	560	8/11/2017 9:40:31 AM
Request for Additional Information No. 163 (eRAI No. 8907).pdf		90714

Options

Priority: Standard

Return Notification: No

Reply Requested: No

Sensitivity: Normal

Expiration Date:

Recipients Received:

Request for Additional Information No. 163 (eRAI No. 8907)

Issue Date: 08/11/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 09.03.03 - Equipment and Floor Drainage System

Application Section: 9.3.3 - Equipment and Floor Drainage System

QUESTIONS

09.03.03-1

GDC 60 requires, in part, a power unit design to “include means to control suitably the release of radioactive materials in liquid effluents ... produced during normal reactor operation, including anticipated operating occurrences.” 10 CFR 52.6 requires, in part, that information provided to the Commission under Part 52 shall be complete and accurate in all material respects.

FSAR Tier 2, Section 9.3.3.2.1, indicates that the radioactive waste drainage system (RWDS) and balance-of-plant drainage system (BPDS) are designed to include surge capacity to support other routine activities such as runoff from firefighting activities. The FSAR shows and describes that firewater removal pumps are provided in certain sumps, but not all, to aid in removal of liquids in those sumps and prevent overflow of the sumps. FSAR Tier 2, Figure 9.3.3-2, “Balance-of-plant Drain System Diagram,” shows some sumps having a firewater removal pump while FSAR Tier 2, Figure 9.3.3.-1, “Radioactive Waste Drain System Diagram,” shows none. It is not clear to the staff why some sumps, such as the Chemical Waste Collection Sump which receives drainage from floor drains, do not have this extra pump.

The applicant is requested to provide clarification on why firewater removal pumps are not required for some sumps. The FSAR is to be modified accordingly. In addition, describe the expected surge volumes, the capacity of the drain systems’ components designed to accommodate these surge volumes, and provide the basis for ensuring the sumps are sized appropriately or provide a COL information item to capture this design information.

09.03.03-2

GDC 60 requires, in part, a power unit design to “include means to control suitably the release of radioactive materials in liquid effluents ... produced during normal reactor operation, including anticipated operating occurrences.” 10 CFR 52.6 requires, in part, that information provided to the Commission under Part 52 shall be complete and accurate in all material respects.

Regarding FSAR Tier 2, Figure 9.3.3-2, “Balance-of-plant Drain System Diagram,” the staff found a clarification needed in order to make a reasonable determination that the equipment and floor drainage system meets the above requirements. FSAR Tier 2, Section 10.4.2.3 states, in part, that [contaminated] liquid detected in the condenser air removal system (CARS) relies on the balance-of-plant drain system to

route it to the radioactive waste drain system for appropriate processing. However, the CARS system is not reflected in Figure 9.3.3-2.

The applicant is requested to provide additional information in the FSAR, including within Figure 9.3.3-2, to accurately depict the inputs and outputs of the drainage sumps and the means by which to isolate each flowpath.

09.03.03-3

10 CFR 52.6(a) states, in part, that the information provided by an applicant for a standard design certification shall be complete and accurate in all material respects. GDC 2 requires, in part, the capability of important to safety system portions of the equipment and floor drainage system (EFDS) to withstand the effects of natural phenomena (such as seismic event, floods, etc.) without loss of capability to perform safety functions.

As stipulated in Section III.2 of Standard Review Plan (SRP) Section 9.3.3, "Equipment and Floor Drainage System," the drawings and descriptions are reviewed for whether safety-related EFDS portions are identified correctly and can be isolated from nonsafety-related portions.

Regulatory Guide 1.29, Revision 4, Regulatory Position C.2 states that those structures, systems, components (SSCs) of which continued function is not required but of which failure could reduce the functioning of any plant feature included in Regulatory Position C.1 to an unacceptable safety level should be designed and constructed so that the safe shutdown earthquake (SSE) would not cause such failure.

FSAR Tier 2 Table 3.2-1, "Classification of Structures, Systems, and Components," under radwaste drainage system (RWDS) (FSAR page 3.2-11), lists the RWDS Seismic Classification as "III." However, FSAR Tier 2, Section 9.3.3.1 states that "portions of the [RWDS and balance-of-plant drainage system (BPDS)] system that are in proximity to Seismic Category I SSCs are designed to Seismic Category II standards." Without proper classification of a system's components, failures of those portions could damage important to safety equipment.

The applicant is requested to clarify the proper classification of the various portions of the EFDS. If there are portions that need to be Seismic Category II, the applicant is requested to identify those system portions in the FSAR.

In addition, FSAR Tier 2 Section 9.3.3.1 suggests there are sections within "proximity" of Seismic Category 1 SSCs. However, there was no definition/specification provided to quantify "in proximity." The applicant is requested to provide clarification in the FSAR on what is defined as "in proximity."

09.03.03-4

GDC 60 requires, in part, a power unit design to "include means to control suitably the release of radioactive materials in liquid effluents ... produced during normal reactor operation, including anticipated operating occurrences." 10 CFR 52.6 requires, in part,

that information provided to the Commission under Part 52 shall be complete and accurate in all material respects.

FSAR Tier 2, Sections 9.3.3 and 14.2 provide high-level descriptions about the testing, inspection, and maintenance of the equipment and floor drainage system. However, it is unclear to the staff which components will be inspected, tested, and maintained throughout the life of the plant. Inspection, testing, and maintenance is important to prevent radioactive liquid effluents from leaking and contaminating areas of the plant.

The applicant is requested to provide further information regarding the periodic inspection, testing, and maintenance of the equipment and floor drainage system (include both radioactive waste drainage system (RWDS) and balance-of-plant drainage system (BPDS)).