

NuScaleDCRaisPEm Resource

From: Cranston, Gregory
Sent: Friday, June 02, 2017 5:35 PM
To: RAI@nuscalepower.com
Cc: NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Burkhart, Lawrence; Markley, Anthony; Williams, Stephen
Subject: RE: Request for Additional Information No. 44, RAI 8755 - Resent with attachment
Attachments: Request for Additional Information No. 44 (eRAI No. 8755).pdf

Attached please find NRC staff's request for additional information concerning review of the NuScale Design Certification Application.

Please submit your 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
301-415-0546

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Request for Additional Information No. 44 (eRAI No. 8755)

Issue Date: 06/02/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 11.03 - Gaseous Waste Management System

Application Section: DSRS 11.3

QUESTIONS

11.03-2

Meeting the requirements of GDCs 2 and 61 provide reasonable assurance that the necessary information is available to identify the amounts of radioactive materials contained in GWMS and assess the radiological impacts during postulated accidents, as described in DSRS Section 11.3, BTP 11-5, and analysis of RG 1.143 in assigning the safety classifications to SSCs of the GWMS for design purposes.

BTP 11-5 describes acceptable methods to evaluate EAB doses associated with the postulated releases of radioactive gases and iodines resulting from the failure of a gas storage tank or charcoal decay tank or a leak from a GWMS component. The BTP presents guidance for selecting the type of failure and model assumptions that provide reasonable assurance that the radiological consequences of a single failure of an active component will not result in doses exceeding a small fraction (10 percent) of the 10 CFR Part 100 dose limits for the whole body to any offsite individuals for the postulated event of systems designed to withstand explosions and earthquakes, or 1 mSv (0.1 rem) for systems not designed to withstand explosions and earthquakes. The analysis assumes that the waste gas system fails to meet its design bases, as required by 10 CFR 50.34a and GDCs 60 and 61 of Appendix A to 10 CFR Part 50. The analysis relies on methods described in BTP 11-5 and the use of the PWR-GALE code (NUREG-0017) and RG 1.112, as modified to reflect the design features of SMRs. The applicant should document the basis of any difference, with sufficient supporting information included in the application, to allow the staff to conduct an independent evaluation of the applicant's use of alternate code parameters. The review of proposed short-term atmospheric dispersion parameters, as they relate to the calculation of doses at the EAB, is performed under SRP Section 2.3.4.

DCD Chapter 11, Section 11.3.3.1 provides COL Item 11.3-2, and describes a postulated GRWS event representing a gaseous radioactive waste system leak or failure analysis, but does not sufficiently provide the methodology and calculations using the guidance in BTP 11-5.

The applicant also refers to Table 11.3-8 for the source term used in their dose calculation; however, Table 11.3-9 includes a gaseous source term and dose consequences from the 11.3.3.1 GRWS described event. The DCD should contain source term information, in accordance with BTP 11-5, (The source term for a PWR is described in BTP 11-5 as 1 percent of the operating fission product inventory in the core being released to the primary coolant.) or justify a replacement source term.

The applicant's Safety Analysis Report (SAR) based on the guidance of SRP Section 11.3, should provide an analysis of the radiological consequences of a single failure of an active component in the waste gas system. The analysis should provide reasonable assurance that, in the event of a postulated failure or leak of the waste gas system, the resulting total body exposure to an individual at the nearest EAB will not exceed 25 mSv (2.5 rem) for systems that are designed to withstand internal explosions and earthquakes, or 1 mSv (0.1 rem) for systems that are not designed to withstand internal explosions and earthquakes.

The DCD does not include sufficient information for the staff to confirm the postulated gaseous radioactive waste system leak or failure analysis. This information is needed to allow the staff to make its required regulatory findings.

Please address these items and provide a markup for the proposed DCD changes.