NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Wednesday, February 28, 2018 1:37 PM
To: 'RAI@nuscalepower.com'
Cc: Lee, Samuel; Cranston, Gregory; Vera Amadiz, Marieliz; Lupold, Timothy; Hansing, Nicholas; Tabatabai, Omid; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 374 RAI No. 9389 (03.09.04)
Attachments: Request for Additional Information No. 374 (eRAI No. 9389).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. 374 (eRAI No. 9389)

Issue Date: 02/28/2018
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 03.09.04 - Control Rod Drive Systems
Application Section:

QUESTIONS

03.09.04-12

The NRC regulations in Appendix A, “General Design Criteria for Nuclear Power Plants,” to 10 CFR Part 50 specify principal design criteria to establish the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components (SSCs) important to safety; that is, SSCs that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. The control rod drive shaft is one such SSC.

General Design Criterion (GDC) 1, “Quality standards and records”, in 10 CFR Part 50, Appendix A, (as further specified in 10 CFR 50.55a), requires that this SSC be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed

In previous RAIs 8835, Question 03.09.04-8 and 9181, Question 03.09.04-10, the applicant has established that the control rod drive shaft will be considered an ASME BPV Code, Subsection NG internal structure. As internal structures have no requirement beyond the Certificate Holder certifying that the internal structure shall not adversely affect the integrity of the core support structure, unless specifically stipulated, the applicant specified the following:

- CRD shaft scram loads and control rod drive shaft deflection limits will be established by testing. CRD shaft scram and SEE loads are added to FSAR Table 3.9-6 for Service Level A and D loading combinations for control rod drive shafts.

- The control rod drive shafts are evaluated against the limits of NG-3222.1 and NG-3222.2 for normal operating (Service Level A) conditions. Service Level A loads for the control rod drive shafts are the deadweight of the control rod assembly and scram loading.

- The control rod drive shafts are evaluated against 110% of the limits of NG-3222.1 and NG-3222.2 for Service Level D loads. Consideration of cyclic loading is not required.

- Martensitic stainless steel materials used in the control rod drive shafts shall be Cv tested in accordance with NG-2331.

The above information should be incorporated into the DCD, as well as a pointer provided to the additional requirements for control rod drive system materials located in Section 4.5.1 of the DCD. This information supports GDC 1 as mentioned above

Also, in the response to 03.09.04-8, “BPCV” should be “BPVC,” and in the response to 03.09.04-10, “SEE” should be “SSE” in the first bullet point.

Finally, in the response to 03.09.04-10, the addition to FSAR Table 3.9-6 (SCRAM) requires a corresponding addition to FSAR Table 3.9-2, as the term SCRAM is currently undefined.