NuScaleDCRaisPEm Resource

From:	Cranston, Gregory
Sent:	Friday, June 30, 2017 3:47 PM
To:	RAI@nuscalepower.com
Cc:	NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Hayes, Michelle; Nakanishi, Tony; Franovich, Rani
Subject:	RE: Request for Additional Information No. 78, RAI 8892
Attachments:	Request for Additional Information No. 78 (eRAI No. 8892).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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From: Cranston, Gregory

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MESSAGE	527	6/30/2017 3:47:26 PM
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Options
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Request for Additional Information No. 78 (eRAI No. 8892)

Issue Date: 06/30/2017
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 19 - Probabilistic Risk Assessment and Severe Accident Evaluation
Application Section: 19

QUESTIONS

19-14

Title 10 Code of Federal Regulations (CFR) 52.47(a)(27) states that a design certification application must contain an final safety analysis report (FSAR) that includes description of the design-specific probabilistic risk assessment (PRA) and its results. In accordance with the Statement of Consideration (72 FR 49387) for the revised 10 CFR Part 52, the staff reviews the information contained in the applicant's FSAR Chapter 19, issues requests for additional information (RAIS) and conducts audits of the complete PRA (e.g., models, analyses, data, and codes) to obtain clarifying information as needed. The staff uses guidance contained in Standard Review Plan (SRP) Chapter 19.0 Revision 3, "Probabilistic Risk Assessment and Severe Accident Evaluation for New Reactors." In accordance with SRP Chapter 19.0 Revision 3, the staff determines whether:

> "The technical adequacy of the PRA is sufficient to justify the specific results and risk insights that are used to support the [Design Certification] DC or [Combined License] COL application. Toward this end, the applicant's PRA submittal should be consistent with prevailing PRA standards, guidance, and good practices as needed to support its uses and applications and as endorsed by the [Nuclear Regulatory Commission] NRC (e.g., [Regulatory Guide] RG 1.200)."

The staff has reviewed the information in the FSAR and examined additional clarifying information from the audit of the complete PRA and determined that it needs additional information to confirm the validity of certain assumptions used in the flooding PRAs. The supporting requirements in the American Society of Mechanical Engineers / American Nuclear Society (ASME/ANS) PRA standard include provisions for documenting sources of model uncertainties and related assumptions. Please address the following questions.

a) FSAR Table 19.1-49, "Assessment of Flood Areas Containing Equipment Modeled in the Probabilistic Risk Assessment," describes the reactor building areas that include flood protection design features to protect equipment from propagating floods. Review of supporting audit information suggests that the required level of flooding protection is determined based on the assumed time available for the operator to successfully isolate the flood source. Please confirm the staff's understanding or provide an alternative explanation.

   Additionally, assuming that the staff understands correctly and considering (1) the uncertainties introduced by the current level of plant design as cited in the FSAR (such as the lack of design detail on protective and mitigative features and detailed pipe routing information) and (2) the PRA should consider scenarios beyond the design basis, please explain how operators will always successfully isolate any flood sources in the reactor building.

b) FSAR Table 19.1-48, "Internal Flooding Sources," indicates the Reactor Building Spray System as a potentially significant flood source. The staff reviewed the FSAR and associated audit documentation and was unable to locate information on potential flooding scenarios associated with this flood source. Please describe the potential flooding scenarios associated with this flood source, considering as applicable, the associated potential propagation paths, equipment damage, flooding protection and mitigation features, and operator actions.

c) FSAR Section 19.1.5.4.1 states:

> "An external flood could initiate a [Loss of Offsite Power] LOOP or [Loss of Direct Current] LODC because of flooding in areas containing [highly reliable DC power system] EDSS or [13.8 kV and switchyard system] EHVS components."

This statement implies that the EDSS and the EHVS equipment is assumed to be unprotected from floods. Please discuss why flooding protection features assumed to be available for internal flooding scenarios are assumed not to be available for external flooding scenarios.