NuScaleDCRaisPEm Resource

From:	Cranston, Gregory
Sent:	Saturday, December 16, 2017 8:04 AM
To:	RAI@nuscalepower.com
Cc:	NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Martinez Navedo, Tania; Otto, Ngola; Tabatabai, Omid
Subject:	Request for Additional Information No. 303 RAI No. 9301 (20.01)
Attachments:	Request for Additional Information No. 303 (eRAI No. 9301).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. The NRC Staff recognizes that NuScale has preliminarily identified that the response to this question in this RAI is likely to require greater than 60 days.

If you have any questions, please contact me.

Thank you.

Gregory Cranston, Senior Project Manager
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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Created By: Gregory.Cranston@nrc.gov

Recipients:
"NuScaleDCRaisPEm Resource" <NuScaleDCRaisPEm.Resource@nrc.gov>
Tracking Status: None
"Lee, Samuel" <Samuel.Lee@nrc.gov>
Tracking Status: None
"Chowdhury, Prosanta" <Prosanta.Chowdhury@nrc.gov>
Tracking Status: None
"Martinez Navedo, Tania" <Tania.MartinezNavedo@nrc.gov>
Tracking Status: None
"Otto, Ngola" <Ngola.Otto@nrc.gov>
Tracking Status: None
"Tabatabai, Omid" <Omid.Tabatabai-Yazdi@nrc.gov>
Tracking Status: None
"RAI@nuscalepower.com" <RAI@nuscalepower.com>
Tracking Status: None

Post Office: MWHPR09MB1200.namprd09.prod.outlook.com

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Request for Additional Information No. 303 (eRAI No. 9301)

Issue Date: 12/16/2017
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 20.01 - Mitigating Strategies for Beyond Design-Basis External Events (NuScale SMR design)
Application Section: 20.01

QUESTIONS

20.01-10

NuScale Final Safety Evaluation Report (FSAR) Tier 2 Section 20.1.4, “Spent Fuel Pool and Reactor Pool Level Instrumentation,” states that ultimate heat sink (UHS) instruments and cabling are environmentally qualified following a Beyond Design Basis External Event (BDBEE) for certain conditions.

The staff in **RAI 9110, Question 20.01-5**, letter dated September 1, 2017, requested that the applicant discuss the methodology for environmental qualification or the basis for the capability of the UHS instrument cabling to remain functional under BDBEE conditions.

In the response to **RAI 9110, Question 20.01-5** dated October 16, 2017, Agencywide Documents Access and Management System (ADAMS) Accession No. ML17289A672, the applicant stated, “For harsh environment applications, such as those for pool level instruments and their cabling, qualification program implementation will follow Institute of Electrical and Electronic Engineers (IEEE) Standard (Std.) 323-2003, “IEEE Std. for Qualifying Class 1E equipment for Nuclear Power Generating Stations.”

The pool instrument and cabling may be subject to a harsh environment as shown in FSAR Tier 2, Table 3.11-1, “List of Environmentally Qualified Electrical/I&C and Mechanical Equipment Located in Harsh Environments.” Regulatory Guide (RG) 1.89, “Qualification of Class 1E Equipment for Nuclear Power Plants,” provides guidance in complying with 10 CFR 50.49, “Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants,” for qualification of equipment in harsh environment, and endorses IEEE Std. 323-1974, “IEEE Std. for Qualifying Class 1E equipment for Nuclear Power Generating Stations.” The applicant has committed to following RG 1.89, as shown in FSAR Tier 2, Table 1.9-2, “Conformance with Regulatory Guides.” In addition, FSAR Tier 2, Section 3.11.2.1, “Environmental Qualification of Electrical Equipment,” states, “Electrical equipment identified to be in a harsh location, as described in Section 3.11.1.2, “Definition of Environmental Conditions,” are environmentally qualified by type testing or type testing and analysis using the guidance of IEEE Std. 323-1974.”

QUESTION: Since the applicant has stated in FSAR Tier 2, Section 3.11.2.1, that the guidance and methodology in IEEE Std. 323-1974 will be used for the environmental qualification of equipment in harsh environment,

1) Clarify whether IEEE Std. 323-2003 or IEEE Std. 323-1974 will be used for qualification of the pool level instruments and cabling located in harsh environment conditions following a BDBEE.

2) If IEEE Std. 323-2003 is used instead of IEEE Std. 323-1974, justify the deviation/differences and discuss how RG 1.89 is being met, as shown in FSAR Tier 2, Table 1.9-2.

3) Otherwise, modify the FSAR and other applicable documents to use the methodology and guidance in IEEE Std. 323-1974 for the qualification of the pool level instruments and cabling.