NuScaleDCRaisPEm Resource

From:	Cranston, Gregory
Sent:	Friday, July 21, 2017 11:33 AM
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Subject:	Request for Additional Information No. 96, RAI 8994 (7.01)
Attachments:	Request for Additional Information No. 96 (eRAI No. 8994).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.

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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Request for Additional Information No. 96 (eRAI No. 8994)

Issue Date: 07/21/2017
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 07.01.DSRS - Fundamental Design Principles
Application Section: DCD, Part 2 - Tier 2, Section 7.1.2, "Independence"

QUESTIONS

07.01.DSRS-1

Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36 sets forth requirements for technical specifications to be included as part of the operating license for a nuclear power facility.

10 CFR 50.55a(h) requires compliance with the Institute of Electrical and Electronics Engineers (IEEE) Standard (Std.) 603-1991. Clause 5.7 of IEEE Std. 603-1991, states that "*Capability for testing and calibration of safety system equipment shall be provided while retaining the capability of the safety systems to accomplish their safety functions. The capability for testing and calibration of safety system equipment shall be provided during power operation and shall duplicate, as closely as practicable, performance of the safety system*."

Part 2 of the NuScale Design Certification Application (DCA), in Tier 2 of the Design Control Document (DCD), Section 7.1.2.2, “Electrical Independence,” states that the Module Protection System (MPS) electrical isolation devices are used as a safety system boundary and are considered part of the MPS. These isolation devices are qualified as part of the MPS in accordance with IEEE Std. 384-1992.

The surveillance requirements and periodic testing criteria of the Class 1E isolation devices are within the scope of generic technical specification Subsection 3.3.1, “MODULE Protection System (MPS) Instrumentation.” However, the Surveillance Requirements (SRs) section of the associated generic technical specifications Bases for Subsection 3.3.1 does not explicitly state that the Class IE isolation devices are within the scope of the CHANNEL CALIBRATION. Therefore, the staff requests NuScale to revise the SRs section of the Bases for generic technical specification Subsection 3.3.1 to clarify that the CHANNEL CALIBRATION surveillance requirement, SR 3.3.1.4, will include verification that the Class IE isolation devices are OPERABLE.

07.01.DSRS-2

Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(h) requires compliance to the Institute of Electrical and Electronics Engineers (IEEE) Standard (Std.) 603-1991. IEEE Std. 603-1991, Clause 5.6.1, states in part that "*Redundant portions of a safety system provided for a safety function shall be independent of and physically separated from each other to the degree necessary to retain the capability to accomplish the safety function during and following any design basis event requiring that safety function*"; and Clause 5.6.3, states, in part that "*The safety system design shall be such that credible failures in and consequential actions by other systems, as documented in 4.8 of the design basis, shall not prevent the safety systems from meeting the requirements of this standard*." Digital I&C Interim Staff Guidance (DI&C-ISG)-04 provides guidance for meeting the communications independence requirements of IEEE Std. 603-1991, Clause 5.6.

NuScale Design Control Document (DCD), Part 2 – Tier 2, Chapter 7, “Instrumentation and Controls,” incorporates by reference topical report (TR)-1015-18653, “Design of Highly Integrated Protection System Platform,” Revision 1. DCD, Part 2 – Tier 2, Section 7.1.2, “Independence,” states that:

> This information satisfies the application specific information in the NuScale Power, LLC, TR-1015-18653, "Design of the Highly Integrated Protection System Platform Topical Report," (Reference 7.1-1) listed in Table 7.0-2 for IEEE-603-1991, Sections 5.6 and 8 (Reference 7.1-3); IEEE-7-4.3.2-2003, Section 5.6 (Reference 7.1-5); and ISG-04, Section 1, Staff Positions 1, 2, 3, 8, 16, 18, and Section 3, Staff Positions 2 and 3 (Reference 7.1-6).

The architecture described in TR-1015-18653 was provided for reference to describe the attributes of the highly integrated protection system (HIPS) platform and how it could be used in an application. However, this example architecture was intended to illustrate the capability of the HIPS platform to implement a prospective system architecture and does not define a proposed usage. Therefore, the staff requests the applicant to identify and discuss if there are any data communication schemes that are NuScale architecture specific, or related to the NuScale DCD.