

August 16, 2017

Docket No. 52-048

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Response to NRC Request for Additional Information No. 96 (eRAI No. 8994) on the NuScale Design Certification Application

REFERENCE: U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 96 (eRAI No. 8994)," dated July 21, 2017

The purpose of this letter is to provide the NuScale Power, LLC (NuScale) response to the referenced NRC Request for Additional Information (RAI).

The Enclosure to this letter contains NuScale's response to the following RAI Question from NRC eRAI No. 8994:

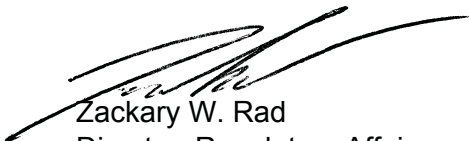
- 07.01.DSRS-1

The response to question 07.01.DSRS-2 will be provided by September 19, 2017.

This letter and the enclosed response make no new regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions on this response, please contact Darrell Gardner at 980-349-4829 or at dgardner@nuscalepower.com.

Sincerely,



Zackary W. Rad
Director, Regulatory Affairs
NuScale Power, LLC

Distribution: Gregory Cranston, NRC, OWFN-8G9A
Omid Tabatabai, NRC, OWFN-8G9A
Samuel Lee, NRC, OWFN-8G9A

Enclosure 1: NuScale Response to NRC Request for Additional Information eRAI No. 8994



RAIO-0817-55463

Enclosure 1:

NuScale Response to NRC Request for Additional Information eRAI No. 8994

Response to Request for Additional Information Docket No. 52-048

eRAI No.: 8994

Date of RAI Issue: 07/21/2017

NRC Question No.: 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 1E 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 1E isolation devices are OPERABLE.

NuScale Response:

A surveillance requirement to verify the Class 1E isolation devices are OPERABLE for limiting conditions for operation (LCOs) 3.3.1, 3.3.2, and 3.3.3 has been added to the NuScale Generic Technical Specifications.



Impact on DCA:

The NuScale Generic Technical Specifications LCOs 3.3.1, 3.3.2, and 3.3.3 and associated bases have been revised as described in the response above and as shown in the markup provided in this response.

SURVEILLANCE REQUIREMENTS (Continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.4 -----NOTE----- Neutron detectors are excluded from the CHANNEL CALIBRATION. -----</p> <p>Perform CHANNEL CALIBRATION on each required channel listed in Table 3.3.1-1.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p><u>SR 3.3.1.5</u> <u>Verify associated Class 1E isolation devices are OPERABLE.</u></p>	<p><u>In accordance with the Surveillance Frequency Control Program.</u></p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.2.1 Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.2 -----NOTE----- Neutron detectors are excluded from response time testing. ----- Verify RTS RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program
<u>SR 3.3.2.3 Verify associated Class 1E isolation devices are OPERABLE.</u>	<u>In accordance with the Surveillance Frequency Control Program.</u>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform ACTUATION LOGIC TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.2	<p>-----NOTE-----</p> <p>Neutron detectors are excluded from response time testing.</p> <p>-----</p> <p>Verify required RESPONSE TIME is within limits.</p>	In accordance with the Surveillance Frequency Control Program
<u>SR 3.3.3.3</u>	<u>Verify associated Class 1E isolation devices are OPERABLE.</u>	<u>In accordance with the Surveillance Frequency Control Program.</u>

BASES

SURVEILLANCE REQUIREMENTS (continued)

Interlocks and permissives are required to support the Function's OPERABILITY and are addressed by this CHANNEL CALIBRATION. This is accomplished by ensuring the channels are calibrated properly in accordance with the SP.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.1.5

Class 1E isolation devices ensure that electrical power to the associated MPS circuitry and logic will not adversely affect the ability of the system to perform its safety functions. The devices de-energize and isolate the MPS components if such a condition is detected. This surveillance verifies the setpoints and functions of the isolation devices including associated alarms and indications.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation."
 2. 10 CFR 50, Appendix A, GDC 21.
 3. 10 CFR 100.
 4. FSAR, Chapter 7, "Instrumentation and Controls."
 5. FSAR, Chapter 14, "Initial Test Program and ITAAC."
 6. 10 CFR 50.49.
 7. TR-0606-49121, Rev. 02, "NuScale Instrument Setpoint Methodology."
 8. IEEE Standard 603-1991.
-
-

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1

An ACTUATION LOGIC TEST on each RTS Logic division is performed to ensure the division will perform its intended function when needed. These tests verify that the RTS is capable of performing its intended function, from SFM input signals to the SVM through actuation of the RTBs.

MPS testing from the input sensors to the SVMs is addressed by surveillance requirements specified in LCO 3.3.1, "Module Protection System (MPS)." The manual actuation functions are addressed by the surveillance requirements specified in LCO 3.3.4.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.2.2

This SR ensures that the RESPONSE TIMES of the RTS divisions are verified to be less than or equal to the maximum values assumed in the safety analysis. Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor to the time at which the RTBs open. Total response time may be verified by any series of sequential, overlapping, or total channel measurements. RESPONSE TIMES of the sensors and separation group MPS electronics are tested in accordance with LCO 3.3.1. This SR encompasses the RESPONSE TIME of the RTS division from the SVMs to the opening of the RTBs.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.2.3

Class 1E isolation devices ensure that electrical power to the associated MPS circuitry and logic will not adversely affect the ability of the system to perform its safety function. The devices de-energize and isolate the MPS components if such a condition is detected. This surveillance verifies the setpoints and functions of the isolation devices including associated alarms and indications.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.3.3.1

An ACTUATION LOGIC TEST on each ESFAS division is performed to ensure the division will perform its intended function when needed. These tests verify that the ESFAS actuation functions are capable of performing their intended function, from the SVMs through actuation of the ESF Components.

MPS testing from the input sensors to the SVMs is addressed by surveillance requirements specified in LCO 3.3.1, "Module Protection System (MPS)."

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.3.2

This SR ensures that the RESPONSE TIMES are verified to be less than or equal to the maximum values assumed in the safety analysis. Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor to the time at which the ESF component actuates. Total response time may be verified by any series of sequential, overlapping, or total channel measurements. RESPONSE TIMES of the sensors and separation group MPS electronics are tested in accordance with LCO 3.3.1. This SR encompasses the RESPONSE TIME of the ESFAS division from the SVMs to the actuation of the ESFAS component.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

A Note is added to indicate that the neutron detectors are excluded from RESPONSE TIME testing because of the difficulty of simulating a meaningful signal. Slow changes in detector sensitivity are compensated for by performing the calorimetric calibration (SR 3.3.1.2).

SR 3.3.3.3

Class 1E isolation devices ensure that electrical power to the associated MPS circuitry and logic will not adversely affect the ability of the system to perform its safety functions. The devices de-energize and isolate the MPS components if such a condition is detected. This surveillance verifies the setpoints and functions of the isolation devices including associated alarms and indications.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.