

## NuScaleDCRaisPEm Resource

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**Sent:** Wednesday, August 02, 2017 1:18 PM  
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**Subject:** Request for Additional Information No. 121, RAI 9007 (7.02)  
**Attachments:** Request for Additional Information No. 121 (eRAI No. 9007).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

**Hearing Identifier:** NuScale\_SMR\_DC\_RAI\_Public  
**Email Number:** 142

**Mail Envelope Properties** (ae001a4013a546808fe91871d7095270)

**Subject:** Request for Additional Information No. 121, RAI 9007 (7.02)  
**Sent Date:** 8/2/2017 1:17:46 PM  
**Received Date:** 8/2/2017 1:17:47 PM  
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<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	554	8/2/2017 1:17:47 PM
Request for Additional Information No. 121 (eRAI No. 9007).pdf		81455

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**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

## Request for Additional Information No. 121 (eRAI No. 9007)

Issue Date: 08/02/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 07.02.DSRS - System Characteristics

Application Section: NuScale DCD, Part 2 – Tier 2, Section 7.2.3.3, “Completion of Protective Action”

### QUESTIONS

#### 07.02.DSRS-3

Title 10 of the *Code of Federal Regulations* Section 50.55a(h) requires compliance to IEEE Std 603-1991. Clauses 5.2, “Completion of Protective Action,” and 7.3, “Completion of Protective Action,” of IEEE Std. 603-1991 require that safety systems and execute features be designed such that, once initiated, the intended sequence of protective actions shall continue to completion, and shall require deliberate operator action to return to normal.

NuScale Design Control Document (DCD), Part 2 – Tier 2, Section 7.1.1.2.1, “Protection Systems,” states that:

The MPS [module protection system] automatically initiates a reactor trip or ESF [engineered safety features] function when the associated setpoint is exceeded. Once initiated, safety functions continue until completed. The completion of the safety function is satisfied once all equipment is in the actuated position and the plant conditions are stabilized. The MPS may be returned to normal when the initiating condition is no longer present.

DCD, Part 2 – Tier 2, Section 7.2.3.3, “Completion of Protective Action,” also states in part that:

Seal-in of ESFAS [engineered safety features actuation system] actuation logic is provided at the EIM [equipment interface module] to account for transient process conditions that may change during a DBE [design basis event] (e.g., containment pressure). This seal-in prevents logic and final actuated devices from returning to the non-trip or non-actuated state due to changing process conditions.

Per the requirements of IEEE Std. 603-1991, Clauses 5.2 and 7.3, the safety systems and execute features should be designed such that deliberate operator action is needed to return the module protection system (MPS) to normal configuration. The staff was not able to identify in the MPS functional logic diagrams how MPS is designed such that deliberate operator action is required to return the MPS to normal configuration. For example, Figure 7.1-1z, “Demineralized Water Supply Valve Actuation,” shows that the seal-in of the equipment interface module logic only holds until the actuated valve has completed opening or closing. However, the MPS functional logic does not show specific design details for deliberate operator action to return the MPS to normal configuration. The staff requests NuScale to explain how the MPS design meets IEEE Std. 603-1991, Clauses 5.2 and 7.3.