## NuScaleDCRaisPEm Resource

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**Subject:** Request for Additional Information No. 318 RAI No. 9330 (3.4.1)
**Attachments:** Request for Additional Information No. 318 (eRAI No. 9330).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:** 345

**Mail Envelope Properties** (CY4PR09MB12874A5810E730E04752E9F0901E0)

**Subject:** Request for Additional Information No. 318 RAI No. 9330 (3.4.1)
**Sent Date:** 1/3/2018 2:30:49 PM
**Received Date:** 1/3/2018 2:30:53 PM
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**Post Office:** CY4PR09MB1287.namprd09.prod.outlook.com

| **Files** | **Size** | **Date & Time** | |
|---|---|---|---|
| MESSAGE | 556 | 1/3/2018 2:30:53 PM | |
| Request for Additional Information No. 318 (eRAI No. 9330).pdf | | | 41306 |

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**Priority:** Standard
**Return Notification:** No
**Reply Requested:** No
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**Expiration Date:**
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# Request for Additional Information No. 318 (eRAI No. 9330)

Issue Date: 01/03/2018
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 03.04.01 - Internal Flood Protection for Onsite Equipment Failures
Application Section: 3.4.1

QUESTIONS

03.04.01-3

10 CFR 52.47(a)(2) requires that a standard design certification applicant provide a description and analysis of the structures, systems, and components (SSCs) of the facility, with emphasis upon performance requirements, the bases, with technical justification therefor, upon which these requirements have been established, and the evaluations required to show that safety functions will be accomplished.

In RAI No. 9052, issued on August 12, 2017 (ML17224A023), the staff requested the applicant to provide justification for the assumptions in the flooding analysis for the Reactor Building (RXB) and Control Room Building (CRB) related to the limited fire suppression activity discharges and duration, which are inconsistent with the guidance in NRC Regulatory Guide 1.189. In the response dated October 10, 2017 (ML17283A393), the applicant stated that "The estimated fire suppression flows in FSAR Tier 2, Section 3.4.1.1 are based on expected demands on the fire suppression system as informed by National Fire Protection Association (NFPA) code, specifically NFPA 13 and NFPA 14. This analysis estimated the demand water flow for the reactor building (RXB) and control building (CRB) structures based on the hazard classification and required fire suppression flow rates in each area."

In reviewing the referenced NFPA 13 and NFPA 14 codes, the NRC staff was unable to validate the applicant's assumptions as the above documents do not specifically address the hazard classification and required fire suppression flow rates for a nuclear power plant's RXB and CRB. Furthermore, the general requirements as specified in NFPA 13 for nuclear power plants are the same as those presented in NRC Regulatory Guide 1.189, which is fire suppression activity duration of 2 hours with a flow rate of 500 gallon per minute (gpm) hose stream, plus the largest design demand of any sprinkler or deluge system. Therefore, the NRC staff requests the applicant to provide additional information and/or analysis to demonstrate that fire suppression activity discharges of 700 gpm ( for the RXB) and 550 gpm (for the CRB), as indicated in FSAR Tier 2, Section 3.4.1.1, bound the largest design demand of any sprinkler or deluge systems in these buildings. In addition, the NRC staff requests the applicant to describe the active and passive fire protection features and/or strategies to ensure any postulated fire in the CRB can be suppressed within 60 minutes as stated in FSAR Tier 2, Section 3.4.1.1.