

## NuScaleDCRaisPEm Resource

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**Subject:** Request for Additional Information No. 314 RAI No. 9241 (19.05)  
**Attachments:** Request for Additional Information No. 314 (eRAI No. 9241).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 the 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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## **Request for Additional Information No. 314 (eRAI No. 9241)**

Issue Date: 12/26/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 19.05 Aircraft Impact Assessment (NuScale SMR design)

Application Section: 19.05

### QUESTIONS

#### 19.05 Aircraft Impact Assessment (NuScale SMR design)-23

In accordance with 10 CFR 50.150(a)(1), each applicant listed in paragraph (a)(3) shall perform a design-specific assessment of the effects on the facility of the impact of a large, commercial aircraft. Using realistic analyses, the applicant shall identify and incorporate into the design those design features and functional capabilities to show that, with reduced use of operator actions: (i) The reactor core remains cooled, or the containment remains intact; and (ii) Spent fuel cooling or spent fuel pool integrity is maintained. 10 CFR 50.150(b) requires that the FSAR contain a description of the design features and functional capabilities and how the design features and functional capabilities meet the assessment requirements. In addition, NEI 07-13, Revision 8 provides guidance acceptable to staff for satisfying the requirements in 10 CFR 50.150(a) regarding the assessment of aircraft impacts for new nuclear power reactors.

FSAR Tier 2, Section 19.5, Revision 0 contained descriptive information regarding the role of the main control room (MCR) and remote shutdown station (RSS); including, the capability of the design to monitor and control the plant, separation between the MCR and RSS, and the availability of the module protection system and DC power equipment to monitor reactor and containment parameters. In response to RAI 8877 and RAI 9023 this important information was removed and replaced with a sentence that states, "once the operators scram the reactors and initiate DHRS and containment isolation upon warning of a potential aircraft, no further operator actions are necessary to maintain fuel cooling."

The staff recognizes that if the key design features perform as expected there are no control or protective functions that are necessary after the aircraft impact for 72 hours, as described in the FSAR; however, monitoring of plant conditions plays a vital role in the overall success of the plant's ability to cope with the impact of a large commercial aircraft. NEI 07-13 acknowledges that there are unknowns and uncertainties in performing aircraft impact assessments. Thus, 10 CFR 50.54(hh)(2) requires all plants to develop and adopt mitigation strategies to address loss of large areas of the plant due to fire or explosion from any cause, including beyond-design-basis aircraft impact. NEI 07-13 adds, "the guidance and strategies required under 10 CFR 50.54(hh)(2) provide a measure of defense-in-depth should the design features identified as a result of the aircraft impact assessment not perform as expected."

Without monitoring capability operators cannot verify the plant's ability to cope with the impact of a large commercial aircraft through the use of design features. Therefore, the ability for operators to monitor key plant parameters must be maintained in case the key design features credited for core cooling, intact containment, or spent fuel pool integrity are not performing as expected, and a transition to an alternate mitigation strategy is necessary.

The applicant is requested to reinsert the descriptive information (identified in the second paragraph above) regarding the monitoring and protection equipment, and related design features of the MCR and RSS. The applicant is requested to identify and describe, in the FSAR, key plant parameters and their location(s) that are available to the operators to monitor and ensure the identified design features are performing as expected following the impact of a large commercial aircraft.