UNITED STATES
NUCLEAR REGULATORY COMMISSION
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March 7, 2018

MEMORANDUM TO: Frank M. Akstulewicz, Jr., Director
Division of New Reactor Licensing
Office of New Reactors

FROM: Timothy J. McGinty, Director ***/RA/***
Division of Construction Inspection
and Operational Programs
Office of New Reactors

SUBJECT: PROPOSED PILOT APPROACH FOR THE NUSCALE POWER, LLC, INITIAL TEST PROGRAM REVIEW

After internal discussion, the staff will be piloting a new review approach regarding the NuScale Power, LLC (NuScale), initial test program (ITP). In this revised approach, the staff would cease review of certain components of the ITP that are considered not risk significant and not required for review at the design certification stage. Instead, the review of administrative requirements for an ITP and the review of structures, systems, and components (SSCs) that are not risk significant would be evaluated at the later combined operating license stage (COL).

The focus of the revised ITP review will be on providing reasonable assurance that the risk significant SSCs functions are being tested, and that they have a test abstract that adequately addresses the design functionality. This approach is in line with the methodology proposed in SECY-11-0024, "Use of Risk Insights to Enhance the Safety Focus of Small Modular Reactor Reviews." The Office of the General Counsel (OGC) determined there was no legal impediment to the staff's proposed approach.

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 52.47(c)(2), states, in part:

> An application for certification for a nuclear power reactor design that differs significantly from the light-water reactor designs described in paragraph (c)(1) of this section . . . must provide an essentially complete nuclear power reactor design . . . and must meet the requirements of 10 CFR 50.43(e).

The regulations in 10 CFR 50.43(e), as applicable here, state that an application for a design certification will only be approved if:

> the performance of each safety feature of the design has been demonstrated through either analysis, appropriate test programs, experience, or a combination thereof.

As such, the NRC staff reviews the ITP at the design certification stage to determine whether the safety-related functions of the risk-significant SSCs are appropriately addressed.

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;OThe staff in the Division of Construction Inspection and Operational Programs (DCIP) have identified a set of fundamental questions for the reviewers to ensure alignment with the new approach. The DCIP staff will meet with the technical staff to discuss these questions. This shift in review will focus on the following:

1. NuScale identified a number of safety- and risk-significant systems in Section 17.4 of the DCD (categorized as A1 or B1). The risk-significant systems that NuScale has identified are the following:

Containment System (A1, B1[1])	Steam Generator System (A1)
Reactor Core System (A1)	Control Rod Drive System (A1)
Reactor Coolant System (A1)	Chemical Volume and Control System (A1)
Emergency Core Cooling System (A1)	Decay Heat Removal System (A1)
Ultimate Heat Sink (A1)	Module Protection System (A1)
Neutron Monitoring System (A1)	Reactor Building (A1)
Control Building (A1)	Reactor Building Crane (B1)

   Does the technical staff agree with NuScale's assessment? Are there any SSCs that should be added to the list?

2. Have the staff identified any unique NuScale design SSC testing that should be required?

3. Are there any non-safety support systems required to support a risk significant SSC that should be tested?

4. Is there sufficient design information for the test? (For example, values such as amount of heat going into the fuel pool during an accident condition rather than the system flow rates/pressures.)

5. Do test abstracts exist that demonstrate the functionality of the risk significant SSC in the preoperational phase? The tests should provide sufficient proof that the SSC will perform its intended function(s) when the reactor is operating.

With the new approach, Phase 1 is considered to be complete. There will no longer be a need to issue a request for additional information. Instead, the staff intends to either hold a multi-day public meeting with NuScale, or perform an audit to ask any clarifying questions. The staff's ultimate safety finding will be based on information provided by the applicant on the docket. The first meeting to be held with NuScale that will use the new approach will be the digital instrumentation and control meeting set for March 7, 2018. Additional details will be provided following this meeting, as well as specific guidance regarding the new review strategy.

[1] Containment System function that supports the Reactor Building Crane

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