



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

May 18, 2020

Mr. Matthew W. Sunseri, Chairman  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: NUSCALE COMBUSTIBLE GAS MONITORING

Dear Mr. Sunseri:

Thank you for the letter, dated April 28, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20113F049), regarding the Advisory Committee on Reactor Safeguards' (ACRS or the Committee) review of the proposed NuScale combustible gas monitoring system to detect hydrogen (H<sub>2</sub>) and oxygen (O<sub>2</sub>) concentrations in containment during severe accident events. The Committee has previously issued a recommendation on this matter in a letter dated December 20, 2019 (ADAMS Accession No. ML19354A031); however, the NRC staff appreciates the additional time and effort that the ACRS has devoted to this important subject, as reflected in the meetings held with the ACRS Subcommittee for NuScale on March 4, 2020, and the ACRS Full Committee between April 8 - 10, 2020.

The letter contained the following three conclusions:

1. We concur with the staff position that the combustible gas monitoring system design not receive finality in the NuScale design certification because the staff is unable to evaluate dose implications.
2. We are concerned that to obtain a sample representative of the containment atmosphere, the proposed combustible gas monitoring system design will require establishing a sizeable flow through non-safety-grade piping outside containment. This may have implications on worker and off-site doses.
3. We expect to have the opportunity to review the final design updates submitted by Combined License (COL) applicants to ensure that our concerns have been addressed and are supported by analyses.

The NRC staff appreciates the ACRS's review and understands the concerns regarding the dose implications for obtaining a representative sample of the containment atmosphere.

The NRC staff further appreciates the Committee's independent concurrence with the staff's position that the combustible gas monitoring system design not receive finality in the NuScale design certification because of a lack of sufficient design information needed to evaluate possible dose impacts. The staff expects more detailed design information will be provided as part of future application that will reference the NuScale small modular reactor design. Once that additional information is available, the staff plans to conduct a risk-informed review that considers the likelihood of the event sequences which would necessitate initiating this system, the dose consequences of its operation, and the risks for potentially forming a combustible gas mixture. The staff looks forward to working with the Committee on the review of that future application.

Sincerely,

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Robert M. Taylor  
Deputy Office Director of New Reactors  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission

Docket No.: 52-048

cc: Chairman Svinicki  
Commissioner Baran  
Commissioner Caputo  
Commissioner Wright  
SECY

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**ADAMS Accession Nos.:**

**PKG: ML20122A104**

**LTR: ML20128J316**

**\*via e-mail**

**NRR-106**

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