

June 29, 2015

MEMORANDUM TO: Mark Tonacci, Branch Chief
Small Modular Reactor Licensing Branch
Division of Advanced Reactors & Rulemaking
Office of New Reactors

FROM: Gregory V. Cranston, Senior Project Manager /RA/
Small Modular Reactor Licensing Branch
Division of Advanced Reactors & Rulemaking
Office of New Reactors

SUBJECT: NRC PRE-APPLICATION AUDIT OF THE NUSCALE
ROCKVILLE OFFICE DOCUMENTS

As part of its pre-application activities pertaining to the development of the Design Specific Review Standards (DSRS) that assist the U.S. Nuclear Regulatory Commission (NRC) staff in reviewing the design when submitted to the NRC for review from NuScale Power LLC. (NuScale) and to prepare for interactions with NuScale on other pre-application activities, members of the NRC staff performed audits of the draft sets of systems descriptions, functional diagrams for selected systems of their small modular reactor, and other documents and assessed progress of pre-application activities at the NuScale office in Rockville, MD during the period from January 8, 2015 to March 31, 2015.

In a letter dated June 3, 2013 (ML13149A455), NuScale was informed of NRC staff's plans to periodically review documents located at the NuScale office located at 11333 Woodglen Drive, Rockville, MD, 20852, for the period mentioned above. In addition, that letter stated that the staff would generate an audit summary identifying the documents audited by the staff. This letter is that audit summary.

Below are the dates of the Rockville office audits, individuals that participated in the audits and the associated documents that were reviewed:

Date: 1/8/15

This was a pre-audit discussion of the status of the NuScale human factors engineering (HFE) process as related to control room staffing in preparation for a NRC staff audit at the NuScale plant simulator at the NuScale offices in Corvallis, OR. The audit is tentatively scheduled for October 2015.

CONTACT: Gregory V. Cranston, NRO/DARR
(301) 415-0546

A pre-application public/closed meeting to discuss the HFE status will be scheduled later to discuss the use of Design Acceptance Criteria (DAC) for HFE, Implementation Plans, human performance monitoring program, how to address possible need for an exemption from Title 10 of the *Code of Federal Regulations* 50.54(m) regarding control room staffing levels, what to include in the Design Certification Application regarding control room staffing (for example, completeness of the Results Summary Report), and possible submittal of Technical Reports to cover selected HFE topics.

Documents reviewed: None

Attendees

NRO staff: Paul Pieringer, David Desaulniers, Mark Tonacci, and Greg Cranston.

NuScale personnel: Steven Mirsky, Tim Tovar, Shawn Jerrow, Gary Becker, and Paul Kumar

Date: 1/27/15

This discussion was to assess the status of NuScale's progress on addressing beyond design basis events for their design certification application (DCA) submittal and discuss which topics will be addressed in the DCA and which will be addressed in the prospective licensee's combined license.

Documents reviewed: Outline of topics to be included in the DCA regarding beyond design basis events, etc.

Attendees:

NRO staff: George Tartal, Jonathan DeGange, Mark Tonacci, Stewart Magruder and Greg Cranston.

NuScale personnel: Steve Mirsky and Steve Pope (NuScale office Rockville); and Jennie Wike, Cyrus Afshar, John Price, Frank Eppler, Barry Reichelderfer, Maurice Ades, Darrell Gardner, Jim Raleigh, Tim Tovar, and Gary Becker (NuScale office Corvallis, OR, via videoconference).

Date: 02/23/2015

This audit was to gain understanding of what guidance documents NuScale is using to: (1) perform their severe accident management design alternatives (SAMDA) analyses and to prepare their Environmental Report (ER) and (2) NuScale methodology that will be used to perform their SAMDA assessment.

NuScale informed the staff that they are considering two options for site assumptions; (1) Electric Power Research Institute's (EPRI) Utility Requirement Document (URD), and (2) Surry site model. The EPRI site model was submitted by the applicants for the AP1000 and ESBWR design certification application (DCA) reviews, while a Surry site model has been used by the staff in NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," state-of-the-art consequence analysis (SOARCA) and several other safety and environmental analyses. It was pointed out that these models use different site assumption inputs for the population, weather, emergency response, and economic data for the purpose of off-site consequence calculations. NuScale asked if the staff had a preference with respect to

any of these methods. The staff stated that they did not and that regardless of the methodology used, NuScale should describe and justify their methodology based on an assumed site location in their design certification application.

NuScale informed the NRC that they are going to use the output of their probabilistic risk assessment (PRA) for only one module as input into their SAMDA assessment. Staff cautioned NuScale that they would need to explain why various possible multi-module severe accidents or interactions are not considered in their SAMDA assessment.

Documents reviewed: none

Attendees:

NRO staff: Omid Tabatabai, Michelle Hart, Donald Palmrose, Mark Caruso, and Jason Schaperow

NuScale personnel: Steve Pope, Steve Mirsky, Bill Galyean, and other probabilistic risk assessment and engineering staff via videoconference from Corvallis, OR.

Date: 03/17/2015

This audit was to gain understanding as to the: (1) status of the Topical Report (TR) on Core Thermal-Hydraulics and Primary System Stability; and, (2) general content of the TR regarding incorporation of such topics as inclusion of both normal operations and abnormal operational occurrences and how power oscillations and density waves are being considered, modeled and validated.

Documents reviewed: none

Attendees:

NRO staff: Greg Cranston, Omid Tabatabai, Jeff Schmitt, and Jim Gilmer

NuScale staff: Steve Mirsky; Russell Goff*, Maurice Ades*, Wendell Wagner*, Youssef Farawila*, Lou Lanese*, and Kent Welter* (* on video conference from NuScale office in Corvallis, OR).

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NRO-002

OFFICE	PM:NRO/DARR/SMRLB
NAME	GCranston
DATE	6/29/15

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