



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

March 26, 2019

MEMORANDUM TO: Samuel S. Lee, Chief  
Licensing Branch 1  
Division of Licensing, Siting, and Environmental Analysis  
Office of New Reactors

FROM: Marieliz Vera, Project Manager */RA/*  
Licensing Branch 1  
Division of Licensing, Siting, and Environmental Analysis  
Office of New Reactors

SUBJECT: SUMMARY OF THE JANUARY 23, 2019, FEBRUARY 13, 2019,  
AND MARCH 6, 2019, CATEGORY 1 PUBLIC  
TELECONFERENCE WITH NUSCALE POWER, LLC TO  
DISCUSS THE PROGRESS ON EMERGENCY CORE COOLING  
SYSTEM VALVE TEST PLANS OF THE DESIGN  
CERTIFICATION APPLICATION

The U.S. Nuclear Regulatory Commission (NRC) held a Category 1 public teleconference on January 23, 2019, February 13, 2019 and March 6, 2019, to discuss the progress on emergency core cooling system (ECCS) valve test Plans of the NuScale Power, LLC (NuScale) Design Certification Application. Participants included personnel from NuScale and members of the public.

The public meeting notice can be found in the Agencywide Documents Access and Management Systems under Accession No. ML19010A397, ML19042A121 and ML19064A798 respectively. This meeting notice was also posted on the NRC public Web site.

The meeting agenda and list of participants can be found in Enclosures 1 and 2, respectively.

CONTACT: Marieliz Vera, NRO/ DLSE  
301-415-5861

**Summary:**

On January 23, February 13, and March 6, 2019, the NRC staff held public telephone conferences with NuScale to discuss the plan for design demonstration testing of the NuScale emergency core cooling system (ECCS) valves in support of the NuScale design certification application (DCA). During the January 23 conference, NuScale presented slides describing its plan for the ECCS valve design demonstration testing.

During the open portion of the January 23 telephone conference, NuScale discussed the objectives of the ECCS valve design demonstration testing. These objectives are:

- (1) demonstrate main valve functionality at operating temperature and pressure fluid conditions;
- (2) demonstrate inadvertent actuation block (IAB) valve functionality at operating temperature and pressure fluid conditions; and
- (3) demonstrate IAB valve and trip line functionality at operating chemistry fluid conditions (boric acid solutions).

During the closed portion of the January 23 telephone conference, NuScale discussed its intent to accomplish each of the objectives of the ECCS valve design demonstration testing. In presenting the slides, NuScale provided additional information in response to questions from the NRC staff. For example, the main valve and IAB valve to be used for the ECCS valve design demonstration testing will be the same valves included as part of the Proof-of-Concept (POC) testing performed in 2015. The most limiting hydraulic tubing arrangement will be applied in the ECCS valve design demonstration testing with 30 feet length of tubing over an elevation of 15 feet from the modeled 2-inch Reactor Recirculation Valve (RRV) to the trip valve. The IAB valve will be installed close to the main valve such that the temperature of the hydraulic fluid in the IAB valve will be similar to the fluid temperature in the main valve control chamber. NuScale will collect test data by continuously monitoring pressure and temperature in various test locations, as well as main valve position, with data time traces. NuScale stated that the main valve actuation time is not an objective for the ECCS valve design demonstration testing. Unlike the plant operating condition, the test pressure reservoir volume is insufficient to ensure the valve opens with the required actuation time. Confirmation that the main valve actuation time requirements are met will be provided by ASME QME-1 qualification testing that will be completed prior to plant operation. NuScale stated that the valve vendor will perform evaluations of the valve stroke times as part of the follow-up to the previous NRC staff audit of the ECCS valve design. During the testing, NuScale will verify that the IAB valve will initially seal at high differential pressure and hold the pressure in the main valve control chamber, and then open at the proper differential pressure to release the pressure in the main valve control chamber to allow the main valve to open. The ECCS valve design demonstration test report will include justification for application of the 2-inch RRV test results to the 5-inch Reactor Vent Valve (RVV) performance.

Follow-up items from the January 23 telephone conference, on the ECCS valve design demonstration testing plan included temperature control for the hydraulic tubing, initial test pressure and boric acid concentration; test quality activities; and specific test schedule.

During the February 13 telephone conference, NuScale described the application of quality controls for the ECCS valve design demonstration testing. NuScale discussed preliminary considerations for the hydraulic line temperature control, initial test pressure, and boric acid concentration.

For the March 6 telephone conference, NuScale provided the following information:

1. For the IAB Valve Functional Tests, the test requirements will require 28 ft (out of 30 ft) of the ECCS valve trip line tubing length from the IAB valve to the trip valve outlet to have a minimum temperature of 400°F as an initial condition for the test runs. This will be indicated by temperature instruments along the length of the trip line tubing. This test requirement, along with existing initial temperature requirements for test fluid at the main valve, given in the January 23 presentation, will be representative of plant conditions.
2. For the Boric Acid Effects Tests, the high-pressure test runs which actuate the IAB valve to the blocking position (with subsequent pressure reduction until release opening) will have an initial condition of 1850 pounds per square inch gage.
3. Request for Additional Information 9189 (Question 09.03.04-7) addresses the chemistry of the fluid in the trip lines. The trip lines will experience flushing (from the reset supply) during startup to close the ECCS valves, and subsequent flushing through the reset valve is expected to establish other chemistry requirements. The boric acid concentration during the testing will be 1.2 wt percent minimum to envelope plant chemistry conditions (including refueling concentrations). This corresponds to a boron concentration above the design basis refueling concentration listed in NuScale DCA Part 2, and envelopes the reactor coolant boron concentration for power operations shown in Figure 4.3-17, "Boron Letdown Curve for Equilibrium Cycle."
4. The NRC staff may witness ECCS valve testing during the week of June 2, 2019.

During the March 6 telephone conference, the NRC staff stated that NuScale has resolved the follow-up items from the previous discussions regarding the ECCS valve design demonstration testing plan. The staff described its plans to perform an audit of the ECCS valve design demonstration testing to review the test plan and procedures, review the test setup and equipment, monitor the valve testing, and evaluate the test results. NuScale did not identify any concerns with the NRC staff audit plans. By e-mail following the March 6 telephone conference, the staff provided a list of the documents requested to be made available for review as part of the staff audit. The staff is preparing a written audit plan for issuance. During the March 6 telephone conference, NuScale stated that it will determine its preferred method to prepare an update to its DCA regarding boron flushing of the ECCS valve system during refueling outages.

Based on its review of the information provided by NuScale and the telephone conference discussions, the NRC staff considers the NuScale plan for the ECCS valve design demonstration testing to be acceptable.

Docket No. 52-048

Enclosures:

1. Meeting Agenda
2. List of Attendees

cc w/encls.: DC NuScale Power, LLC Listserv

SUBJECT: SUMMARY OF THE JANUARY 23, 2019, FEBRUARY 13, 2019, AND MARCH 6, 2019, CATEGORY 1 PUBLIC TELECONFERENCE WITH NUSCALE POWER, LLC TO DISCUSS THE PROGRESS ON EMERGENCY CORE COOLING SYSTEM VALVE TEST PLANS OF THE DESIGN CERTIFICATION APPLICATION

DATE: March 26, 2019

**DISTRIBUTION:**

PUBLIC

Reading File

MVera, NRO

SGreen, NRO

TLupold, NRO

TScarbrough, NRO

RNolan, NRO

RKaras, NRO

RidsOgcMailCenter

RidsAcrsAcnwMailCenter

**ADAMS Accession No.: ML19085A041**

**\*via e-mail**

**NRC-002**

<b>OFFICE</b>	NRO/DLSE/LB1: PM	NRO/DLSE/LB3: LA	NRO/DNRL/LB1: PM
<b>NAME</b>	MVera	SGreen	MVera
<b>DATE</b>	3/22/2019	03/26/2019	03/26/2019

**OFFICIAL RECORD COPY**

**U.S. NUCLEAR REGULATORY COMMISSION**

**CATEGORY 1 PUBLIC TELECONFERENCE WITH NUSCALE POWER, LLC TO DISCUSS  
THE PROGRESS ON EMERGENCY CORE COOLING SYSTEM VALVE TEST PLANS OF  
THE CERTIFICATION APPLICATION**

**January 23, 2019**

**11:00 a.m. – 12:00 p.m.**

**AGENDA**

<b>Public Meeting</b>	
11:00 - 11:15 p.m.	Welcome and Introductions
11:15 - 11:40 p.m.	Technical discussion
11:40 - 11:50 p.m.	Public – Questions and Comments
11:50 - 12:00 p.m.	Closed portion

**February 13, 2019**

**11:00 a.m. – 12:00 p.m.**

**AGENDA**

<b>Public Meeting</b>	
11:00 - 11:15 p.m.	Welcome and Introductions
11:15 - 11:40 p.m.	Technical discussion
11:40 - 11:50 p.m.	Public – Questions and Comments
11:50 - 12:00 p.m.	Closed portion

**March 6, 2019**

**2:30 p.m. – 3:30 p.m.**

**AGENDA**

<b>Public Meeting</b>	
2:30 - 2:45 p.m.	Welcome and Introductions
2:45 - 3:10 p.m.	Technical discussion
3:10 - 3:20 p.m.	Public – Questions and Comments
3:20 - 3:30 p.m.	Closed portion

**U.S. NUCLEAR REGULATORY COMMISSION**

**CATEGORY 1 PUBLIC TELECONFERENCE WITH NUSCALE POWER, LLC TO DISCUSS  
THE PROGRESS ON EMERGENCY CORE COOLING SYSTEM VALVE TEST PLANS OF  
THE CERTIFICATION APPLICATION**

**LIST OF ATTENDEES**

**January 23, 2019**

<b>NAME</b>	<b>AFFILIATION</b>
Marieliz Vera	U.S. Nuclear regulatory Commission (NRC)
Thomas Scarbrough	NRC
Ryan Nolan	NRC
Paul Prescott	NRC
Rebecca Karas	NRC
Shanlai Lu	NRC
Marty Bryan	NuScale Power, LLC (NuScale)
Greg Myers	NuScale
Dan Lassiter	NuScale
Scott Harris	NuScale
Zack Houghton	NuScale

**February 13, 2019**

<b>NAME</b>	<b>AFFILIATION</b>
Marieliz Vera	U.S. Nuclear regulatory Commission (NRC)
Thomas Scarbrough	NRC
Ryan Nolan	NRC
Paul Prescott	NRC
Rebecca Karas	NRC
Shanlai Lu	NRC
Marty Bryan	NuScale Power, LLC (NuScale)
Greg Myers	NuScale
Dan Lassiter	NuScale
Scott Harris	NuScale
Zack Houghton	NuScale



**March 6, 2019**

<b>NAME</b>	<b>AFFILIATION</b>
Omid Tabatabai	U.S. Nuclear regulatory Commission (NRC)
Thomas Scarbrough	NRC
Shanlai Lu	NRC
Marty Bryan	NuScale Power, LLC (NuScale)
Greg Myers	NuScale
Dan Lassiter	NuScale
Scott Harris	NuScale
Bradyn Wuth	NuScale
Mike Smith	NuScale