

July 29, 2016

MEMORANDUM TO: Mark Tonacci, Chief
Licensing Branch 1
Division of New Reactor Licensing
Office of New Reactors

FROM: Rani Franovich, Project Manager /RA/
Licensing Branch 1
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: SUMMARY OF JUNE 9, 2016, AND JUNE 15, 2016, CLOSED
MEETINGS WITH NUSCALE POWER, LLC (PROJ0769)

On June 9, 2016, and June 15, 2016, the U.S. Nuclear Regulatory Commission (NRC), held all-day closed meetings between representatives of the NRC staff and NuScale Power, LLC (NuScale) in the Commission Hearing Room at the NRC Headquarters. The purpose of these meetings or information sessions was to prepare the NRC staff for the upcoming NuScale Design Certification (DC) application review.

In a June 7, 2016, letter (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16161A721), Mr. Steve Mirsky, Regulatory Affairs Manager, NuScale, requested that the slides used by NuScale during this meeting be protected from public disclosure per the requirements of the *Title 10 Code of Federal Regulations* 10 CFR, Section 810. The NRC staff reviewed the material in accordance with the requirements of 10 CFR 2.390 and agreed to withhold the proprietary version of the slides from public disclosure (ADAMS Accession No. ML16207A427). However, NuScale also submitted a non-proprietary version of the slides, which has been made publicly available (ADAMS Accession No. ML16161A723). An agenda for the information sessions is provided in Enclosure 1.

The information sessions allowed the NRC staff an opportunity to receive information and form a basic foundation prior to engaging in the DC review. In addition to the staff from the Office of New Reactors (NRO), staff from the following NRC offices also attended the information sessions: Office of Nuclear Reactor Regulation, Office of Nuclear Regulatory Research, Office of Nuclear Security and Incident Response, and Office of the General Counsel. Over 160 NRC staff members benefitted from the two information sessions. A list of attendees is provided in Enclosures 2 and 3.

CONTACT: Rani Franovich, NRO/DNRL
(301) 415-7334

M. Tonacci

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During the two information sessions, the NRC staff asked questions related to the NuScale design. Some questions were answered by the presenters; unanswered questions are provided in Enclosure 4, at the request of NuScale staff.

Project No.: PROJ0769

Enclosures:

1. Meeting Agenda
2. June 9, 2016, Meeting Attendees
3. June 15, 2016, Meeting Attendees
4. Integrated List of Questions from the
NRC Attendees for Both Sessions

cc: DC NuScale Power LLC Listserv

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cc: DC NuScale Power LLC Listserv

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NAME	RFranovich	MBrown	GCranston
DATE	07/26/2016	07/28/2016	07/29/2016

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Meeting Agenda

U.S. Nuclear Regulatory Commission
11545 Rockville Pike, Room
Rockville, Maryland 20852

Tuesday, June 9, 2016, and June 15, 2016

08:30 a.m. – 9:00 a.m.	Introductions
9:00 a.m. – 10:15 a.m.	Presentation and Discussion
10:15 a.m. – 10:30 a.m.	Break
10:30 a.m. – 12:00 p.m.	Presentation and Discussion (cont.)
12:00 p.m. – 1:00 p.m.	Lunch
1:00 p.m. – 2:30 p.m.	Presentation and Discussion (cont.)
2:30 p.m. – 2:45 p.m.	Break
2:45 p.m. – 4:00 p.m.	Presentation and Discussion (cont.)
4:00 p.m. – 4:30 p.m.	Summary and Conclusions

List of Attendees

June 9, 2016

Name	Organization
ALLEY, DAVID W.	USNRC
ANDRUKAT, DENNIS W	USNRC
ASHCRAFT, JOSEPH M	USNRC
ASHLEY, CLINTON L	USNRC
AULUCK, RAJENDER	USNRC
AYEGBUSI, ODUNAYO A	USNRC
BARR, JONATHAN A	USNRC
BASU, SUDHAMAY	USNRC
BECKER, DONALD R.	USNRC
BEDI, GURJENDRA S	USNRC
BERGMAN. TOM	NUSCALE POWER, LLC
BETANCOURT, LUIS D	USNRC
CARUSO, MARK A	USNRC
CHIEN, NAN-PIN D.	USNRC
CHOWDHURY, PROSANTA	USNRC
CLARKE, BRENT R	USNRC
CURTIS, DAVID	USNRC
D'AGOSTINO, AMY L.	USNRC
DEMARSHALL, JOSEPH NMN	USNRC
DIAS, ANTONIO F	USNRC
DINH, THINH Q	USNRC
DRZEWIECKI, TIMOTHY J	USNRC
FERGUSON, ASHLEY DANYELL	USNRC
FITZPATRICK, ROBERT G.	USNRC
FOSTER, ROCKY D	USNRC
GARCIA, ISMAEL L	USNRC
GEORGE, ANDREA E	USNRC
GRAN, ZACHARY A.	USNRC
HAIDER, SYED I.	USNRC
HARBUCK, CHARLES C	USNRC
HATHAWAY, ALFRED G	USNRC
HERNANDEZ, RAUL	USNRC
HOANG, DAN V	USNRC
ISTAR, ATA	USNRC
JERVEY, RICHARD A.	USNRC
KARAS, REBECCA L	USNRC
KENDZIA, THOMAS A	USNRC
KENT, LAUREN A	USNRC
LAVERA, RONALD	USNRC
LAW, YIU K	USNRC
LIPSCOMB, GEORGE A.	USNRC
LU, SHANLAI	USNRC
MADNI, IMTIAZ K.	USNRC

MAKAR, GREGORY L	USNRC
MARKLEY, ANTHONY W	USNRC
MAZAIKA, MICHAEL D.	USNRC
MICEWSKI, LAURA H	USNRC
MIRSKY, STEVEN	NUSCALE POWER, LLC
MONNINGER, JOHN D	USNRC
NAKANISHI, TONY T	USNRC
NIE, JINSUO R	USNRC
NING, LAUREN ASHLEY KILLIAN	USNRC
ORR, MARQUIS P.	USNRC
PARK, SUNWOO	USNRC
PATEL, PRAVIN D.	USNRC
PATTERSON, MALCOLM D	USNRC
PIERINGER, PAUL A	USNRC
POPE, STEVE	NUSCALE POWER, LLC
RAY, SHEILA	USNRC
ROGGENBRODT, WILLIAM A	USNRC
SACKO, FANTA	USNRC
SAMADDAR, SUJIT KUMAR	USNRC
SASTRE FUENTE, EDUARDO A.	USNRC
SCARBROUGH, THOMAS G	USNRC
SEGALA, JOHN P	USNRC
TABATABAI-YAZDI, OMID	USNRC
TALBOT, FRANCIS X	USNRC
TANEJA, DINESH	USNRC
THOMAS, AARON M	USNRC
THURSTON, CARL G.	USNRC
TJADER, THEODORE R	USNRC
TRUONG, TUNG H.	USNRC
TSAO, JOHN C	USNRC
UNIKEWICZ, STEVE	NUSCALE POWER, LLC
WAGAGE, HANRY A	USNRC
WANG, GEORGE Z	USNRC
WOLFGANG, ROBERT J.	USNRC
XI, ZUHAN	USNRC
XU, JIM	USNRC
YOUNG, AUSTIN T.	USNRC
ZHANG, JING	USNRC
ZHAO, JACK Y	USNRC
ZIMMERMAN, JACOB I	USNRC

**List of Attendees
June 15, 2016**

Name	Organization
ARORA, SURINDER S	USNRC
BAYSSIE, MEKONEN M	USNRC
BUDZYNSKI, JOHN T.	USNRC
BURJA, ALEXANDRA L	USNRC
CALDWELL, ROBERT K	USNRC
CAMPBELL, SHAWN A	USNRC
CHAKRAVORTY, MANAS K	USNRC
CHEOK, MICHAEL C	USNRC
CHUANG, TZE-JER	USNRC
CLEMENT, RICHARD S.	USNRC
COLLINS, JAY W	USNRC
COSTA, ARLON D	USNRC
COZENS, IAN A	USNRC
CURRAN, GORDON L.	USNRC
DIJAMCO, DAVID CHRISTIAN GULAPA	USNRC
DOWNEY, STEVEN T.	USNRC
FETTER, ALLEN H.	USNRC
FRANOVICH, RANI L	USNRC
GALLETTI, GREG S	USNRC
GHOSH, AMITAVA	USNRC
GIACINTO, JOSEPH F.	USNRC
GOEL, RAJ P	USNRC
GOEL, VIJAY K.	USNRC
GRADY, ANNE-MARIE	USNRC
GRAIZER, VLADIMIR	USNRC
HAMM, MATTHEW E	USNRC
HARRISON, DONALD G	USNRC
HART, MICHELLE L	USNRC
HARVEY, ROBERT B	USNRC
HAYES, MICHELLE W.	USNRC
HEARN, PETER C	USNRC
HEBBAR, SUDHA K	USNRC
HICKEY, JAMES A.	USNRC
HOFFMAN, KEITH M	USNRC
HONCHARIK, JOHN	USNRC
HSU, KAIHWA R	USNRC
HUANG, JASON	USNRC
HUDSON, NATHANAEL H	USNRC
JACKSON, DEBORAH	USNRC

JAIN, BHAGWAT P	USNRC
JONES, STEVEN R	USNRC
KHAN, MARYAM HABIB	USNRC
LE, HIEN M.	USNRC
LE, TUAN D.	USNRC
LEE, PETER S	USNRC
LEE, SAMUEL S	USNRC
LI, CHANG-YANG	USNRC
LI, YUEH-LI C	USNRC
LUPOLD, TIMOTHY	USNRC
MARSHALL, AMANDA M	USNRC
MAYFIELD, MICHAEL E	USNRC
MCMURRAY, NICHOLAS R	USNRC
MIRSKY, STEVEN	NUSCALE POWER, LLC
MITCHELL, MATTHEW A	USNRC
NATIVIDAD, PHILIP	USNRC
NEUHAUSEN, ALISSA P	USNRC
NOLAN, RYAN M	USNRC
O'DRISCOLL, JAMES G.	USNRC
PALMROSE, DONALD E.	USNRC
PATEL, RAJU B	USNRC
PERIN, VANICE A	USNRC
PHAN, HANH K	USNRC
POHIDA, MARIE A	USNRC
POPE, STEVE	NUSCALE POWER, LLC
QUINLAN, KEVIN R.	USNRC
RAINES, JACKIE	NUSCALE POWER, LLC
REICHEL, ERIC G	USNRC
REZAI, ALI	USNRC
SCHAPEROW, JASON H	USNRC
SCULLY, DEREK P	USNRC
SHENG, CHIA-FU	USNRC
STRNISHA, JAMES M	USNRC
STUBBS, ANGELO	USNRC
TABATABAI-YAZDI, OMID	USNRC
TONACCI, MARK E	USNRC
TRAVIS, BOYCE W.	USNRC
VERA, MARIELIZ	USNRC
VETTORI, ROBERT L	USNRC
VOVERIS, JESSICA JANE	USNRC
WANG, WEIJUN	USNRC
WEISMAN, ROBERT M	USNRC
WHITE, JASON D.	USNRC
WILLIAMS, STEPHEN E.	USNRC

WONG, YUKEN	USNRC
WU, CHENG-IH	USNRC
YESHNIK, ANDREW G	USNRC

NuScale Power, LLC, Closed Meeting and Information Sessions
Integrated List of Questions from the U.S. Nuclear Regulatory Commission Attendees
to the NuScale Staff

June 9, 2016, and June 15, 2016

1. How many safety-trains per module? And how many safety-divisions (instrumentation and control) per module?
2. How are the safety-related cables of one power module separated from any other power module?
3. How are these safety-related cables routed from each module to the main control room? Do these cables ever go above grade level? Is there a common cable-spreading room (or similar) or switchgear room or computer room that would contain cables for multiple power modules? Or even multiple divisions of the same power module?
4. Has NuScale Power, LLC (NuScale) considered digital spurious actuations in their fire-induced multiple spurious actuation analysis? Look at the South Texas Project Units 3 and 4 (STP) combined license application Advisory Committee on Reactor Safeguards (ACRS) transcripts and final letter. This area is not currently covered by Nuclear Energy Institute 00-01 nor Regulatory Guide 1.189 but this question is being asked to all new reactor applicants. Focus is on digital equipment cabinets (not fiber optic cables, analog cables, or analog cabinets).
 - a. ML15072A109 – NRC Staff Response to ACRS STP Letter
 - b. ML15039A006 – ACRS Final Letter on STP
 - c. ML15176A532 – SECY-15-0123__Final STP SECY
5. How does NuScale control smoke and hot gases as not to affect any other division or power module?
6. How many fire brigades and how many members per fire brigade will NuScale maintain (per shift, not total)?
7. Is there complete fire suppression coverage (aside from manual suppression extinguishers and hose stations) for the reactor building, control building, and turbine buildings (i.e., are there any fire areas or rooms that do not have a fixed fire suppression system)?
8. Aircraft Impact Assessment – Is Final Safety Analysis Report Section 19.5 crediting any equipment (or support equipment) outside of the Reactor Building?

Enclosure 4

9. Does NuScale credit any post-fire safe shutdown operator manual action? How does NuScale realign inaccessible safe shutdown valves due to fire-induced failures and/or spurious operations?
10. Does NuScale credit any post-fire safe shutdown operator manual action? How does NuScale realign inaccessible safe shutdown valves due to fire-induced failures and/or spurious operations?
11. Are the alternate shutdown panel(s) physically and electrically separated from the main control room via the transfer switch? Are the modules transferred individually or all at once? What are the scenarios requiring the use of alternate shutdown panel(s)?
12. Does the term "AIA-resistance barrier" mean no penetration and/or perforation after a strike?
13. On the first page of the Refueling Section (slide 52), it states the "Module has factory ITAAC [inspection, test, analysis, and acceptance criteria] completed." What is meant by completed?
14. Who will be submitting the associated ITAAC closure notification (ICN) and when will it be submitted? Would NRC verification of the ICN be a prerequisite for the module leaving the factory?
15. What is the equivalent indication in the NUSCALE design to the core exit thermocouples in a pressurized water reactor design?
16. Are the controls and associated indication for the refueling crane powered by a highly reliable system?