

June 30, 2015

Docket: PROJ0769

U.S. Nuclear Regulatory Commission
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SUBJECT: NuScale Power, LLC Submittal of Proposed Scope of Human Factors Engineering Information in Design Certification Application (NRC Project No. 0769).

REFERENCES: 1. Memorandum for Mark Tonacci from Gregory Cranston, "Summary of March 2, 2015, Closed Meeting with NuScale Power, LLC to Discuss Topics Related to Human Factors Engineering and Control Room Staffing (TAC No. RN6110)," May 13, 2015 (ML 15072A347)
2. Memorandum for Michael Mayfield from Greg Cranston, "Summary of April 21, 2015 Public Meeting to Discuss NuScale Design Certification Application Submittal Preparations," May 26, 2015 (ML 15040A361)

On March 2, 2015, NuScale Power, LLC (NuScale) and the NRC participated in a video-conference to discuss NuScale's approach to control room staffing, regulations and other documents as they relate to control room staffing, use of design acceptance criteria (DAC) in NuScale's design certification application (DCA), and other related human factors engineering (HFE) topics. A summary of the video-conference was provided by the NRC in Reference 1.

On April 21, 2015, NuScale met with the NRC in Rockville, MD to discuss NuScale's DCA preparations. Discussions included NuScale's approach to plant and control room staffing from an HFE perspective. This topic had been identified by the NRC as a key issue for resolution to support their review of the DCA. At the meeting NuScale proposed to submit a written scope of HFE information that would be included in the DCA. A summary of the April 21, 2015 meeting was provided by the NRC in Reference 2.

This letter provides NuScale's proposed scope of HFE-related information that will be included in Chapter 18 of the DCA's design control document (DCD), and deliverables that will be submitted at or prior to the time of DCA submittal (see Enclosure 1). In order for NuScale to develop these documents in support of its planned DCA submittal date, NuScale requests that the NRC provide a written response to this proposal within 60 days from the date of this letter.

Consistent with the guidance of NUREG-0711, "Human Factors Engineering Program Review Model," NuScale will submit an overall HFE program management plan and an implementation plan (IP) for each of the following elements of the HFE program (note that some of these IPs have already been submitted for NRC review):

- Operating Experience Review
- Functional Requirements Analysis and Function Allocation
- Task Analysis
- Staffing and Qualifications

- Treatment of Important Human Actions
- Human-System Interface Design
- Human Factors Verification and Validation
- Design Implementation
- Human Performance Monitoring

IPs are submitted prior to DCA submittal to allow the NRC staff to review the methodology of the HFE element analysis in accordance with NUREG-0711 Section 1.2.2, Review Elements.

In addition to submitting an IP for Human Factors Verification and Validation (V&V) element, NuScale will also submit a letter requesting the use of DAC and the associated justification in accordance with SECY-92-053, "Use of Design Acceptance Criteria During 10 CFR Part 52 Design Certification Reviews." The IP for the Design Implementation element will not include any DAC or inspections, tests, analyses, and acceptance criteria (ITAAC), in accordance with the guidance of DRAFT NEI 15-02, "Industry Guideline for the Development of Tier 1 and ITAAC Under 10 CFR Part 52." No IPs will be submitted for the Procedures Development and the Training Program Development elements as they are operational programs, and are reviewed by the NRC as part of Chapter 13.

In addition to the IPs discussed above, NuScale will submit Results Summary Reports (RSRs) for the following HFE elements at the time of DCA submittal:

- Operating Experience Review
- Functional Requirements Analysis and Function Allocation
- Task Analysis
- Staffing and Qualifications
- Treatment of Important Human Actions

These RSRs will include activities performed by licensed control room operators, and will not include maintenance or refueling activities, activities completed by craft/technical personnel (i.e., mechanical, electrical, or I&C maintenance; health physics; chemistry; engineering; or information technology), or activities associated with the TSC, EOF, OSC, or any other emergency response facilities unless they are determined to impact licensed operator workload. If licensed operator workload is impacted then the area of concern will be analyzed to a degree sufficient to quantify the impact to licensed operator workload and develop any human-system interface (HSI) required to address the specific task. Evaluation results for these HFE elements for the licensed control room operators will ensure that the DCD Chapter 18 portion of the application is complete and technically sufficient for the staff to conduct the full DCA review and provide assurance that the control room staffing will be accommodated by the control building design with sufficient margin for additional staffing.

No RSR will be submitted for the HSI Design element at the time of DCA submittal. As acknowledged by the NRC, the HSI design is not expected to be complete at the time of DCA, and the design must be essentially complete in order to complete the HSI library development to the degree that would support an RSR. As discussed above, NuScale will submit an IP for the HSI Design element and the IP will meet the guidance provided in NUREG-0711.

Section 8.3 of NUREG-0711 allows submittal of either an IP or a completed RSR for the HSI Design element. If an IP is submitted, it should include a completed HSI Style Guide and a description of the methodology for designing the HSIs. At the time of the DCA submittal, NuScale will have completed a significant scope of HSI development work (although not the complete scope), including preparation of the HSI Style Guide, which will be available for NRC's review and audit. At the time of DCA submittal, NuScale will submit a basic HSI Design Technical Report which will include, as a minimum, the control room layout, description of basic operation video display units, level of information displays, and navigation techniques from one level to the next. An ITAAC will be required for the HSI Design

element in accordance with the DRAFT NEI 15-02 guidance; however, no DAC will be submitted in accordance with the same guidance.

Enclosure 1 contains an itemized list of proposed HFE-related submittals by NuScale to support DCD Chapter 18. NuScale will continue to engage with the NRC in the near term to address the issues that are addressed in this letter.

Please feel free to contact me at 301-770-0472 or at smirsky@nuscalepower.com if you have any questions.

Sincerely,

A handwritten signature in black ink that reads "Steve Mirsky". The signature is written in a cursive style with a large, stylized "S" and "M".

Steve Mirsky
Licensing Manager

Distribution: Greg Cranston, NRC, TWFN-6E7
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Enclosure 1: Itemized List of Proposed NuScale HFE-Related Submittals

Enclosure 1: Itemized List of Proposed NuScale HFE-Related Submittals

HFE Program Management Plan

Implementation Plans for HFE Elements:

- Operating Experience Review
- Functional Requirements Analysis and Function Allocation
- Task Analysis
- Staffing and Qualifications
- Treatment of Important Human Actions
- Human-System Interface Design
- Human Factors Verification and Validation
- Design Implementation
- Human Performance Monitoring

Results Summary Reports for HFE Elements:

- Operating Experience Review
- Functional Requirements Analysis and Function Allocation
- Task Analysis
- Staffing and Qualifications
- Treatment of Important Human Actions

Technical Report for HFE Element:

- Human-System Interface Design