

A decorative graphic on the left side of the page consists of three overlapping circles. The top circle shows a snow-capped mountain peak. The middle circle shows a city skyline at night with lights reflecting on water. The bottom circle shows a city skyline at night with lights reflecting on water.

NuScale US460 Plant Standard Design Approval Application

Chapter Thirteen **Conduct of Operations**

Final Safety Analysis Report

Revision 2

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CHAPTER 13 CONDUCT OF OPERATIONS

13.1 Organizational Structure

13.1.1 Management and Technical Support Organization

COL Item 13.1-1: An applicant that references the NuScale Power Plant US460 standard design will provide a description of the corporate or home office management and technical support organization, including a description of the qualification requirements for (1) each identified position or class of positions that provide technical support to the on-site operating organization, and (2) individuals holding management and supervisory positions in organizational units providing technical support to the on-site operating organization.

13.1.2 Operating Organization

COL Item 13.1-2: An applicant that references the NuScale Power Plant US460 standard design will provide a description of the proposed structure, functions, and responsibilities of the on-site organization necessary to operate and maintain the plant. The proposed operating staff shall be consistent with the minimum licensed operator staffing requirements in Section 18.5.

13.1.3 Qualifications of Nuclear Plant Personnel

COL Item 13.1-3: An applicant that references the NuScale Power Plant US460 standard design will provide a description of the qualification requirements for each management, operating, technical, and maintenance position described in the operating organization.

13.2 Training

COL Item 13.2-1: An applicant that references the NuScale Power Plant US460 standard design will provide a description and schedule of the Initial Training and Qualification as well as Requalification Programs for reactor operators and senior reactor operators.

COL Item 13.2-2: An applicant that references the NuScale Power Plant US460 standard design will provide a description and schedule of the Non-Licensed Plant Staff Training Programs including initial training, periodic retraining, and qualification requirements.

13.3 Emergency Planning

The NuScale Power Plant design includes design features, facilities, and equipment that are usable for up to six NuScale Power Modules to support Emergency Response functions.

A Technical Support Center (TSC) is provided, compliant with the design requirements of NUREG-0696, Functional Criteria for Emergency Response Facilities. The TSC is located in the Seismic Category II portion of the Control Building. A description of the Control Building is provided in Section 1.2.2, General Arrangement of Major Structures and Equipment. When using the shortest designed direct route, the walking time between the entrance of the control room and the entrance of the TSC does not exceed two minutes. The TSC can accommodate staffing levels of at least 25 persons, including 20 licensee and 5 NRC personnel at 75 square feet per person. The TSC includes a technical evaluation room and additional space for storage, offices, and conference rooms. The design ensures that personnel are protected from radiological hazards, including direct radiation and airborne radioactivity from in-plant sources under accident conditions (i.e., maximum of 5 rem total effective dose equivalent for the duration of the accident). In the event of a loss of ventilation, or if the TSC becomes otherwise uninhabitable, personnel are evacuated and the TSC functions are transferred to a location designated by the Emergency Plan. Heating, ventilation and air conditioning for the TSC is provided by the control room area ventilation system and is discussed further in Section 9.4.1, Control Room Area Ventilation System.

The TSC is equipped with voice communications systems that provide communications between the TSC and plant, local, and off-site Emergency Response facilities, the NRC, and local and state operations centers. Section 9.5.2, Communication System, provides additional information regarding communications equipment and power sources.

The TSC includes display only engineering workstations as described in Section 7.2.13, Displays and Monitoring. The module control system and plant control system provide the same sets of data to the TSC engineering workstations and the main control room. Table 7.1-7 lists post-accident monitoring variables available in both the TSC and the main control room.

The TSC engineering workstations and communications equipment are supplied with power from the normal DC power system (EDNS). As discussed in Section 8.3.2, the EDNS includes battery backup power sources and the EDNS may also be provided backup power from the backup power supply system.

An Emergency Response data system compliant with Section VI of 10 CFR 50 Appendix E provides a direct near-real-time electronic data link of selected parameters between the on-site computer system and the NRC Operations Center in the event of an emergency.

Radiation Protection support facilities, including personnel decontamination facilities, are described in Section 12.1.2, Design Considerations.

COL Item 13.3-1: An applicant that references the NuScale Power Plant US460 standard design will provide a description of the Emergency Response facilities for management of overall licensee Emergency Response. The facility will meet the requirements of 10 CFR 52.79.

COL Item 13.3-2: An applicant that references the NuScale Power Plant US460 standard design will provide a comprehensive Emergency Plan in accordance with 10 CFR 50 and 10 CFR 52.79(a)(21).

13.4 Operational Programs

COL Item 13.4-1: An applicant that references the NuScale Power Plant US460 standard design will provide site-specific information, including implementation milestones, for Operational Programs:

- Inservice Inspection Programs (Section 5.2, Section 5.4, and Section 6.6)
- Inservice Testing Programs (Section 3.9 and Section 5.2)
- Environmental Qualification Program (Section 3.11)
- Preservice Inspection Program (Section 5.2 and Section 5.4)
- Preservice Testing Program (Section 3.9.6 and Section 5.2)
- Containment Leakage Rate Testing Program (Section 6.2)
- Fire Protection Program (Section 9.5.1)
- Process and Effluent Monitoring and Sampling Program (Section 11.5)
- Radiation Protection Program (Section 12.5)
- Non-Licensed Plant Staff Training Program (Section 13.2)
- Reactor Operator Training Program (Section 13.2)
- Reactor Operator Requalification Program (Section 13.2)
- Emergency Planning (Section 13.3)
- Process Control Program (Section 11.4)
- Security (Section 13.6)
- Quality Assurance Program (Section 17.5)
- Maintenance Rule (Section 17.6)
- Initial Test Program (Section 14.2)

13.5 Plant Procedures

Administrative and operating procedures are utilized by the operating organization to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner.

13.5.1 Administrative Procedures

COL Item 13.5-1: An applicant that references the NuScale Power Plant US460 standard design will describe the site-specific procedures that provide administrative control for activities that are important for the safe operation of the facility consistent with the guidance provided in Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 3.

COL Item 13.5-2: An applicant that references the NuScale Power Plant US460 standard design will provide a plan for the development, implementation, and control of administrative procedures, including preliminary schedules for preparation and target dates for completion. Additionally, the applicant will identify the group within the operating organization responsible for maintaining these procedures.

13.5.2 Operating and Maintenance Procedures

13.5.2.1 Operating and Emergency Operating Procedures

COL Item 13.5-3: An applicant that references the NuScale Power Plant US460 standard design will describe the process to manage the development, review and approval of the site-specific procedures that operators use in the main control room and locally in the plant, including normal operating procedures, abnormal operating procedures, and emergency operating procedures. The applicant will describe the classification system for these procedures, and the general format and content of the different classifications.

COL Item 13.5-4: An applicant that references the NuScale Power Plant US460 standard design will provide a plan for the development, implementation, and control of operating procedures, including preliminary schedules for preparation and target dates for completion. Additionally, the applicant will identify the group within the operating organization responsible for maintaining these procedures.

COL Item 13.5-5: An applicant that references the NuScale Power Plant US460 standard design will provide a plan for the development, implementation, and control of emergency operating procedures, including preliminary schedules for preparation and target dates for completion.

Additionally, the applicant will identify the group within the operating organization responsible for maintaining these procedures.

13.5.2.2 Maintenance and Other Operating Procedures

COL Item 13.5-6: An applicant that references the NuScale Power Plant US460 standard design will describe the site-specific maintenance and other operating procedures, including how these procedures are classified, and the general format and content of the different classifications. The categories of procedures listed below will be included:

- plant radiation protection procedures
- emergency preparedness procedures
- calibration and test procedures
- chemical-radiochemical control procedures
- radioactive waste management procedures
- maintenance and modification procedures
- material control procedures
- plant security procedures

COL Item 13.5-7: An applicant that references the NuScale Power Plant US460 standard design will provide a plan for the development, implementation, and control of maintenance and other operating procedures, including preliminary schedules for preparation and target dates for completion. Additionally, the applicant will identify what group or groups within the operating organization have the responsibility for maintaining and following these procedures.

13.6 Security

13.6.1 Physical Security

The NuScale Power Plant physical security design provides the capabilities to detect, assess, impede, and delay threats up to and including the design basis threat, and to provide defense-in-depth through the integration of systems, technologies, and equipment. The design of physical security systems within the nuclear island and structures is described in the technical report TR-118318, "NuScale Design of Physical Security Systems," (Reference 13.6-1), which is incorporated by reference to this Final Safety Analysis Report.

COL Item 13.6-1: An applicant that references the NuScale Power Plant US460 standard design will provide the following:

- Security Plans (Physical Security, Security Training and Qualification, and Safeguards Contingency Plans)
- proposed site security provisions to be implemented during construction and as modules are completed and become operational
- elements of the physical security system not located within the nuclear island and structures

COL Item 13.6-2: An applicant that references the NuScale Power Plant US460 standard design will be responsible for the requirements described in Table 5-1 of TR-118318, "NuScale Design of Physical Security Systems" (Reference 13.6-1).

The central alarm station provides

- continuous communications with on-site and off-site resources via two-way voice communication.
- two-way voice communication between local law enforcement authorities and the site.
- a system for continuous communication with the control room.

COL Item 13.6-3: An applicant that references the NuScale Power Plant US460 standard design will provide a secondary alarm station that is equal and redundant to the central alarm station.

Independent power sources for alarm annunciation equipment and non-portable communication equipment are provided. Reference 13.6-1 provides additional information on communications systems associated with physical security.

The methodology for Inspections, Tests, Analyses, and Acceptance Criteria is described in Section 14.3. The applicant addresses site-specific Inspections, Tests, Analyses, and Acceptance Criteria for physical security structures, systems, and components.

13.6.2 Access Authorization - Operational Program

COL Item 13.6-4: An applicant that references the NuScale Power Plant US460 standard design will provide a description of the Access Authorization Program.

13.6.3 Cyber Security Plan

COL Item 13.6-5: An applicant that references the NuScale Power Plant US460 standard design will provide a Cyber Security Plan.

13.6.4 References

- 13.6-1 NuScale Power, LLC, "NuScale Design of Physical Security Systems," TR-118318, Revision 1.

13.7 Fitness for Duty

This section addresses an operational program that is the responsibility of an applicant and is not applicable to new plant designs.