NuScale Power™

LO-1117-57037

November 13, 2017

Docket No. 52-048

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Submittal of Changes to Final Safety Analysis Report, Tier 1 Table 5.0-1 and Tier 2 Tables 2.0-1 and 15.0-12

REFERENCES: 1. NuScale Topical Report, "Accident Source Term Methodology", TR-0915-17565, Revision 2, dated September 11, 2017 (ML17254B067)

2. Letter from NuScale Power LLC, to Nuclear Regulatory Commission, "NuScale Power, LLC Submittal of the NuScale Standard Plant Design Certification Application," dated December 31, 2016 (ML17013A229)

On September 11, 2017 NuScale submitted Revision 2 of the "Accident Source Term Methodology" Topical Report (Reference 1), which contained modifications of NuScale's offsite atmospheric dispersion methodology. These modifications have affected the content currently contained in the FSAR (Reference 2) associated with offsite atmospheric dispersion values and radiological dose results.

The Enclosure to this letter provides a mark-up of the FSAR pages incorporating revisions to FSAR Tier 1 Table 5.0-1 and Tier 2 Tables 2.0-1 and 15.0-12, in redline/strikeout format. NuScale will include these changes as part of a future revision to the NuScale Design Certification Application.

This letter makes no regulatory commitments or revisions to any existing regulatory commitments.

Please feel free to contact Darrell Gardner at 980-349-4829 or at dgardner@nuscalepower.com if you have any questions.

Sincerely,

Jennie Wike
Manager, Licensing
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Enclosure: Changes to NuScale Final Safety Analysis Report, Tier 1 Table 5.0-1 and Tier 2 Tables 2.0-1 and 15.0-12

Enclosure:

Changes to NuScale Final Safety Analysis Report, Tier 1 Table 5.0-1 and Tier 2 Tables 2.0-1 and 15.0-12

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RAI 03.08.05-1

Table 5.0-1: Site Design Parameters

Site Characteristic/Parameter	NuScale Design Parameter
Nearby Industrial, Transportation, and Military Facilities	
External hazards on plant structures, systems, and components (SSC) (e.g., explosions, fires, release of toxic chemicals and flammable clouds, pressure effects) on plant SSC	No external hazards
Aircraft hazards on plant SSC	No aircraft hazards
Meteorology	
Maximum precipitation rate	19.4 in. per hour 6.3 in. for a 5-minute period
Normal roof snow load	50 psf
Extreme roof snow load	75 psf
100-year return period 3-second wind gust speed	145 mph (Exposure Category C) with an importance factor of 1.15 for Reactor Building, Control Building, and Radioactive Waste Building
Design Basis Tornado • maximum horizontal wind speed • maximum translational speed • maximum rotational speed • maximum radius of rotational speed • maximum pressure differential • maximum rate of pressure drop	 230 mph 46 mph 184 mph 150 ft 1.2 psi 0.5 psi/sec
Tornado missile spectra	Table 2 of Regulatory Guide 1.76, Revision 1, Region 1.
Maximum wind speed design basis hurricane	290 mph
Hurricane missile spectra	Tables 1 and 2 of Regulatory Guide1.221, Revision 0.
Summer outdoor design dry bulb temperature	115°F
Winter outdoor design dry-bulb temperature	-40°F
Summer outdoor wet bulb temperature coincident non-coincident	 80°F 81°F
Accident release χ/Q values at security owner controlled area fence 0-2 hr 2-8 hr 8-24 hr 24-96 hr 96-720 hr	 ~~5.72~~6.22E-04 s/m^3 ~~4.85~~5.27E-04 s/m^3 ~~2.14~~2.41E-04 s/m^3 ~~2.15~~2.51E-04 s/m^3 ~~1.95~~2.46E-04 s/m^3
Accident release χ/Q values at main control room/ technical support center door and heating ventilation and air conditioning intake (approximately 112 feet from source) 0-2 hr 2-8 hr 8-24 hr 1-4 day 4-30 day	Door / Heating Ventilation and Air Conditioning Intake 6.50E-03 s/m^3 / 6.50E-03 s/m^3 5.34E-03 s/m^3 / 5.34E-03 s/m^3 2.32E-03 s/m^3 / 2.32E-03 s/m^3 2.37E-03 s/m^3 / 2.37E-03 s/m^3 2.14E-03 s/m^3 / 2.14E-03 s/m^3
Hydrologic Engineering	
Maximum flood elevation Probable maximum flood and coincident wind wave and other effects on maximum flood level	 1 foot below the baseline plant elevation
Maximum elevation of groundwater	2 feet below the baseline plant elevation

RAI 03.08.05-1

Table 2.0-1: Site Design Parameters

Site Characteristic / Parameter	NuScale Design Parameter
Geography and Demography (Section 2.1)	
Minimum exclusion area boundary	Security owner controlled area fence
Minimum outer boundary of low population zone	Security owner controlled area fence
Nearby Industrial, Transportation, and Military Facilities (Section 2.2)	
External hazards on plant systems, structures, and components (SSC) (e.g., explosions, fires, release of toxic chemicals and flammable clouds, pressure effects) on plant SSC	No external hazards
Aircraft hazards on plant SSC	No design basis aircraft hazards
Meteorology (Section 2.3)	
Maximum precipitation rate	19.4 inches per hour 6.3 inches for a 5 minute period
Normal roof snow load	50 psf
Extreme roof snow load	75 psf
100-year return period 3-second wind gust speed	145 mph (exposure Category C) with an importance factor of 1.15 for Reactor Building, Control Building and Radioactive Waste Building
Design basis tornado maximum horizontal wind speed maximum translational speed maximum rotational speed maximum radius of rotational speed maximum pressure differential maximum rate of pressure drop	 230 mph 46 mph 184 mph 150 ft 1.2 psi 0.5 psi/sec
Tornado missile spectra	Table 2 of Regulatory Guide 1.76, Revision 1, Region 1
Maximum wind speed design basis hurricane	290 mph
Hurricane missile spectra	Tables 1 and 2 of Regulatory Guide 1.221, Revision 0
Summer outdoor design dry bulb temperature	115°F
Winter outdoor design dry-bulb temperature	-40°F
Summer outdoor wet bulb temperature coincident non-coincident	 80°F 81°F
Accident airborne effluent release point characteristics for offsite receptors release height adjacent building height adjacent building cross-sectional area	 ground level (0 meters) negligible negligible (0.1 square meters)
Accident release χ/Q values at security owner controlled area fence 0-2 hr 2-8 hr 8-24 hr 24-96 hr 96-720 hr	 ~~5.72~~6.22E-04 s/m^3 ~~4.85~~5.27E-04 s/m^3 ~~2.14~~2.41E-04 s/m^3 ~~2.15~~2.51E-04 s/m^3 ~~1.95~~2.46E-04 s/m^3
Accident release χ/Q values at main control room/technical support center door and HVAC intake (approximately 112 feet from source) 0-2 hr 2-8 hr	Door 6.50E-03 s/m^3 5.34E-03 s/m^3	HVAC Intake 6.50E-03 s/m^3 5.34E-03 s/m^3

RAI 02.03.04-1, RAI 15.00.03-1, RAI 15.00.03-5, RAI 15.00.03-8

Table 15.0-12: Radiological Dose Consequences for Design Basis Analyses

Event	Location	Acceptance Criteria (rem TEDE)	Dose (rem TEDE)
Failure of Small Lines Carrying Primary Coolant Outside Containment	EAB	6.3	0.1~~0~~1
	LPZ	6.3	~~0.17~~0.20
	CR	5.0	~~0.32~~0.44
Steam Generator Tube Failure (pre-incident iodine spike)	EAB	25.0	~~0.36~~0.43
	LPZ	25.0	~~0.36~~0.44
	CR	5.0	~~0.65~~1.11
Steam Generator Tube Failure (coincident iodine spike)	EAB	2.5	≤0.0~~5~~1
	LPZ	2.5	≤0.0~~5~~1
	CR	5.0	≤0.0~~2~~1
Main Steam Line Break (pre-incident iodine spike)	EAB	25.0	<0.01
	LPZ	25.0	0.0~~2~~3
	CR	5.0	0.0~~5~~6
Main Steam Line Break (coincident iodine spike)	EAB	2.5	<0.01
	LPZ	2.5	<0.01
	CR	5.0	<0.01
Fuel Handling Accident	EAB	6.3	0.55~~0.42~~
	LPZ	6.3	0.55~~0.42~~
	CR	5.0	0.89~~0.71~~
~~Maximum Hypothetical Accidents~~Design Basis Source Term (significant core damage)	EAB	25.0	~~0.50~~0.22
	LPZ	25.0	~~1.44~~0.99
	CR	5.0	~~2.29~~1.43