

## Comment Response Matrix

### Chapter 11

<b>Comment #</b> <i>(Affiliation: NuScale Power, LLC)</i>	<b>DSRS Section</b>	<b>Paragraph, Item, or Page</b>	<b>Comment / Basis</b>	<b>Commenter Recommendation</b>	<b>NRC Staff Technical Resolution</b>
462	Chapter 11, General	General	There are multiple terms used interchangeable throughout that may cloud the interpretation of the chapters: "Radiation monitoring instrumentation" "Radiation monitoring systems" "Radiation monitoring equipment" "The radiation monitoring system" Our radiation monitors are not systemized as the term "radiation monitoring system" may suggest. Our radiation detectors that perform effluent monitoring and/or control functions are handled as an instrument in the applicable system it is monitoring or controlling. Thus, there isn't a radiation monitoring "system" performing many of the functions that the chapters suggest.	NuScale recommends removing the term "system" throughout.	The staff agrees with this comment. The term "system" has been removed as appropriate throughout the DSRs and in most cases was replaced with "instrumentation."

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463	11.2	DSRS Ch. 11.2, 11.2 Page 15, paragraph no. 6; Page 23, paragraph no. 7	The SRP says: For unmitigated releases of radioactive materials, the acceptance criterion of RG 1.143 is <u>1 mSv (100 mrem) of radioactive materials, for members of the public.</u> But 10CFR20 uses: Site boundary means that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee assumed to be located <u>at or beyond the restricted area or in unrestricted areas</u> (whichever is more limiting). But, the RG actually says: The radiological release criteria <u>(500 millirem at the unprotected area boundary and 5 rem to facility personnel within the protected boundary)</u> was selected to be consistent with the criteria of 10 CFR Part 20, "Standards for Protection Against Radiation. But 10CFR20 defines: <u>Restricted area means an area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to</u>	NuScale recommends the NRC provides clarification that: In classifying radwaste containing structures and systems within them, an unmitigated release calculation is used in accordance with RG 1.143 to determine the dose to a maximum exposed individual (MEI) at the site boundary and a worker inside the restricted area. This is for classification purposes only; 10CFR20 dose limits apply to mitigated releases.	RG 1.143 is in the process of being revised to revision 3 and will include the dose correction. In the interim, Staff added the following information from SRP Nureg-0800, 11.2, Technical Rational, item number 6. "For the purpose of this DSRS, the dose limit cited in Section 5 of RG 1.143, addressing unmitigated releases of radioactive materials, is revised to be consistent with that of 10 CFR Part 20.1301. The annual dose limit of Part 20.1301 is 100 mrem for members of the public located in unrestricted areas." Addition was added on Pages 16 & 24.

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			<u>radiation and radioactive materials.</u> The RG and DSRS should use terms defined in regulations and consistent limits. This section introduces the terms AOO and postulated accident conditions in relation to Radwaste SSC without specifics for AOO or reference to Ch. 15 for accidents.		
464	11.3	III. Review Procedures; #11.C	This section lists three reference Reg Guides: 1.11, 1.143 and 4.21. RG 1.11 pertains to Instrument Lines Penetrating Primary Containment and does appear to be the correct reference. The correct / intended Reg Guide reference is not immediately apparent.	NuScale recommends the NRC correct the reference to Reg Guide 1.11.	Similar to current SRPs, the reference to RG 1.11 will remain in this DSRS. While the review considers information describing design features that will minimize, to the extent practicable, contamination of the facility and environment; facilitate eventual decommissioning; and minimize, to the extent practicable, the generation of radioactive waste in accordance with the requirements of 10 CFR 20.1406 and Regulatory Guide 1.143 for gaseous wastes produced during normal operation and anticipated operational occurrences, the review may also consider the information contained in the DC application, the update in the SAR, or the COL application, to

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					the extent not addressed in a referenced certified design.
465	11.3	DSRS Ch. 11.3, 11.3.1 Page 1, paragraph 1, line 1	Integral pressurized water reactor is the incorrect term for the NuScale SMR.	Change from "integral pressurized water reactor (iPWR), to: NuScale SMR.	The NRC staff agrees with the suggestion and has made the change.
466	11.3	DSRS Ch. 11.3, 11.3.1 Page 2, paragraph 1, line 3	There are no need for PFDs.	NuScale recommends the deletion of: "and process flow diagrams"	The NRC staff agrees with the suggestion and has made the change by deleting "and process flow diagrams."
467	11.3	DSRS Ch. 11.3, 11.3.1 Page 5, paragraph 11	There is no interface of the GWMS with demineralized water.	NuScale recommends the deletion of the entire paragraph.	The paragraph will remain in the DSRS to ensure the staff performs the evaluation to identify and review any systems found with possible interface with demineralized water system when submission is made. This is based on past technical reviews of this nature.
468	11.5	I. Areas of Review; Review Interfaces; #15 Table 1; Item 5	The sentence that includes the list of ventilation systems refers to the "reactor service building ventilation system". The NuScale design does not include such a system/building.	NuScale recommends replacement of "reactor service building ventilation system" with "reactor building ventilation system."	The NRC staff agrees with the suggestion and has made the terminology consistent.

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469	11.5	Table 1; Item 12	The column for In Effluent Monitor Provisions, the designation appears to be incomplete.	NuScale recommends replacement of "(N "with "(NG)".	The NRC staff agrees with the suggestion and has made the change.
470	11.5	Table 2; Item 16	The NuScale design does not include a Containment Heat Removal System from which samples can be taken.	NuScale recommends replacement of "Containment Heat Removal" with "Reactor Pool".	The NRC staff agrees with the suggestion and has made the terminology consistent.
471	11.5	<b>General comment, 1st sentence of 1st paragraph in Areas of Review:</b> The process and effluent radiological monitoring instrumentation and sampling systems (PERMISS) of an integrated pressurized water reactor (iPWR) are used to monitor	Radioactive waste management systems are mentioned in the scope. But Table 1 and Table 2 listings of process and effluent streams to be monitored and/or sampled also encompass other plant systems beyond the radwaste systems. AP1000 made Section 11.5 the radiation monitoring system (RMS), with the functions to provide plant effluent monitoring, process fluid monitoring, airborne monitoring, and continuous indication of the radiation environment in plant areas where such information is needed. AP1000 also divided their RMS into two subsystems: area radiation monitoring, and process, airborne, and effluent	NuScale recommends replacement of "from the liquid waste management system (LWMS), gaseous waste management system (GWMS), and solid waste management system (SWMS)" in the first sentence with from "various plant auxiliary systems".	The NRC staff agrees and has clarified the text as requested by the commenter.

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		liquid and gaseous process streams and effluents from the liquid waste management system (LWMS), gaseous waste management system (GWMS), and solid waste management system (SWMS)	radiological monitoring. NuScale RMS design only addresses area radiation monitoring.		
472	11.5	<b>Review Interface 12:</b> The following DSRS sections were referenced but currently do not exist for NuScale design: 9.3.3, 9.4.4. What	The following DSRS sections were referenced but currently do not exist for NuScale design: 9.3.3, 9.4.4, 10.4.12. However, NuScale DSRS Scope and Safety Matrix document stated that sections 9.3.3 and 9.4.4 will use SRP. What system will be DSRS Section 10.4.12? There is no SRP Section 10.4.12.	NuScale recommends correction of the discrepancies on the use of DSRS vs SRP in the noted sections.	The NRC staff agrees with the recommendation and has clarified the text.

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		system is Section 10.4.12?			
473	11.5	<b>Review Interface 13:</b> Reference to BTP 5-1.	The way the first sentence is currently written seems to imply that there will be DSRS BTP 5-1. However, NuScale DSRS Scope and Safety-Matrix states that the current SRP BTP 5-1 will be used.	NuScale recommends clarification is added that SRP BTP 5-1 will be used instead of developing new DSRS section. This is consistent with what stated in the NuScale DSRS Scope and Safety-Matrix.	The NRC staff agrees with the suggestion and has clarified the text.
474	11.5	<b>Review Interface 15:</b> reference to DSRS Section 9.4.	Reference to DSRS Section 9.4 is not applicable. Per NuScale DSRS Scope and Safety Matrix, SRP Section 9.4 will be used instead of DSRS.	NuScale recommends the NRC change "DSRS Section 9.4" to "SRP Section 9.4"	The NRC staff agrees with the suggestion and has clarified the text.
475	11.5	<b>Review Interface 15:</b> reference to DSRS for review of design features of plant and building	DSRS or SRP Section 6 is not applicable to plant and building ventilation system or the radwaste management and monitoring systems.	NuScale recommends deletion of reference to DSRS Section 6 for this particular review interface.	The NRC staff agrees with the suggestion and has clarified the text.

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		ventilation systems and interfaces with radwaste management and monitoring systems.			
476	11.5	<b>Review Interface 16:</b> reference to DSRS Section 9.5.1	Per NuScale DSRS Scope and Safety Matrix, SRP Section 9.5.1 will be used instead of DSRS.	NuScale recommends change of "DSRS Section 9.5.1" to "SRP Section 9.5.1". DSRS Section 11.4 is still applicable.	The NRC staff agrees with the suggestion and has clarified the text.
477	11.5	<b>Review Interface 17:</b> reference to DSRS Section 9.5.1	Per NuScale DSRS Scope and Safety Matrix, SRP Sections 12.1 will be used for ALARA requirements.	NuScale recommends change of "DSRS Section 12" to "SRP Section 12.1".	The NRC staff agrees with the suggestion and has clarified the text.
478	11.5	<b>Review Interface 19:</b> reference to DSRS Section 13.4 and 13.5.2	Per NuScale DSRS Scope and Safety Matrix, SRP Sections 13.4 and 13.5.2 will be used instead of developing new DSRS sections.	NuScale recommends change of "DSRS Section 13.4" to "SRP Section 13.4 and Section 13.5.2".	The NRC staff agrees with the suggestion and has clarified the text.



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479	11.5	<b>Review Interface 22:</b> reference to DSRS Section 16.3.4	Currently there is no DSRS Section 16.3.4. DSRS Section 16.0 may be more applicable as generic referenced section.	NuScale recommends change of "DSRS Section 16.3.4" to "DSRS Section 16.0".	The NRC staff agrees with the suggestion and has clarified the text.
480	11.5	<b>Review Interface 24:</b> reference to radioactive waste monitoring system and DSRS Section 13.4	NuScale design does not have radioactive waste monitoring system; the equivalent system is the radiation monitoring system (RMS). However, it should be noted that the RMS will only provide area radiation monitoring and not process or effluent radiation monitoring. Per NuScale DSRS Scope and Safety Matrix, SRP Sections 13.4 will be used instead of developing new DSRS section.	NuScale recommends change of "Radioactive Waste Monitoring System (RWMS) systems" to "radiation monitoring equipment" and change "DSRS Section 13.4" to "SRP Section 13.4"	The NRC staff agrees with the suggestion and has clarified the text.
481	11.5	<b>Acceptance Criteria 8:</b> Reference to RWMS Evaluation Findings 5: Reference to RWMS	NuScale design does not have specific radioactive waste monitoring system. The GDC 2 requirement should be applied to housing of PERMISS and their components.	NuScale recommends change of "RWMS" to "PERMISS".	The NRC staff agrees with the suggestion and has clarified the text.

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482	11.5	<b>Review Procedure 10:</b> Reference to MCES and TGSS, and BTP 5-1	The terms to the abbreviations MCES and TGSS have not been given previously. Need to provide clarification that SRP (not DSRS) BTP 5-1 will be used.	NuScale recommends defining MCES and TGSS; NuScale recommends adding "SRP" in front of "Branch Technical Position (BTP) 5-1"	The NRC staff agrees with the suggestion and has clarified the text.
483	11.5	<b>Review Procedure 12.B:</b> Reference to DSRS Section 9.2 and 9.4	Per NuScale DSRS Scope and Safety Matrix, SRP Sections 9.2 and 9.4 will be used instead of developing new DSRS sections.	NuScale recommends removal of Sections 9.2 and 9.4 from DSRS and revised to SRP Sections 9.2 and 9.4	The NRC staff agrees with the suggestion and has clarified the text.
484	11.5	Table 1	Some of the process system names should be made consistent with NuScale systems. Remove systems which are not applicable to NuScale Design.	NuScale recommends change of "Condenser Evacuation System" to "Condenser Air Removal System" NuScale recommends change of "Service Building Ventilation System" to "Reactor Building HVAC System" NuScale recommends change of "Radwaste Area Vent Systems" to "Radioactive Waste Building HVAC System" NuScale recommends deletion of "Residual Heat Removal System"	The NRC staff agrees with the suggestion and has clarified the text.

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485	11.5	<b>Table 2</b>	Some of the process system names should be made consistent with NuScale systems.	NuScale recommends change of "Service Water System" to "Site Cooling Water System" NuScale recommends change of "Component Cooling Water System" to "Reactor Component Cooling Water System" NuScale recommends change of "Spent Fuel Pool Treatment System" to "Pool Cleanup System" NuScale recommends deletion of "boron recovery system" from No.15	The NRC staff agrees with the suggestion and has clarified the text.
486	11.5, Page 1	Radiological monitoring instrumentation used to initiate control room habitability functions and, if applicable, containment isolation, are classified as safety-related. The remainder of the system is non-safety related. A	Radiological monitoring instrumentation is not used to initiate containment isolation and control room habitability initiation is not safety related	NuScale recommends deletion of: "and, if applicable, containment isolation," Replace: "safety-related" with "non-safety related". Delete the second sentence.	The NRC staff agrees with the suggestion and has clarified the text.

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		part of the radiological monitoring mentation system serves to control radiological releases to the public, including monitoring systems that support building ventilation systems in areas housing irradiated fuel, demineralizers and filters, and waste management equipment.			
487	11.5 Pages 7 & 8	15. The review of design features of plant and building ventilation	The context of this section suggests that the reactor containment is ventilated. The containment evacuation system provides a vacuum in the space between	NuScale recommends change of the " reactor containment vessel ventilation and treatment systems", to containment evacuation system	The NRC staff agrees with the suggestion and has clarified the text.

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		systems and interfaces with radwaste management and monitoring systems is conducted under DSRS Section 9.4 and Section 6 using RGs 1.13, 1.29, 1.52, and 1.140. The systems include the reactor containment vessel ventilation and treatment systems, spent-fuel pool area ventilation system, radwaste building and waste storage	containment and the reactor vessel.		

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		area ventilation systems, reactor service building ventilation systems servicing radiologically controlled areas, turbine building areas ventilation system and exhaust as it relates to releases from the steam jet air ejectors, and ESF atmosphere cleanup systems as it relates to plant stack releases.			
488	11.5 Page 27	...indicate whether noble gas radiation monitors will	There are no radiation monitors inside of containment for the NuScale design.	NuScale recommends deletion of containment particulate radiation monitor	The NRC staff agrees with the suggestion and has clarified the text.

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		be used to supplement the containment particulate radiation monitor, and provide descriptions of models, methods, and assumptions used in calculations supporting the stated radiation monitor sensitivity levels and compliance with TS.			
489	11.5 Page 27 11.6 Page 25	...the review should determine whether the RCS pressure boundary leakage detection systems can reliably	Unnecessary "and."	Delete unneeded "and"	The NRC staff agrees with the suggestion and has clarified the text.

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		monitor reactor coolant leakage from RCS components and contained within the reactor vessel by a combination of changes in internal pressure and temperature levels,...			
490	11.5 Page 27	9. For each reactor vessel,...	Incorrect use of terminology. "Reactor vessel" is used in this section instead of "containment vessel" in several instances of this section.	NuScale recommends replacement as applicable	Staff agrees with the suggestion and has clarified the text.
491	11.5 Page 42	Examples of this function are the termination of exhaust airflow by closure of containment ventilation	This example is not a NuScale design feature	NuScale recommends the use of an example applicable to the NuScale design like isolation of effluent discharge in a radwaste management system	The NRC staff agrees with the suggestion and has clarified the text.



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		or purge isolation valves and diversion of building ventilation exhaust streams from an untreated discharge path to an alternative treatment system.			
492	11.6	I. Areas of Review; Review Interfaces; #11	The sentence that contains, "the system used to evacuate and maintain negative pressure in the reactor vessel..." The reactor vessel is not evacuated and maintained at a negative pressure, that is the containment vessel.	NuScale recommends change of the word "reactor" to "containment".	The NRC staff agrees with the suggestion and has clarified the text.
493	11.6	III. Review Procedures; Radiation Monitoring for Non-Effluent Process Streams; 4th	The sentence that contains, "the evacuation system to maintain negative pressure within each reactor vessel containment..." The reactor vessel is not evacuated and maintained at a negative pressure, that is the containment vessel.	For clarity, NuScale recommends change of "reactor containment vessel" to "containment vessel".	The NRC staff agrees with the suggestion and has clarified the text.

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		paragraph; first sentence			
494	11.6 page 2	2nd paragraph, Second Sentence	Typo	NuScale recommends add a space between "achieve" and "the"	The NRC staff agrees with the suggestion and has clarified the text.
495	11.6 page 2	3rd Paragraph: Radiological monitoring instrumentat ion used to initiate control room habitability functions and isolation of reactor modules is classified as a safety- related system	Classification of the control room habitability systems is stated as safety related but the NuScale SSC classification process has determined these systems as non-safety related.	NuScale recommends change of "safety related" to "non-safety related"	The NRC staff agrees with the suggestion and has clarified the text.

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496	11.6 Page 9	11...The review starts with the system used to evacuate and maintain negative pressure in the reactor vessel,...	Maintaining negative pressure in the reactor vessel is incorrect. Negative pressure is maintained between the reactor vessel and containment.	NuScale recommends to replace "reactor vessel" with "containment vessel"	The NRC staff agrees with the suggestion and has clarified the text.