NuScale Comments on Draft Design-Specific Review Standard (DSRS) for the mPower Design

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
1.	3.13	II. Acceptance Criteria DSRS Acceptance Criteria Table 3.13-1 p. 3.13-5 II. Acceptance Criteria DSRS Acceptance Criteria Table 3.13-2 p. 3.13-6	THREADED FASTENERS - ASME CODE CLASS 1, 2, AND 3	The ASME Code section specified for Class 1 bolting/stud materials is changed (as compared to SRP Section 3.13) from “NB-2224.3” to “NB 2224.” In Table 3.13-2 of mPower DSRS Section 3.13, the Examination Category specified for Class 1 bolting less than or equal to 2 inches in diameter is changed (as compared to SRP Section 3.13) from “B-G-1” to “B-G-2.” These changes appear to be typographical corrections to the corresponding table entries in the SRP Section 3.13, and thus, these changes are appropriate for the NuScale DSRS Section 3.13.	Retain typographical corrections in the NuScale DSRS.
2.	3.13	Throughout section	THREADED FASTENERS - ASME CODE CLASS 1, 2, AND 3	SRP and mPower DSRS Sections 3.13 recommend the use of Regulatory Guide (RG) 1.37. NuScale will meet the intent of RG 1.37, but RG 1.37 is not applied directly in the NuScale design. This is because RG 1.37 endorses specific portions of NQA-1-1994. The NuScale design will be based on NQA-1-2008 and the NQA-1a-2009 addenda (rather than NQA 1 1994), as endorsed in RG 1.28, Rev. 4. Notwithstanding, as the substantive content of RG 1.37 has been subsumed within NQA 1 2008/1a-2009, the intent of RG 1.37 will be satisfied by the NuScale design. The above discussion should be reflected in NuScale DSRS Section 3.13.	Modify applicability of the RG 1.37 to Section 3.13 based on the presented discussion.
3.	3.2.1	II. Acceptance Criteria Technical Rationale Item 2 p. 3.2.1-7	SEISMIC CLASSIFICATION	"RCP lube oil will be properly classified and analyzed for safe-shutdown earthquake loads.” NuScale does not have any reactor coolant pumps, and therefore, no associated lube oil. The NuScale DSRS should be revised for this section.	Consider that NuScale does not have RCPs.
4.	3.2.2	III. Review Procedures Item 6 p. 3.2.2-9	SYSTEM QUALITY GROUP CLASSIFICATION	The DSRS identifies “Fluid Systems Important to Safety for PWR Plants”. Some of these systems are not applicable to the NuScale design. Suggest identifying NuScale specific systems that NRC considers important to safety or more generically, the functions that are considered important to safety.	Verify applicability of the systems for the NuScale DSRS. Also note that page numbers for this section are incorrect (8.1 rather than 3.2.2).
5.	3.3.1	I. Areas of Review Item 6 p. 3.3.1-2	SEVERE WIND LOADING	This item is specific to the mPower design and does not apply to NuScale. NuScale does not have a refueling water storage tank. The NuScale DSRS should be developed accordingly.	Consider that NuScale does not have a refueling water storage tank.

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6.	3.3.2	I. Areas of Review Item 9 p. 3.3.2-2	EXTREME WIND LOADS (TORNADO AND HURRICANE LOADS)	This item is specific to the mPower design and does not apply to NuScale. NuScale does not have a refueling water storage tank. The NuScale DSRS should be developed accordingly.	Consider that NuScale does not have a refueling water storage tank.
7.	3.5.1.2	I. Areas of Review Review Interfaces Item 1 p. 3.5.1.2-2	INTERNALLY-GENERATED MISSILES (INSIDE CONTAINMENT)	NuScale has a containment vessel, rather than a containment structure and liner. The NuScale DSRS should be developed accordingly.	Consider that NuScale design has a containment vessel, rather than a containment structure and liner.
8.	3.5.2	I. Areas of Review Paragraph 2 p. 3.5.2-1	STRUCTURES, SYSTEMS, AND COMPONENTS TO BE PROTECTED FROM EXTERNALLY-GENERATED MISSILES	This paragraph is specific to the mPower design and will need to be revised to be consistent with the NuScale design (e.g., NuScale has no essential service water). The NuScale DSRS should be developed accordingly.	Revise the paragraph for the NuScale DSRS.
9.	3.5.3	Throughout section	BARRIER DESIGN PROCEDURES	Scope of SSCs to be protected from externally generated missiles was changed from “includes all safety related SSCs”…”reviewed in accordance with SRP section 3.5.2” to “includes all plant site safety-related SSCs or risk-significant non-safety-related SSCs. These SSCs are listed in DSRS Section 3.2.2.” The list of SSCs in DSRS section 3.2.2. does not reflect NuScale specific systems. NuScale recommends clarification on which systems needs protection. DSRS section 3.5.2 states that safety related SSCs and RTNSS category B equipment are subject to missile protection. Not all risk significant SSCs need to be protected from missiles. Remove reference to SRP section 19.0 and change reference from DSRS 3.2.2 to DSRS 3.5.2	Remove reference to SRP section 19.0 and change reference from DSRS 3.2.2 to DSRS 3.5.2, as described.
10.	3.6.2	Throughout section	DETERMINATION OF RUPTURE LOCATIONS AND DYNAMIC EFFECTS ASSOCIATED WITH THE POSTULATED RUPTURE OF PIPING	The NuScale gap analysis identified an issue with ANSI/ANS 58.2-1988, which is mis-cited as ANSI/ANS 58.2-1998 in SRP Section 3.6.2. This standard was withdrawn in 1998. With consideration for the NRC concerns related to technical adequacy of this standard (i.e., potential non-conservatisms), ANSI/ANS 58.2-1988 was considered in the gap analysis to be not applicable. The incorrect citation of ANSI/ANS 58.2-1988 as ANSI/ANS 58.2-1998 has been corrected in the mPower DSRS Section 3.6.2, and a new Appendix A added that clarifies the NRC's concerns with potential non-conservatisms in this standard. With the clarification for using ANSI/ANS 58.2-1988 that is provided by the new Appendix A (that would be included in NuScale DSRS Section 3.6.2), NuScale will consider ANSI/ANS 58.2 1988 (as clarified by the new Appendix A) to be applicable to the NuScale design. The NuScale DSRS should be developed accordingly.	Consider that NuScale is planning to use ANSI/ANS 58.2 1988 (as clarified by the new Appendix A) to be applicable to the NuScale design.
11.	3.8.5	Throughout section	FOUNDATIONS	5.F was enhanced guidance to evaluate sliding and overturning. However, foundation overturning is not possible for the deeply embedded Seismic Category 1 reactor building of the NuScale SMR Power Plant.	Clarify the applicability of sliding and overturning for the NuScale design.
12.	3.8.5	I. Areas of Review p. 3.8.5-1	FOUNDATIONS	Description of foundations will need to be modified to match the NuScale design.	Modify the description of foundations to match the NuScale design.

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13.	3.9.5	Throughout section	REACTOR PRESSURE VESSEL INTERNALS	The riser is classified as RCPB for mPower, which is not the case for the NuScale design. For NuScale, the riser is an internals component and has no pressure boundary function. It is an internals structure and provides support to the CRDM shafts. The NuScale DSRS should be developed accordingly.	Consider that the riser is an internals component and has no pressure boundary function.
14.	3.9.5	I. Areas of Review p. 3.9.5-1	REACTOR PRESSURE VESSEL INTERNALS	The steam generator includes the tubes and tubesheet for mPower. In addition to these, the NuScale design uses a SG plenum as part of the RCPB. Recommend for the NuScale DSRS revising to "…(including tubes and tube sheet, and/or plenums)…"	Consider that the NuScale design uses a SG plenum as part of the RCPB.
15.	4.3	I. Areas of Review Review Interfaces Item 3 p. 4.3-5	NUCLEAR DESIGN	In development of the NuScale DSRS, {{ }}3(a)-(c)	Consider the specific design feature as described.
16.	4.3	Throughout section	NUCLEAR DESIGN	{{ }}3(a)-(c)	Consider the specific design feature as described.
17.	4.3	I. Areas of Review paragraph 1 p. 4.3-1	NUCLEAR DESIGN	Put in NuScale version of deleted text addressing neutronic thermal-hydraulic instabilities performed under SRP Sections 15.8.X and 15.9.A, respectively.	Revise as recommended.
18.	4.3	Throughout section	NUCLEAR DESIGN	In development of the NuScale DSRS, {{ }}3(a)-(c)	Consider the specific design feature as described.
19.	4.3	II. Acceptance Criteria DSRS Acceptance Criteria Item 1 p. 4.3-8	NUCLEAR DESIGN	The NuScale design prevents core uncovery during design basis LOCAs and there is no significant effect on the fuel or cladding heatup because of fluid temperatures or enthalpies or clad or fuel heatup. Delete the following sentence from the Acceptance Criteria in the NuScale DSRS: *Consideration must also be made to the effect of coolant temperatures and enthalpy on the fuel and cladding temperatures.*	Modify the acceptance criteria as recommended.
20.	4.4	VI. References Items 12, 14 p 4.4-14	THERMAL AND HYDRAULIC DESIGN	References 12 and 14 are not applicable to the NuScale design. NuScale materials may differ from these specified in the last sentence of this. This must be considered in the development of the NuScale DSRS.	Remove References 12 and 14.
21.	4.4	I. Areas of Review Review Interfaces Items 2, 3 p. 4.4-3	THERMAL AND HYDRAULIC DESIGN	Between items 2 and 3 put in NuScale version of deleted text addressing neutronic thermal-hydraulic instabilities performed under SRP Sections 15.8.X and 15.9.A, respectively.	Revise as recommended.
22.	4.4	III. Review Procedures Item 12 p. 4.4-9	THERMAL AND HYDRAULIC DESIGN	Item 12 addresses N-1 RCP operation (less than 8 RCPs) which is not applicable to the NuScale design. The NuScale analogous condition is one SG operation, and this operating mode should be considered in development of the NuScale DSRS.	Remove Item 12 and revise accordingly.

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23.	4.4	Throughout section	THERMAL AND HYDRAULIC DESIGN	Consider that the NuScale design may have more than one operating map and the restrictions may involve other parameters.	Consider design characteristics as described.
24.	4.4	I. Areas of Review Item 6 p. 4.4-2	THERMAL AND HYDRAULIC DESIGN	Item 6 refers to "Topical Reports". The term “topical report” has too specific a meaning and should be broadened in the NuScale DSRS. The requirements for technical review for advanced reactor technical issues do not always align with the staff's definition of a topical report, even when the topics have significant technical review and are of interest to the NRC staff.	Expand the term “topical report”, as it has too specific a meaning.
25.	4.4	II. Acceptance Criteria DSRS Acceptance Criteria Item 2 p. 4.4-5	THERMAL AND HYDRAULIC DESIGN	Item 2 refers to B&W specific codes as examples of acceptable DNBR limits and should be removed in the NuScale DSRS.	Modify the examples as recommended.
26.	4.4	II. Acceptance Criteria DSRS Acceptance Criteria Item 3 p. 4.4-5	THERMAL AND HYDRAULIC DESIGN	Item 3 in this section refers to Section 15.9.A. In the NuScale DSRS this may become a Section in Chapter 4. This must be considered in the development of the NuScale DSRS.	In development of the NuScale DSRS move the section to Chapter 4 as described.
27.	4.4	II. Acceptance Criteria DSRS Acceptance Criteria Item 4 p. 4.4-5	THERMAL AND HYDRAULIC DESIGN	Item 4 refers to B&W reports and these references should be deleted in the NuScale DSRS. NuScale will provide the specific components and reports that require specific reports.	Delete Item 4, as recommended.
28.	4.4	II. Acceptance Criteria DSRS Acceptance Criteria Item 8 p. 4.4-5	THERMAL AND HYDRAULIC DESIGN	Item 8 refers a 3% drop in coolant flow and a 24 hour monitoring frequency. These values may be design specific. The NuScale DSRS should be revised to reflect NuScale design specific values.	Use design specific values for drop in coolant flow and monitoring frequency.
29.	4.4	III. Review Procedures Item 14 p. 4.4-10	THERMAL AND HYDRAULIC DESIGN	The NuScale DSRS, {{ }}[3(a)]	Consider the NuScale classification for the transients and accidents.
30.	4.5.1	I. Areas of Review Review Interfaces Item 6 p. 4.5.1-3	CONTROL ROD DRIVE STRUCTURAL MATERIALS	In developing NuScale DSRS, change reference from 9.3.6 "Reactor Coolant Inventory and Purification system (RCIPS) to 9.3.4 Chemical Volume and Control System (CVC).	Change reference from 9.3.6 to 9.3.4, as described.

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~~31.~~	4.5.1	II. Acceptance Criteria Technical Rational Item 2 p. 4.5.1-5	CONTROL ROD DRIVE STRUCTURAL MATERIALS	Delete "*The RCPB includes the CRDM dump valves and CRDM block valves which are part of the control rod drive system".*	Delete the sentence as suggested.
32.	4.5.2	I. Areas of Review paragraph 1 p. 4.5.2-1	REACTOR INTERNAL AND CORE SUPPORT STRUCTURE MATERIALS	Delete the phrase that was added for mPower DSRS in the next to last sentence of the introductory paragraph: "Any supporting structures for these components may be considered reactor internals/core supports."	Delete the phrase as recommended.
33.	4.5.2	I. Areas of Review Item 3 p. 4.5.2-1	REACTOR INTERNAL AND CORE SUPPORT STRUCTURE MATERIALS	Change item 3 from RTNSS to the NuScale specific designation. This comments applies to the reference to RTNSS in the subsequent paragraph.	Change Item 3 as described.
34.	4.6	II. Acceptance Criteria DSRS Acceptance Criteria Item 5 p. 4.6-5	FUNCTIONAL DESIGN OF CONTROL ROD DRIVE MECHANISM SYSTEM	DSRS Acceptance Criteria. Item 5. The phrase "*the combined capability of CRDM and emergency…"* is not correct for the NuScale design. 1. "CRDM" should be "RCA". 2. The ECCS does not add reactivity in the NuScale design.	Modify as described.
35.	4.6	II. Acceptance Criteria Technical Rationale Item 5 p. 4.6-7	FUNCTIONAL DESIGN OF CONTROL ROD DRIVE MECHANISM SYSTEM	Change of nomenclature. 1. "Boron tanks" should be deleted. 2. "CRDM" should be changed to "RCA"	Modify the nomenclatures, as described.
36.	4.6	I. Areas of Review Review Interfaces paragraph 1 p. 4.6-2	FUNCTIONAL DESIGN OF CONTROL ROD DRIVE MECHANISM SYSTEM	The following mPower design specific statement does not apply to the NuScale design: *"Reactor Coolant Inventory and Purification System (RCI) circulating pumps provide CRDM latching pressure during normal plant operation. There are two block valves and two scram valves associated with each CRDM (to be verified). Review of the maintenance of the CRDM latching pressure is performed under review section RCI DSRS 9.3.4."*	Delete the sentence as is proposed.
37.	4.6	I. Areas of Review Review Interfaces Item 3 p. 4.6-2	FUNCTIONAL DESIGN OF CONTROL ROD DRIVE MECHANISM SYSTEM	Change reference from boron injection tanks to boron. The NuScale design review should be for the system that injects boron.	Modify the issues related to boron injection, as described.

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38.	4.6	II. Acceptance Criteria Requirements Item 5 p. 4.6-4	FUNCTIONAL DESIGN OF CONTROL ROD DRIVE MECHANISM SYSTEM	Please delete "EBT subsystem of the RCI". This is not a part of the NuScale design.	Delete EBT subsystem of the RCI.
39.	4.6	II. Acceptance Criteria Technical Rationale Item 7 p. 4.6-8	FUNCTIONAL DESIGN OF CONTROL ROD DRIVE MECHANISM SYSTEM	Delete the reference to *"loss of power to all reactor coolant pumps".* The NuScale design does not include RCPs.	Delete the reference as recommended.
40.	5.2.1.1	I. Areas of Review 1st paragraph	COMPLIANCE WITH THE CODES AND STANDARDS RULE, 10 CRF 50.55a	This paragraph does not reflect NuScale design and will need to be revised. For example, NuScale does not have reactor coolant pumps or a reactor inventory control and purification system.	Revise this section for the NuScale DSRS considering that NuScale does not include an RCP, inventory control, or purification system.
41.	5.2.1.1	Throughout section	COMPLIANCE WITH THE CODES AND STANDARDS RULE, 10 CRF 50.55a	{{ }}$^{3(a)-(c)}$	Modify as described.
42.	5.2.3	I. Areas of Review p. 5.2.3-1	REACTOR COOLANT PRESSURE BOUNDARY MATERIALS	The introductory paragraph of mPower DSRS Section 5.2.3 is generally applicable to the NuScale design. However, for completeness and to minimize potential misinterpretation, the corresponding introduction in the NuScale DSRS Section 5.2.3 should reflect the NuScale-specific definitions of the NuScale RCS and RCPB. These definitions provide a description of the NuScale SSCs that connect to the reactor vessels, which is part of the scope of the introductory paragraph of DSRS Section 5.2.3.	Modify as described.
43.	5.2.3	I. Areas of Review Review Interfaces Item 2 p. 5.2.3-6	REACTOR COOLANT PRESSURE BOUNDARY MATERIALS	Item 2 refers to DSRS Section 3.6 for review of reactor coolant chemistry and associated chemistry controls. It appears that this reference may be more appropriate to Section 9.3.6 for the mPower DSRS. For the NuScale DSRS Section 5.2.3, this review interface reference should be to NuScale DSRS Section 9.3.4 instead of Section 3.6.	Verify if the reference belongs to Section 9.3.4 instead of 5.2.3.
44.	5.2.3	Throughout section	REACTOR COOLANT PRESSURE BOUNDARY MATERIALS	SRP and mPower DSRS Sections 5.2.3 recommend the use of Regulatory Guide (RG) 1.44 and RG 1.37. NuScale intends to use RG 1.44 except for its specification of applying RG 1.37 for cleaning and flushing of finished surfaces. NuScale will meet the intent of RG 1.37, but RG 1.37 is not applied directly in the NuScale design. This is because RG 1.37 endorses specific portions of NQA-1-1994. The NuScale design will be based on NQA-1-2008 and the NQA-1a-2009 addenda (rather than NQA-1-1994), as endorsed in RG 1.28, Rev. 4. Notwithstanding, as the substantive content of RG 1.37 has been subsumed within NQA-1-2008/1a-2009, the intent of RG 1.37 will be satisfied by the NuScale design. The above discussion should be reflected in NuScale DSRS Section 5.2.3.	Consider the approach to using RG 1.37 as described.

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45.	5.2.3	Throughout section	REACTOR COOLANT PRESSURE BOUNDARY MATERIALS	Portions of mPower DSRS (and SRP) Section 5.2.3 (including subtier RG 1.36) govern the use of nonmetallic thermal insulation on reactor coolant pressure boundary components. NuScale is not intending to use nonmetallic thermal insulation on reactor coolant pressure boundary components. Therefore, this review guidance may be deleted in the NuScale DSRS Section 5.2.3.	Delete the reference to the use of nonmetallic thermal insulation on reactor coolant pressure boundary components.
46.	5.2.3	II. Acceptance Criteria DSRS Acceptance Criteria Item 4.B p. 5.2.3-10 VI. References Item 21 p. 5.2.3-23	REACTOR COOLANT PRESSURE BOUNDARY MATERIALS	As compared to SRP Section 5.2.3, new wording was added in the mPower DSRS Section 5.2.3, Acceptance Criterion 4.B (Page 5.2.3-10), specifying use of NQA-1-1994. Reference 21 also was added to Section VI of mPower DSRS Section 5.2.3 to describe NQA 1-1994. These references will require modification for the NuScale DSRS, to reflect NuScale's use of NQA-1-2008 and the NQA 1a 2009 addenda (rather than NQA-1-1994), as endorsed in RG 1.28, Rev. 4.	Consider modifying references as described.
47.	5.2.5	Throughout section	REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION	The design features included in this section do not apply to NuScale. Leaks of reactor coolant will not reach the floor drains. Containment condensate does not flow to a sump or tank. Containment is a small vessel around the reactor vessel, with no floor drains, tanks, sumps, or containment air coolers. Containment sits mostly submerged in a large pool of water. The NuScale DSRS should be developed accordingly.	Modify the contents of this paragraph according to the NuScale design.
48.	5.2.5	IV. Evaluation Findings paragraph 2 p 5.2.5-7	REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION	NuScale may use a different combination of leak detection methods than those listed. Leak detection is provided by the containment evacuation system. The NuScale DSRS should be developed accordingly.	Consider use of alternative leak detection methods.
49.	5.2.5	Table 1 p. 5.2.5-10	REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION	Table I. does not reflect NuScale design and will need to be revised. For example, NuScale does not have a residual heat removal system or reactor coolant pumps. The NuScale DSRS should be developed accordingly.	Consider that the design does not include RHR.
50.	5.3.1	I. Areas of Review Review Interfaces Item 2 p. 5.3.1-3	REACTOR VESSEL MATERIALS	Portions of mPower DSRS (and SRP) Section 5.3.1 govern the use of thermal insulation on the reactor pressure vessel (e.g., Item 2 under “Review Interfaces” on Page 5.3.1-3). NuScale is not intending to use thermal insulation on the reactor pressure vessels. Therefore, this review guidance may be deleted in the NuScale DSRS Section 5.3.1.	Delete the reference to the use of thermal insulation on reactor pressure vessel.
51.	5.3.1	II. Acceptance Criteria DSRS Acceptance Criteria Item 7 p. 5.3.1-9	REACTOR VESSEL MATERIALS	Acceptance Criterion II.7 on Page 5.3.1-9 recommends material grades for reactor vessel studs (i.e., closure bolts) derived from RG 1.65, Regulatory Positions C.1 and C.2. The materials listed in this acceptance criterion are alloy steels. NuScale will not use alloy steels for the NuScale reactor pressure vessel closures. The NuScale plant design and operation results in the closure bolts being submerged in borated water during certain operating conditions. Thus, NuScale will specify corrosion resistant materials to be used for the reactor pressure vessel closures.	Consider that the NuScale design will not use alloy steels.

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52.	5.3.1	Throughout section	REACTOR VESSEL MATERIALS	SRP and mPower DSRS Sections 5.3.1 recommend the use of Regulatory Guide (RG) 1.44 and RG 1.37. NuScale intends to use RG 1.44 except for its specification of applying RG 1.37 for cleaning and flushing of finished surfaces. NuScale will meet the intent of RG 1.37, but RG 1.37 is not applied directly in the NuScale design. This is because RG 1.37 endorses specific portions of NQA-1-1994. The NuScale design will be based on NQA-1-2008 and the NQA-1a-2009 addenda (rather than NQA-1-1994), as endorsed in RG 1.28, Rev. 4. Notwithstanding, as the substantive content of RG 1.37 has been subsumed within NQA 1 2008/1a-2009, the intent of RG 1.37 will be satisfied by the NuScale design. The above discussion should be reflected in NuScale DSRS Section 5.3.1 (e.g., including a specific allowance for equivalent alternative guidance/approaches to RG 1.37). It is noted that Acceptance Criterion 4.E of SRP and mPower DSRS Sections 5.3.1 refer to Position C.5 of RG 1.37. The current version of RG 1.37 is Revision 1 dated March 2007. RG 1.37, Revision 1, does not contain Position C.5 of the original RG 1.37 (March 16, 1973) since it was subsumed into ASME NQA 1 1994. Thus, the reference to “Position C.5” should be deleted from the mPower DSRS Section 5.3.1. It is further noted that the substantive content of the original Position C.5 has been retained in NQA-1-2008/1a-2009. Thus, NuScale’s use of NQA-1-2008 and the NQA-1a-2009 addenda ensures that Position C.5 of the original RG 1.37 is satisfied.	Modify applicability of the RG 1.37 to Section 5.3.1 based on the presented discussion.
53.	5.3.1	III. Review Procedures Item 5 last paragraph p. 5.3.1-14	REACTOR VESSEL MATERIALS	The last paragraph of Item 5 is not relevant to new reactor designs and should be deleted from the NuScale DSRS. This guidance is specific to those plants that were designed and constructed prior to the effective date of Appendix G, 10 CFR 50, so some of the fracture toughness requirements of Appendix G may not be explicitly met. The NuScale design will meet the 10 CFR 50, Appendix G, fracture toughness requirements.	Delete the last paragraph of item 5 in the Review Procedure, as is described.
54.	5.3.2	I. Areas of Review p. 5.3.2-1	PRESSURE-TEMPERATURE LIMITS, UPPER-SHELF ENERGY, AND PRESSURIZED THERMAL SHOCK	The introductory paragraph is generally applicable to the NuScale design, but mentions reactor coolant pumps and reactor vessel connections that are not relevant to the NuScale design. For completeness and to minimize potential misinterpretation, the corresponding introduction in the NuScale DSRS Section 5.3.2 should reflect a NuScale-specific design summary, such as "The NuScale plant design comprises up to 12 integral power modules. Each module consists of a reactor core, two steam generator tube bundles, and a pressurizer all contained within a single reactor pressure vessel, along with the containment vessel that immediately surrounds the reactor pressure vessel." This description also should reflect the NuScale-specific definitions of the NuScale RCS and RCPB.	Consider that the NuScale design may have up to 12 reactor modules.
55.	5.3.3	I. Areas of Review p. 5.3.3-1	REACTOR VESSEL INTEGRITY	The introductory paragraph is generally applicable to the NuScale design, but mentions reactor coolant pumps and reactor vessel connections that are not relevant to the NuScale design. For completeness and to minimize potential misinterpretation, the corresponding introduction in the NuScale DSRS Section 5.3.3 should reflect a NuScale-specific design summary, such as "The NuScale plant design comprises up to 12 integral power modules. Each module consists of a reactor core, two steam generator tube bundles, and a pressurizer all contained within a single reactor pressure vessel, along with the containment vessel that immediately surrounds the reactor pressure vessel." This description also should summarize the systems connecting to the reactor vessel. These systems are indicated in the NuScale-specific definitions of the NuScale RCS and RCPB.	Consider that the NuScale design may have up to 12 reactor modules.
56.	5.4.2.1	Throughout section	STEAM GENERATOR MATERIALS	Many of the details in this section of the mPower DSRS reflect the traditional configurations of primary ID which is appropriate for mPower configuration However, the NuScale DSRS should reflect that needs to reflect that the primary configuration is on the outside and secondary on the inside.	The NuScale DSRS should reflect that the primary configuration is on the outside and secondary on the inside.

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57.	5.4.2.2	Throughout section	STEAM GENERATOR PROGRAM	In developing Section 5.4.2.2 of the NuScale DSRS, following comments should be considered: 1. NuScale has two integral SGs, not one. 2. NuScale primary is on the outside and secondary on the inside. Many of the details in the DSRS reflect the traditional configurations of primary ID (which is mPower configuration). Some issues, such as sludge buildup, are fundamentally different as a result. 3. Inspection to the shell side for damage is primary and not secondary side. 4. The SG does not have a primary side channel head.	Consider the design characteristics, as listed.
58.	5.4.7	Throughout section	RESIDUAL HEAT REMOVAL (RHR) SYSTEM (mPOWER)	The NuScale advanced modular reactor design does not include an RHR system allied with the reactor coolant system (RCS) as would be found at a large light water reactor (LWR). Thus, Section 5.4.7 is not relevant to the NuScale design certification or to combined license applicants referencing the NuScale certified design. The NuScale design incorporates systems that fulfill design functions similar to those served by a typical RHR system. These systems will be described in other portions of the NuScale DCD. NuScale DCD Section 5.4.7 will provide references to these other portions of the DCD, as appropriate.	Consider that NuScale does not include an RHR system.
59.	6.1.1	Throughout section	ENGINEERED SAFETY FEATURES MATERIALS	Draft mPower Section 6.1.1 contains descriptive text that is specific to the mPower design and is not appropriate for the NuScale design. For example, Section I, “Areas of Review,” refers to the mPower Reactor Coolant Inventory and Purification System and the Containment Building; Item 3 under "Review Interfaces" on Page 6.1.1-3 refers to refueling water storage tanks; and Item 5 on Page 6.1.1 8 refers to the UHS tank. These and other design-specific references need to be revised for the NuScale DSRS.	Modify according to the NuScale design, as described.
60.	6.1.1	I. Areas of Review Review Interfaces Item 2 p. 6.1.1-3	ENGINEERED SAFETY FEATURES MATERIALS	Item 2 refers to DSRS Section 6.1.2 for review of the use and compatibility of organic materials inside containment. Based on the NuScale gap analysis results, SRP Section 6.1.2 was determined to be “Not Applicable” to the NuScale design. The basis for this determination was that the NuScale reactor module design does not involve the use of protective coatings or organics inside the containment vessels. This gap analysis determination has changed. Specifically, based on the current stage of engineering design, there may be certain cabling insulation and/or coating materials used inside the containment vessels that would be reviewed under Section 6.1.2. Based on the above, Item 2 under “Review Interfaces” is appropriate for including in the NuScale DSRS Section 6.1.1.	Include Section 6.1.2 despite previous position in the NuScale Gap Analysis summary report.
61.	6.1.1	I. Areas of Review Review Interfaces Item 3 p. 6.1.1-3	ENGINEERED SAFETY FEATURES MATERIALS	Item 3 refers to DSRS Section 9.3.6 for review of reactor coolant and refueling water storage tank chemistry and associated chemistry controls. This review interface should be revised for the NuScale DSRS Section 6.1.1. Specifically, the NuScale design does not use refueling water storage tanks, and it is anticipated that reactor coolant chemistry and associated chemistry controls would be reviewed under NuScale DSRS Section 9.3.4 instead of Section 9.3.6.	The Review Interface should be modified as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
62.	6.1.1	Throughout section	ENGINEERED SAFETY FEATURES MATERIALS	A number of (design-basis and/or other) regulatory requirements are anticipated to be applicable to certain NuScale ESF SSCs (e.g., the emergency core cooling [ECC] system and containment vessels) that are not relevant to typical ESF designs. From a review of the mPower DSRS Section 6.1.1, it appears that this also is the case for the mPower design, since GDC 34 has been added in mPower DSRS Section 6.1.1 (as compared to SRP Section 6.1.1). Based on the current stage of NuScale design, it appears that GDC 34 also will be applicable to certain NuScale ESF systems, and thus these additions are appropriate for NuScale DSRS Section 6.1.1. {{ }}3(a)-(c) As part of pre-application activities, NuScale will seek to reach consensus with the NRC on the appropriate regulatory (design-basis) requirements to be incorporated into NuScale DSRS Section 6.1.1, including but not necessarily limited to those discussed above.	Applicability of GDCs should be considered.
63.	6.1.1	II. Acceptance Criteria DSRS Acceptance Criteria Item 1 p. 6.1.1-5	ENGINEERED SAFETY FEATURES MATERIALS	Acceptance Criterion II.1 states that fracture toughness of ESF materials should be as stated in SRP/DSRS Section 10.3.6, “Steam and Feedwater System Materials," Acceptance Criterion II.1. The fracture toughness guidance of Section 10.3.6 is specific to Class 2 and Class 3 SSCs. In the NuScale design, certain portions of ESF systems/components form part of the reactor coolant pressure boundary, and as such are Class 1 components. These portions will meet the fracture toughness guidance of DSRS Section 5.2.3. NuScale DSRS Section 6.1.1, Acceptance Criterion II.1, should be worded to accommodate the NuScale ESF design.	NuScale DSRS Section 6.1.1, Acceptance Criterion II.1, should be worded to accommodate the NuScale ESF design in regard to fracture toughness.
64.	6.1.1	II. Acceptance Criteria Technical Rationale Item 3 p. 6.1.1-8	ENGINEERED SAFETY FEATURES MATERIALS	Item 3 includes the residual heat removal (RHR) system as an ESF system that interfaces with the reactor coolant pressure boundary (RCPB). The NuScale design does not include an RHR system or equivalent system that interfaces with the RCPB (i.e., that connects to and becomes part of the reactor coolant flow path). (The NuScale decay heat removal system is a plant secondary side system, and thus does not interface with the reactor coolant system.) Thus, reference to the RHR system should be deleted in NuScale DSRS Section 6.1.1.	Consider that the design does not include an RHR system or equivalent system that interfaces with the RCPB.
65.	6.1.1	Throughout section	ENGINEERED SAFETY FEATURES MATERIALS	SRP and mPower DSRS Sections 6.1.1 recommend the use of Regulatory Guide (RG) 1.44 and RG 1.37. NuScale intends to use RG 1.44 except for its specification of applying RG 1.37 for cleaning and flushing of finished surfaces. NuScale will meet the intent of RG 1.37, but RG 1.37 is not applied directly in the NuScale design. This is because RG 1.37 endorses specific portions of NQA-1-1994. The NuScale design will be based on NQA-1-2008 and the NQA-1a-2009 addenda (rather than NQA-1-1994), as endorsed in RG 1.28, Rev. 4. Notwithstanding, as the substantive content of RG 1.37 has been subsumed within NQA 1 2008/1a-2009, the intent of RG 1.37 will be satisfied by the NuScale design. The above discussion should be reflected in NuScale DSRS Section 6.1.1.	Consider that NuScale will meet the intent of RG 1.37, but RG 1.37 is not applied directly in the NuScale design.
66.	6.1.2	Throughout section	PROTECTIVE COATING SYSTEMS (PAINTS) - ORGANIC MATERIALS	Based on the original NuScale gap analysis results, SRP Section 6.1.2 was determined to be “Not Applicable” to the NuScale design. The basis for this determination was that the NuScale reactor module design does not involve the use of protective coatings or organics inside the containment vessels. This gap analysis determination has changed. Specifically, based on the current stage of engineering design, there may be certain cabling insulation and/or coating materials used inside the containment vessels that would be reviewed under Section 6.1.2. Based on the above, except for the changes identified in the NuScale comments provided below on mPower DSRS Section 6.1.2, the content of mPower DSRS Section 6.1.2 is appropriate for including in the NuScale DSRS Section 6.1.2.	Applicability of the Section 6.1.2 should be considered, as discussed.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
67.	6.2.1.2	Throughout section	SUBCOMPART-MENT ANALYSIS	Section 6.2.1.2 discussing Subcompartment Analysis is not applicable to the NuScale design and corresponding DSRS.	The discussion of the Subcompartment Analysis is not applicable to the NuScale design.
68.	6.2.1.3	II. Acceptance Criteria DSRS Acceptance Criteria Item 1.C.iii p. 6.2.1.3-4 and 6.2.1.3-5	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED LOSS-OF-COOLANT ACCIDENTS	The NuScale DSRS for this section should be revised to only include the first sentence of the first paragraph and also the last paragraph. The rest of the section does not apply to the NuScale design and should be deleted.	For the NuScale DSRS, revise the sentence, as described.
69.	6.2.1.3	Throughout section	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED LOSS-OF-COOLANT ACCIDENTS	In the development of the NuScale DSRS, it should be noted that the reflood phase eliminates the post reflood as a distinct phase.	The reflooding should be addressed, as described.
70.	6.2.1.3	II. Acceptance Criteria DSRS Acceptance Criteria Item 1.C.v p. 6.2.1.3-5	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED LOSS-OF-COOLANT ACCIDENTS	For the NuScale DSRS, delete reference to mixing of ECCS injection "such as from the pipe break occurring in one of the two RWST drain lines to the reactor."	Delete the sentence, as suggested.
71.	6.2.1.3	I. Areas of Review p. 6.2.1.3-1	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED LOSS-OF-COOLANT ACCIDENTS	The first paragraph in this section describing the control rods inside the vessel as well as description of the containment as a free-standing, below grade structure should be revised for the NuScale DSRS, considering that the NuScale containment is under water.	Revise this section for the NuScale DSRS, as described.
72.	6.2.1.3	I. Areas of Review Item 3 p. 6.2.1.3-1	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED LOSS-OF-COOLANT ACCIDENTS	I. Areas of Review, item 3 should be clarified in the NuScale DSRS and discussion concerning the additional steam generator stored energy available for release caused by reverse heat transfer from the SGs.	Clarify the SG reverse heat transfer issue, as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
73.	6.2.1.3	Throughout section	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED LOSS-OF-COOLANT ACCIDENTS	In developing NuScale DSRS, multiple references to sub-compartments should be deleted, based on NuScale design characteristics.	Delete the multiple references, as described.
74.	6.2.1.3	II. Acceptance Criteria DSRS Acceptance Criteria Item 1.A paragraph 2 p. 6.2.1.3-3	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED LOSS-OF-COOLANT ACCIDENTS	For the NuScale DSRS Acceptance Criteria Item 1.A. 2nd paragraph, reference to reflood should be deleted in accordance to NuScale specific design requirements.	Delete reference to reflood in accordance to NuScale specific design requirements.
75.	6.2.1.3	Throughout section	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED LOSS-OF-COOLANT ACCIDENTS	For the NuScale DSRS this section should specify the surfaces exposed to reactor coolant before the LOCA. Otherwise, the CNV metal shell falls under this requirement. The NuScale CNV also serves as part of the ECCS heat removal system. Therefore, attention should be paid to the conservatisms applied to the wall heat transfer coefficients for the CNV.	Revise this section to specify the surfaces exposed to reactor coolant before the LOCA, as described.
76.	6.2.1.4	Throughout section	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED SECONDARY SYSTEM PIPE RUPTURES	This section should specify that these are the surfaces exposed to reactor coolant before the LOCA. Otherwise, the CNV metal shell falls under this requirement. The NuScale CNV also serves as part of the ECCS heat removal system. Therefore, attention should be paid to the conservatisms applied to the wall heat transfer coefficients for the CNV.	Revise this section to specify the surfaces exposed to reactor coolant before the LOCA, as described.
77.	6.2.1.4	Throughout section	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED SECONDARY SYSTEM PIPE RUPTURES	For the NuScale DSRS this section should be revised to reflect that the NuScale control rod, vessel, and containment are under water.	Revise the section as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
78.	6.2.1.4	Throughout section	MASS AND ENERGY RELEASE ANALYSIS FOR POSTULATED SECONDARY SYSTEM PIPE RUPTURES	The NuScale DSRS should be developed to address the lack of a steam separator in the NuScale design and also the consideration of moisture carryover during a main steamline break (MSLB).	The NuScale DSRS should be developed to address the lack of a steam separator in the NuScale design, as described.
79.	6.2.5	I. Areas of Review Item 4 p. 6.2.5-2	COMBUSTIBLE GAS CONTROL IN CONTAINMENT	Please change the sentence "The capability to reduce combustible gas concentrations within containment by suitable means such as recombiners or igniters." to: "The **need** to reduce combustible gas concentrations within containment by suitable means such as recombiners or igniters".	Change the sentence as proposed.
80.	6.2.5	II. Acceptance Criteria Item 1.(2) p. 6.2.5-3	COMBUSTIBLE GAS CONTROL IN CONTAINMENT	For the NuScale DSRS, delete item 1.(2) - limiting hydrogen generation.	Delete Item 1.(2).
81.	6.2.5	III. Review Procedures Item 10 p. 6.2.5-8	COMBUSTIBLE GAS CONTROL IN CONTAINMENT	In item 10, delete references to atmosphere mixing systems and mixing in interior compartments.	Delete references to atmosphere mixing systems and mixing in interior compartments.
82.	6.2.5	III. Review Procedures Item 11 p. 6.2.5-9	COMBUSTIBLE GAS CONTROL IN CONTAINMENT	In the NuScale DSRS, Section III. Review Procedures, item 11 should be deleted since there are no hydrogen control systems in the NuScale design.	Delete Item 11.
83.	6.2.7	Throughout section	FRACTURE PREVENTION OF CONTAINMENT PRESSURE BOUNDARY	For the NuScale containment design, the SRP Section 6.2.7 is a more suitable review source for the subject in comparison with the mPower DSRS Section.	Consider using SRP for the NuScale DSRS
84.	6.2.7	Throughout section	FRACTURE PREVENTION OF CONTAINMENT PRESSURE BOUNDARY	The NuScale containments are subject to neutron embrittlement. The NuScale design readily complies with Section 6.2.7 as written, because embrittlement is not a degradation mechanism of conventional containments. The current guidance (e.g., RG 1.99) for RPVs is likely not adequate or too conservative due to the lower metal temperature. The staff is aware of the embrittlement and temperature issues based on our CNV pre-app meeting. The NuScale DSRS should address this issue in a more in-depth manner.	Revise this section in the NuScale DSRS to address neutron embrittlement more in-depth.
85.	6.4	III. Review Procedures Item 3, A, v. p. 6.4-11	CONTROL ROOM HABITABILITY SYSTEM	Of the five types of systems listed, the one discussing bottled air talks about a limited time (~1 hour) to prevent inleakage. There is no mention of the specific type of system we have. {{ }}[3(a)] The type of system affects the evaluation information used by reviewers in Section III.5.E.	Consider the specific design feature as described.
86.	6.4	Throughout section	CONTROL ROOM HABITABILITY SYSTEM	Unlike the mPower design, in which the control room is in a control building, the NuScale DSRS will need to show the control room as being located in the reactor building.	Consider that the control room in the NuScale design is located in the reactor building.

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87.	6.6	Throughout section	INSERVICE INSPECTION AND TESTING OF CLASS 2 AND 3 COMPONENTS	NuScale is intending to pursue a reliability and integrity management (RIM) approach to ISI and IST, which is a risk based approach. This will include Class 2 systems in the RXM and ultimately Class 3 systems in the plant. This will significantly differ from the traditional approach of using ASME Section XI and ASME OM Codes for ISI and IST, respectively. The NuScale DSRS should be developed based on the aforementioned approach.	Consider NuScale use of RIM, as described.
88.	7.0	Throughout section	INSTRUMENTATION AND CONTROLS - INTRODUCTION AND OVERVIEW OF REVIEW PROCESS	This section is not applicable to NuScale since the design does not include an auxiliary feedwater system. The NuScale DSRS should be developed accordingly.	Consider that NuScale design does not include AFW system.
89.	7.0	Table 7.1 p. 7.0-21	INSTRUMENTATION AND CONTROLS - INTRODUCTION AND OVERVIEW OF REVIEW PROCESS	Draft mPower DSRS Section 7.0, Table 7.1, page 7.0-21, indicates partial compliance with 10 CFR 50.34(f)(2)(xx) (Power for Pressurizer Level Indication and Controls for Pressurizer Relief and Block Valves). This section is partially applicable to NuScale. Since the design does not include pressurizer power operated relief valves or block valves, the NuScale design will not have these items to be powered. However, the requirement to power pressurizer level indicators from vital buses would be applicable to NuScale's pressurizer level indicators. This requirement overlaps the requirements of 10 CFR 50.34(f)(2)(xix) to provide a post-accident monitoring system (PAMS). Reg. Guide 1.97 Rev. 4, which endorses IEEE 497-2002, provides detailed guidance for meeting this requirement, including power supply requirements. Typically, operating plants designate pressurizer level as a PAMS Type A variable that requires a 1E power supply. The NuScale DSRS should be developed with the consideration that the design not include the referenced equipment (no pressurizer power operated relief valves or block valves).	Consider the NuScale design as described.
90.	7.0	Table 7.1 p. 7.0-13	INSTRUMENTATION AND CONTROLS - INTRODUCTION AND OVERVIEW OF REVIEW PROCESS	IEEE Std. 603-1991, Section 5.3, “Quality” is listed as covered in Chapter 17 of the DSRS. DSRS Section 7.2.1 also covers Quality.	NRC should clarify how the review guidance in DSRS 7.2.1 relates to the DSRS Chapter 17 review.
91.	7.0	Table 7.1 p. 7.0-18	INSTRUMENTATION AND CONTROLS - INTRODUCTION AND OVERVIEW OF REVIEW PROCESS	The Hazards Analysis is not listed as an applicable section for GDC-24. Does this mean that the hazards from control system interactions are excluded from the Hazards Analysis to be included in Appendix A?	NRC should clarify the expectations for addressing GDC-24 in the Hazards Analysis.
92.	7.0	Table 7.1 p. 7.0-21	INSTRUMENTATION AND CONTROLS - INTRODUCTION AND OVERVIEW OF REVIEW PROCESS	Table 7.1 requires full compliance with 10 CFR 50.34(f)(2)(xxii) (Failure Mode and Effect Analysis of Integrated Control System). This section is not applicable to NuScale. The NuScale DSRS should be developed accordingly.	This section is not applicable to NuScale. The NuScale DSRS should be developed accordingly.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
93.	7.0	Table 7.1 p. 7.0-21	INSTRUMENTATION AND CONTROLS - INTRODUCTION AND OVERVIEW OF REVIEW PROCESS	Table 7.1 requires full compliance with 10 CFR 50.34(f)(2)(xxiii) (Anticipatory Trip on Loss of Main Feedwater or Turbine Trip). This section is not applicable to NuScale. The NuScale DSRS should be developed accordingly.	This section is not applicable to NuScale. The NuScale DSRS should be developed accordingly.
94.	7.0	Table 7.1 p. 7.0-24	INSTRUMENTATION AND CONTROLS - INTRODUCTION AND OVERVIEW OF REVIEW PROCESS	Table 7.1 lists RG 1.105, "Setpoints for Safety-Related Instrumentation" as the guide for review of DSRS Setpoints. Add a note to indicate the additional requirements of RIS 2006-17 and BTP 7-12 also apply. Note that RIS-2006-17 is referenced in Section 7.2.7, Setpoints, however BTP 7-12 is not. NuScale has determined that BTP 7-12 is also applicable. Please clarify if it is still applicable and revise the DSRS accordingly.	Revise applicability of the requirements, as proposed.
95.	7.0 Appendix A	p. A-2 and A-4 through A-6	INSTRUMENTATION AND CONTROLS - HAZARD ANALYSIS	The guidance notes that the "Hazards Analysis is iterative and should be performed at every phase in the system development lifecycle to identify new hazards that could arise as the design is implemented in software and hardware." This approach will make the hazard analysis an integral part of ITAAC. The format and content of this ITAAC will be important to ensure predictable closure.	NRC should provide guidance on the format and content of the ITAAC for the Hazards Analysis iterations performed for the post-design certification phases in the system development lifecycle to ensure predictable closure criteria.
96.	7.0 Appendix B	p. B-2	INSTRUMENTATION AND CONTROLS - SYSTEM ARCHITECTURE	Added discussion of specific constraints identified in the I&C design resulting from the general plant safety approach that could affect compliance with regulatory requirements.	NRC should expand on the discussion of specific constraints on the I&C design resulting from the general plant safety approach by providing some examples of constraints that could affect compliance with regulatory requirements.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
97.	7.1	II. Acceptance Criteria DSRS Acceptance Criteria p. 7.1-11 through 7.1-13	INSTRUMENTATION AND CONTROLS - FUNDAMENTAL DESIGN PRINCIPLES	Added that each isolation device is powered by a safety related power source. This could affect how some cyber-approved non-safety related one-way devices for gateway isolation.	NRC should modify the guidance document to allow isolation devices that have a fail-safe state on a loss of power. Specifically, gateway isolation devices that no longer transmit without power should be acceptable for digital communication pathways.
98.	7.1.5, and other locations in the I&C Chapter 7 DSRS		INSTRUMENTATION AND CONTROLS - FUNDAMENTAL DESIGN PRINCIPLES	In section 7.1.5 and other locations in the I&C Chapter 7, the ATWS rule has been addressed. The ATWS rule, 10 CFR 50.62 as it applies to the NuScale design is currently being investigated. The wording in the DSRS should be revised to include the allowance for taking an exemption to 10 CFR 50.62 provided sufficient justification is submitted for NRC review and evaluation.	Consider the NuScale design as described.
99.	7.2	Section 7.2.8 Auxiliary Features III. Review Procedures Item 3 p. 7.2-38	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Draft mPower DSRS Section 7.2, Page 7.2-38, 7.2.8 Auxiliary Features, Section III Review Procedures, Item 3, is not applicable to NuScale. 10 CFR 50.34(f)(2)(xxiii) identifies this requirement as applicable to B&W plants only.	Delete Item 3, as recommended.
100.	7.2	Section 7.2.7 Setpoints III. Review Procedures Item 1.A p. 7.2-34	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Section includes a requirement to verify established setpoints are identified in the technical specifications and limits contained in Chapter 16 of the application. TSTF-493, Rev. 4, Option B, allows setpoints to be located in a Setpoint Control Program rather than having them documented in the technical specifications. The Chapter 7 review should verify setpoints are established using an approved methodology and documented in the technical specifications or in a Setpoint Control Program. Please clarify and/or revise the DSRS accordingly.	Clarify and/or revise the setpoint issue, as described.
101.	7.2	Section 7.2.13 Displays and Monitoring I. Areas of Review p. 7.2-52	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Review Interfaces 2 is not applicable since NuScale does not have pressurizer power operated relief valves or block valves. Any safety functions assigned to the corresponding equipment in the NuScale design will/should be discussed in Chapter 5 and Chapter 8 of the NuScale DSRS.	Consider that NuScale does not have pressurizer power operated relief valves or block valves.
102.	7.2	Section 7.2.13 Displays and Monitoring II. Acceptance Criteria Requirements Item 5 p. 7.2-53	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item 5, 10 CFR 50.34(f)(2)(xii) is not applicable since NuScale does not have an auxiliary feedwater system.	Consider that NuScale does not have auxiliary feedwater system.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
103.	7.2	Section 7.2.13 Displays and Monitoring II. Acceptance Criteria Requirements Item 9 p. 7.2-53	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item 9, 10 CFR 50.34(f)(2)(xx)are not applicable since NuScale does not have pressurizer power operated relief valves or block valves. Any safety functions assigned to the corresponding equipment in the NuScale design will/should be discussed in Chapter 5 and Chapter 8 of the NuScale DSRS.	Consider that NuScale does not have pressurizer power operated relief valves or block valves.
104.	7.2	Section 7.2.13 Displays and Monitoring III. Review Procedures TMI Action Items Items 4 and 8 p. 7.2-59	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	In the list of applicable sections of 10 CFR 50.34(f)(2), items 4, 10 CFR 50.34(f)(2)(xii), and 8, 10 CFR 50.34(f)(2)(xx), are not applicable to NuScale.	Delete inapplicable items, as described.
105.	7.2	Section 7.2.15 Capability for Test and Calibration II.Acceptance Criteria Requirements Item 3 p. 7.2-63	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item 3 is not applicable to NuScale. 10 CFR 50.34(f)(2)(xxii) identifies this requirement as applicable to B&W plants only.	Delete the inapplicable item, as described.
106.	7.2	III. Review Procedures p. 7.2-6 and 7.2-11	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Added new bullet that “Provisions are established for system maintenance and retirement.” This addition should be treated as a COLA action item, as part of the owner’s cyber security program.	NRC should clarify that addition should be treated as a COLA action item, as part of the owner’s cyber security program.
107.	7.2	III. Review Procedures p. 7.2-6, 7.2-7 and 7.2-11	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	The revisions to Parts A through J introduce software safety analyses as a parallel activity to the software hazards analyses described in Appendix A. It is another layer of software development paper without a clear distinction from hazards analysis and traditional verification and validation activities.	NRC should clarify how the software safety analyses and the software hazards analyses (as parallel activities) are distinct from or the same as traditional verification and validation activities.
108.	7.2	III. Review Procedures Item 1.B.iv p. 7.2-7	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	The guidance in item iv has been expanded to require the requirements traceability matrix to document and justify the origin and rationale of every system requirement.	NRC should clarify what is meant by “justify the origin and rationale of every system requirement.”

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
109.	7.2	III. Review Procedures Item 1.F.v p. 7.2-9	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item F.v adds a review element to ensure that "Each software unit should identify measures for traceability to software modules and design features."	NRC should clarify what is meant by "Each software unit should identify measures for traceability to software modules and design features."
110.	7.2	III. Review Procedures Item 1.F.vi p. 7.2-9	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item F.vi added a review element to verify that the "software design ... should not contain any unnecessary functions."	NRC should clarify whether this guidance statement is intended to preclude operating systems software features for configurable systems that may not be used in a specific software instance.
111.	7.2	III. Review Procedures Item 1.K p. 7.2-11 and 7.2-12	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Part K on I&C System Operations contains aspects that are more appropriately handled as part of the owner's cyber security program or as COLA action items.	NRC should clarify that addition should be treated as a COLA action item, as part of the owner's cyber security program or as COLA action items.
112.	7.2	III. Review Procedures Item 1.L p. 7.2-11 and 7.2-12	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Part L on I&C System Maintenance contains aspects that are more appropriately handled as part of the owner's cyber security program or as COLA action items.	NRC should clarify that addition should be treated as a COLA action item, as part of the owner's cyber security program or as COLA action items.
113.	7.2	III. Review Procedures Item 1.M p. 7.2-12 and 7.2-13	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Part M on I&C Systems Retirement contains aspects that are more appropriately handled as part of the owner's cyber security program or as COLA action items.	NRC should clarify that addition should be treated as a COLA action item, as part of the owner's cyber security program or as COLA action items.
114.	7.2	II. Acceptance Criteria DSRS Acceptance Criteria Items 1, 2, 3 p. 7.2-3	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item 1 references RG 1.28, which endorses NQA-1-2008. Item 2 references RG 1.152, which endorses IEEE Std 7 4.3.2-2003. Item 3 references RG 1.168, which endorses IEEE Std 1012-2004. All three sets of documents address verification/validation testing and independent verification; however, the mandatory requirements in each set are somewhat different.	NRC should clarify the expectations for validation testing and independent verification and validation and reconcile differences in definitions and mandatory requirements.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
115.	7.2	II. Acceptance Criteria DSRS Acceptance Criteria Items 1, 2, 4 p. 7.2-3	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item 1 references RG 1.28, which endorses NQA-1-2008. Item 2 references RG 1.152, which endorses IEEE Std 7 4.3.2-2003. Item 4 references RG 1.169, which endorses IEEE Std 828-2005. All three sets of documents address configuration management; however, the mandatory requirements in each set are somewhat different.	NRC should clarify the expectations for configuration management mandatory requirements.
116.	7.2	II. Acceptance Criteria DSRS Acceptance Criteria Items 1, 3,5 p. 7.2-3 and 7.2-4	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item 1 references RG 1.28, which endorses NQA-1-2008. Item 3 references RG 1.168, which endorses IEEE Std 1012-2004. Item 5 references RG 1.170, which endorses IEEE Std 829-2008. All three sets of documents address test documentation requirements applicable to validation testing; however, the mandatory requirements in each set are somewhat different.	NRC should clarify the expectations for mandatory requirements applicable to validation test documentation.
117.	7.2	III. Review Procedures I&C Safety System Development Processes Item 3 p. 7.2-14	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	Item 3 references IEEE Std. 730-1998, which has not been endorsed by NRC.	NRC should clarify the expectations for the use of IEEE Std. 730-1998, since it has not been endorsed in a Regulatory Guide by NRC.
118.	7.2	III. Review Procedures Item 1 p. 7.2-19	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	RGs 1.89 (harsh environment qualification) and 1.100 (seismic qualification) are not included in section III.1.	NRC should add reference to RGs 1.89 (harsh environment qualification) and 1.100 (seismic qualification).
119.	7.2.11	Throughout section	INSTRUMENTATION AND CONTROLS - SYSTEM CHARACTERISTICS	This section should be revised to align with IEEE 603-1991 Clause 5.13 which states that “The sharing of [SSCs] between units at multi-unit generating stations is permissible provided that the ability to simultaneously perform required safety functions in all units is not impaired.” The NuScale design shares certain SSCs between power modules. Please provide clarification in the DSRS.	Revise this section considering that the NuScale design shares certain SSCs between power modules.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
120.	8.1	Throughout section	ELECTRIC POWER - INTRODUCTION	SRP and mPower DSRS Sections 8.1 incorporate Table 8-1, with references to Table 8-1 in Items 1 and 2 under “Requirements” in Section II; Item 5 under “Review Procedures;” Items 2 and 3 under Section IV, “Evaluation Findings;” and Reference 1 in Section VI, “References.” Table 8-1 provides a matrix of the NRC requirements, guidance, and Commission policy documents, and industry codes and standards that will be applied as acceptance criteria and/or guidance to the review of the electrical systems described in Sections 8.2, 8.3.1, 8.3.2, and 8.4. Many of the documents listed in Table 8-1 are cited within SRP and mPower DSRS Sections 8.2, 8.3.1, 8.3.2, and 8.4 as subtier documents. As detailed in the NuScale comments provided for mPower DSRS Sections 8.2, 8.3.1, 8.3.2, and 8.4, some of these subtier documents are not relevant or are only partially relevant to the NuScale design. Based on the NuScale comments for Sections 8.2, 8.3.1, 8.3.2, and 8.4, it is anticipated that some of the subtier documents for Sections 8.2, 8.3.1, 8.3.2, and 8.4 will be revised (as compared to SRP and mPower DSRS Sections 8.1) for the NuScale DSRS to reflect their relevance to the NuScale plant design. Thus, conforming changes will be necessary to Table 8-1 of the NuScale DSRS Section 8.1 for consistency with the relevant requirements and guidance that will be incorporated into NuScale DSRS Sections 8.2, 8.3.1, 8.3.2, and 8.4.	Revise Table 8-1 of the NuScale DSRS Section 8.1 for consistency with the relevant requirements, as explained.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
121.	8.1	Throughout section	ELECTRIC POWER - INTRODUCTION	SRP and mPower DSRS Sections 8.1 incorporate Table 8-2, with reference to Table 8 2 in Item 6 under “Review Procedures.” Table 8-2 provides the staff’s interpretation of the deterministic requirements of GDC 17 and the corresponding staff interpretations regarding conformance to the single failure criterion. Items c, d, and e of Table 8-2 relate to the GDC 17 criterion specifying two physically independent circuits connecting the transmission network (grid) to the onsite distribution system. {{ }}3(a)-(c)	Modify the GDC applicability based on the presented argument.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
122.	8.2	Throughout section	OFFSITE POWER SYSTEM	SRP and mPower DSRS Sections 8.2 refer to a number of subtier guidance documents (e.g., regulatory guides), generic communications, and industry codes and standards. Some of these subtier documents are not relevant or are only partially relevant to the NuScale design. For example, SRP and mPower DSRS Sections 8.2 refer to RG 1.204 and IEEE Std. 666-1991 for acceptable guidelines for grounding systems and surge and lightning protection systems. As discussed in the NuScale gap analysis, the 1991 edition of IEEE Std 666, which is endorsed by RG 1.204, has been superseded by the 2007 edition. NuScale intends to use the current IEEE Std 666 2007, unless superseded by a future endorsed revision. As another example, SRP and mPower DSRS Sections 8.2 refer to RG 1.204 and IEEE Std. 1050-1996 for acceptable guidelines for instrumentation and control system grounding. The 1996 edition of IEEE Std. 1050, which is endorsed by RG 1.204, has been superseded by the 2004 edition. NuScale intends to use the current IEEE Std 1050-2004, unless superseded by a future endorsed revision. This version is not endorsed by a regulatory guide but its use is not anticipated to result in deviation from the design philosophy otherwise stated in RG 1.204 (to be verified by code reconciliation). (This example was not identified in the NuScale gap analysis. The NuScale DSRS Section 8.2 should reflect the relevance of these and other subtier documents to the NuScale plant design. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.	The NuScale DSRS Section 8.2 should reflect the relevance of these and other subtier documents to the NuScale plant design. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.
123.	8.2	I. Areas of Review Review Interfaces Item 3 p. 8.2-3	OFFSITE POWER SYSTEM	Item 3 refers, in part, to DSRS Sections 5.4.6 and 5.4.7. These references are not appropriate for the NuScale DSRS Section 8.2. Specifically, the NRC guidance of NUREG 0800 and Regulatory Guide 1.206 designates Section 5.4.6 for a description of the reactor core isolation cooling system, a system applicable only to boiling water reactor designs. As the NuScale design is a pressurized water reactor, this section is not applicable to the NuScale design certification or to combined license applicants referencing the NuScale certified design. Thus, Item 3 should be revised in the NuScale DSRS Section 8.2 to eliminate the reference to DSRS Section 5.4.6. The NRC guidance of NUREG 0800 and Regulatory Guide 1.206 designates Section 5.4.7 for a description of the residual heat removal (RHR) system. The NuScale advanced modular reactor design does not include an RHR system allied with the RCS as would be found at a large light water reactor (LWR). Thus, Section 5.4.7 is not relevant to the NuScale design certification or to combined license applicants referencing the NuScale certified design. The NuScale design incorporates systems that fulfill decay heat removal functions similar to those served by a typical RHR system. These systems are described in other portions of the DCD. NuScale DCD Section 5.4.7 will provide references to these other portions of the DCD, if/as appropriate. Thus, Item 3 should be revised in the NuScale DSRS Section 8.2 to reflect the above discussion.	Delete the references as recommended based on the presented argument.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
124.	8.2	I. Areas of Review Review Interfaces Item 8 p. 8.2-3	OFFSITE POWER SYSTEM	Item 8 refers, in part, to DSRS Sections 9.2.3, 5.4.8, and 9.3.6. These references are not appropriate for the NuScale DSRS Section 8.2. The NRC guidance of NUREG 0800, Section 9.2.3 (demineralized water makeup system), was withdrawn in December 1996, and Section 9.2.3 is reserved by the NRC per RG 1.206. Accordingly, Section 9.2.3 is not applicable to the NuScale design certification or to combined license applicants referencing the NuScale certified design. Thus, Item 8 should be revised in the NuScale DSRS Section 8.2 to eliminate the reference to DSRS Section 9.2.3. The NRC guidance of NUREG 0800 and RG 1.206 designates Section 5.4.8 for a description of the reactor water cleanup system, a system applicable only to boiling water reactor designs. As the NuScale design is a pressurized water reactor, this section is not applicable to the NuScale design certification or to combined license applicants referencing the NuScale certified design. Thus, Item 8 should be revised in the NuScale DSRS Section 8.2 to eliminate the reference to DSRS Section 5.4.8. It appears that mPower DSRS Section 9.3.6 is a design-specific section that will govern the review of the mPower reactor coolant inventory and purification system. This review interface in Item 8 should be revised for the NuScale DSRS Section 8.2. Specifically, the NuScale design does not have a reactor coolant inventory and purification system, but it appears that the NuScale chemical and volume control system may serve similar functions. If this is the case, the appropriate reference for the NuScale DSRS would be Section 9.3.4 instead of Section 9.3.6.	Revise the references as recommended based on the presented argument.
125.	8.2	I. Areas of Review Review Interfaces Item 4 p. 8.2-3	OFFSITE POWER SYSTEM	Item 4 refers, in part, to DSRS Section 10.4.9. This reference is not appropriate for the NuScale DSRS Section 8.2. The NRC guidance of NUREG 0800 and RG 1.206 designates Section 10.4.9 for a description of the auxiliary feedwater (AFW) system. The NuScale design neither requires nor uses an AFW system, and thus Section 10.4.9 is not applicable to the NuScale design certification application. The NuScale design does include the DHR system that fulfills a function substantively equivalent to that served by a typical AFW system. NuScale intends to use a new DCD Section 10.4.12 to describe the DHR system. Thus, Item 4 under “Review Interfaces” should be revised in the NuScale DSRS Section 8.2 to refer to the new DSRS Section 10.4.12 that will govern the NRC staff's review of the NuScale DHR system.	Revise the references as recommended based on the presented argument.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
126.	8.2	Throughout section	OFFSITE POWER SYSTEM	{{ }}3(a)-(c) The above discussion should be reflected appropriately in the NuScale DSRS Section 8.2.	Revise GDC applicability based on the presented argument.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
127.	8.2	Throughout section	OFFSITE POWER SYSTEM	SRP and mPower DSRS Sections 8.2 specify that GDC 17 applies to the offsite power system. The NuScale offsite power system satisfies the provision of GDC 17 specifying that an offsite power system be provided. GDC 17 is further satisfied in that the offsite power system is designed in accordance with applicable industry codes and standards. This minimizes to the extent practical the likelihood of its failure under normal, abnormal, and accident conditions (e.g., as a result of, or coincident with, the loss of power generated by the nuclear plant or the loss of power from the onsite electric power supplies). {{ }}$^{3(a)-(c)}$	Consider the NuScale offsite power system as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
128.	8.2	Throughout section	OFFSITE POWER SYSTEM	SRP and mPower DSRS Sections 8.2 specify that GDCs 33, 34, 35, 38, 41, and 44 apply to the offsite power system to ensure that safety functions of the systems described in these GDCs are accomplished. GDCs 33, 34, 35, 38, 41, and 44 contain criteria for safety systems, including provisions for sufficient redundancy such that, for offsite power system operation (if onsite power is not available) and for onsite power system operation (if offsite power is not available), the system safety function can be accomplished. These “redundancy provisions” are applied for reactor coolant makeup during small breaks (GDC 33), residual heat removal (GDC 34), emergency core cooling (GDC 35), containment heat removal (GDC 38), containment atmosphere cleanup (GDC 41), and cooling water for SSCs important to safety (GDC 44). As they relate to the operation of the offsite power system, the redundancy provisions of these criteria are satisfied for a typical reactor design by demonstrating that the minimum design provisions of GDC 17 are met. {{ }}$^{3(a)-(c)}$ The above discussion should be reflected appropriately in the NuScale DSRS Section 8.2.	Consider the NuScale advanced passive design concerning GDCs compliance in developing this section.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
129.	8.2	Throughout section	OFFSITE POWER SYSTEM	SRP and mPower DSRS Sections 8.2 specify that GDC 18 applies to the offsite power system. {{ }}3(a)-(c) The above discussion should be reflected appropriately in the NuScale DSRS Section 8.2.	Revise GDC applicability as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
130.	8.2	Throughout section	OFFSITE POWER SYSTEM	{{ }}3(a)-(c)	Consider the presented argument in development of the NuScale DSRS for this section.
131.	8.2	Throughout section	OFFSITE POWER SYSTEM	The mPower DSRS Section 8.2 (e.g., Review Interface Item 10 on Page 8.2-4; Review Procedure Item 2.J on Page 8.2-14; Review Procedure Item 6 on Page 8.2-17; etc.) refers to technical specification requirements to ensure operability of the offsite power system. With the NuScale plant design's reduced reliance on AC power, technical specification requirements on offsite power system operability are not appropriate to apply to the passive NuScale plant design.	Based on the presented argument in development of the NuScale DSRS for this section, technical specification requirements on offsite power system operability are not appropriate to apply to the passive NuScale plant design.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
132.	8.2	III. Review Procedures Item 2.F p. 8.2-12	OFFSITE POWER SYSTEM	Item 2.F refers, in part, to BTP 8-6 for review guidance related to offsite power system stability. As detailed in the original NuScale gap analysis, SRP BTP 8-6 was determined to be “not applicable” to the NuScale advanced passive design. The mPower DSRS BTP 8-6 incorporates revisions as compared to SRP BTP 8-6 that are relevant to passive plant designs such as the NuScale design. Thus, the content of mPower DSRS BTP 8-6 is generally applicable to the NuScale design and may be used in a NuScale DSRS BTP 8-6 with specific changes to accommodate the NuScale design. The changes needed for the NuScale DSRS BTP 8-6 are identified in the NuScale comments on mPower DSRS BTP 8-6.	Based on the presented argument in development of the NuScale DSRS, revise the applicability of BTP 8-6 for this section and as it is discussed in BTP 8-6 review comment.
133.	8.2	III. Review Procedures Item 2.F p. 8.2-13	OFFSITE POWER SYSTEM	The last paragraph of Item 2.F includes direction to the reviewer to verify reactor coolant pump operational requirements. The NuScale design does not include reactor coolant pumps or any other active SSCs that require electrical power to actuate safety-related functions. Thus, this content should be revised to reflect the NuScale passive design.	Consider that the NuScale design does not include reactor coolant pumps or any other active SSCs that require electrical power to actuate safety-related functions.
134.	8.2	III. Review Procedures Item 8 p. 8.2-17	OFFSITE POWER SYSTEM	Item 8 states, in part: “The mPower design does not share any safety significant SSCs between multiple reactor modules. The exception to this is that multi-module sites…do share a common switchyard.” As discussed further below, the entirety of Item 8 (including the excerpted text above) is not appropriate for the NuScale DSRS Section 8.2. Specifically, the first sentence is not accurate for the NuScale design. The NuScale plant design does in some instances share important-to-safety SSCs between up to 12 reactor modules (e.g., the safety-related UHS). However, based on the discussion provided in the NuScale comment above on mPower DSRS Section 8.2 regarding GDC 5 relevance to the offsite power system, Item 8 in its entirety is not relevant to the NuScale offsite power system since it is not important to safety and has no reasonable likelihood of adversely affecting the performance of plant safety functions. Thus, Item 8 under Section III, “Review Procedures,” should be deleted in the NuScale DSRS Section 8.2.	Based on the presented argument, delete Item 8.
135.	8.2	III. Review Procedures Item 11 p. 8.2-18	OFFSITE POWER SYSTEM	Item 11 includes an out-of-service steam-driven pump as an example of a condition potentially impacting the ability to cope with a loss of offsite power or station blackout. The NuScale design does not include steam-driven pumps. Thus, this example is not relevant and may be eliminated in the NuScale DSRS Section 8.2.	Delete example of steam-driven pumps.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
136.	8.2	I. Areas of Review Item 8 p. 8.2-2	OFFSITE POWER SYSTEM	Item 8 refers to DSRS Section 8.4 for review of the interface between the offsite power system and the alternate AC (AAC) power source. As discussed further below, the NuScale plant design neither requires nor uses an AAC power source. Thus, Item 8 under Section I, “Areas of Review,” should be deleted in the NuScale DSRS Section 8.2. The NuScale plant design conforms to the requirements of 10 CFR 50.63 for a light water reactor to have the capability to withstand for a specified duration and recover from a station blackout (as defined in 10 CFR 50.2). The NuScale plant design meets the underlying purpose of 10 CFR 50.63 largely in its advanced passive design and inherently strong station blackout (SBO) coping capability. This eliminates any significant safety benefit a typical light water reactor design gains by having an AAC power source (e.g., gas turbine generator) for SBO. This conclusion is consistent with the NRC’s policy documented in SECY 90-016, SECY 94-084, and SECY 95-132, and their associated Staff Requirements Memorandums (SRMs). SECY 90-016 establishes the policy that advanced light water reactor plants should have an AAC power source of diverse design and capable of powering at least one complete set of normal shutdown loads in the event of a SBO. In SECY-94-084 and SECY-95-132, the NRC modified this criterion for advanced light water reactor plants that use passive safety systems (such as the NuScale reactor plant design). Specifically, an AAC power source is not necessary for passive plant designs that (a) do not need AC power to perform safety-related functions for 72 hours following the onset of a SBO, and (b) meet the NRC guidelines for the regulatory treatment of non-safety systems (RTNSS). The NuScale passive plant design satisfies both of these criteria. Thus, consistent with Commission policy and the applicable provisions of Regulatory Guide 1.155, the NuScale design conforms to the requirements of 10 CFR 50.63: • with no reliance on or provision for an alternate AC power source (as defined in 10 CFR 50.2) that is relied upon to cope with an SBO. • by demonstrating that the fulfillment of plant safety-related functions is assured for a minimum of 72 hours following the onset of a SBO event.	Consider that the NuScale plant design neither requires nor uses an AAC power source. Thus, Item 8 under Section I, “Areas of Review,” should be deleted in the NuScale DSRS Section 8.2.
137.	8.3.1	Throughout section	AC POWER SYSTEMS (ONSITE)	SRP and mPower DSRS Sections 8.3.1 refer to a number of subtier guidance documents (e.g., regulatory guides), generic communications, and industry codes and standards. Some of these subtier documents are not relevant or are only partially relevant to the NuScale design. Several of the NuScale comments provided above on mPower DSRS Section 8.3.1 represent examples of such documents. The NuScale DSRS Section 8.3.1 should reflect the relevance of these and other subtier documents to the NuScale plant design, as documented in the NuScale gap analysis. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.	Consider that some of these subtier documents are not relevant or are only partially relevant to the NuScale design.
138.	8.3.1	I. Areas of Review paragraph 2 p. 8.3.1-1	AC POWER SYSTEMS (ONSITE)	Draft mPower DSRS Section 8.3.1, first sentence of the second paragraph under Section I, “Areas of Review,” on Page 8.3.1-1, lists the primary constituents of the onsite AC power system. The Class 1E AC power system (supplied by the Class 1E DC power system batteries and inverters) will be considered part of the NuScale onsite AC power system that is reviewed under SRP Section 8.3.2. Thus, NuScale recommends that this sentence be revised in the NuScale DSRS Section 8.3.1 to include the Class 1E AC power system (supplied by the Class 1E DC power system batteries and inverters).	Recommend that revision be made to include the Class 1E AC power system, as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
139.	8.3.1	I. Areas of Review Item 4 p. 8.3.1-2 and 8.3.1-3	AC POWER SYSTEMS (ONSITE)	{{ }}3(a)-(c)	Recommend that Item 4 be revised in the NuScale DSRS Section 8.3.1.
140.	8.3.1	I. Areas of Review Item 9.B p. 8.3.1-4	AC POWER SYSTEMS (ONSITE)	Item 9.B states: “RTNSS components, such as alternate ac power sources (e.g., ancillary DGs/GTGs)….” As discussed in the NuScale comment above on mPower DSRS Section 8.3.1, Areas of Review Item 4, the terminology “alternate AC power source” is not appropriate for or relevant to the NuScale design (since the NuScale design uses the AC-independent approach as opposed to the alternate AC power source approach). Thus, NuScale recommends that Item 9.B be revised in the NuScale DSRS Section 8.3.1 to eliminate the terminology “alternate AC power sources.”	Recommend that Item 9.B be revised in the NuScale DSRS Section 8.3.1 to eliminate the terminology “alternate AC power sources.”
141.	8.3.1	I. Areas of Review Item 9.C p. 8.3.1-4	AC POWER SYSTEMS (ONSITE)	Item 9.C specifies that the onsite AC power system and its components must be designed to withstand environmental conditions associated with normal operation, natural phenomena, and postulated accidents. NuScale recommends that this item be revised to reflect its relevance only to safety-related and certain RTNSS (e.g., RTNSS Criterion B) portions of the onsite AC power system.	Recommend that this item be revised to reflect its relevance only to safety-related and certain RTNSS (e.g., RTNSS Criterion B) portions of the onsite AC power system.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
142.	8.3.1	I. Areas of Review Review Interfaces Item 1 p. 8.3.1-4	AC POWER SYSTEMS (ONSITE)	Item 1 states: "…the independence of the preferred power system and any alternate ac power sources provided for station blackout…." As discussed in the NuScale comment above on mPower DSRS Section 8.3.1, Areas of Review Item 4, the terminology "alternate AC power source" is not appropriate for or relevant to the NuScale design (since the NuScale design uses the AC-independent approach as opposed to the alternate AC power source approach). Thus, NuScale recommends that Item 1 be revised in the NuScale DSRS Section 8.3.1 to replace the terminology "alternate AC power sources" with "onsite standby AC power sources" or similar terminology.	Recommend that Item 1 be revised in the NuScale DSRS Section 8.3.1 to replace the terminology "alternate AC power sources" with "onsite standby AC power sources" or similar terminology.
143.	8.3.1	I. Areas of Review Review Interfaces Item 7 p. 8.3.1-5	AC POWER SYSTEMS (ONSITE)	Item 7 refers, in part, to DSRS Section 10.4.9. This reference is not appropriate for the NuScale DSRS Section 8.3.1. The NRC guidance of NUREG 0800 and RG 1.206 designates Section 10.4.9 for a description of the auxiliary feedwater (AFW) system. The NuScale design neither requires nor uses an AFW system, and thus Section 10.4.9 is not applicable to the NuScale design certification application. The NuScale design does include the DHR system that fulfills a function substantively equivalent to that served by a typical AFW system. As detailed in the NuScale comment provided for mPower DSRS Section 5.4.7, NuScale intends to use a new DCD Section 10.4.12 to describe the DHR system. Thus, Item 7 under "Review Interfaces" should be revised in the NuScale DSRS Section 8.3.1 to refer to the new DSRS Section 10.4.12 that will govern the NRC staff's review of the NuScale DHR system.	Consider the presented argument in development of the NuScale DSRS for this section.
144.	8.3.1	I. Areas of Review Review Interfaces Item 9 p. 8.3.1-6	AC POWER SYSTEMS (ONSITE)	Item 9 refers, in part, to DSRS Section 9.3.6 and SRP Section 5.4.8. These references are not appropriate for the NuScale DSRS Section 8.3.1. It appears that mPower DSRS Section 9.3.6 is a design-specific section that will govern the review of the mPower reactor coolant inventory and purification system. This review interface in Item 9 should be revised for the NuScale DSRS Section 8.3.1. Specifically, the NuScale design does not have a reactor coolant inventory and purification system, but it appears that the NuScale chemical and volume control system may serve similar functions. If this is the case, the appropriate reference for the NuScale DSRS would be Section 9.3.4 instead of Section 9.3.6. The NRC guidance of NUREG 0800 and Regulatory Guide 1.206 designates Section 5.4.8 for a description of the reactor water cleanup system, a system applicable only to boiling water reactor designs. As the NuScale design is a pressurized water reactor, this section is not applicable to the NuScale design certification or to combined license applicants referencing the NuScale certified design. Thus, Item 9 should be revised in the NuScale DSRS Section 8.3.1 to eliminate the reference to SRP Section 5.4.8.	Consider that Item 9 should be revised in the NuScale DSRS Section 8.3.1 to eliminate the reference to SRP Section 5.4.8.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
145.	8.3.1	I. Areas of Review Review Interfaces Item 11 p. 8.3.1-6	AC POWER SYSTEMS (ONSITE)	Item 11 refers, in part, to DSRS Section 5.4.7. This reference is not appropriate for the NuScale DSRS Section 8.3.1. Specifically, the NRC guidance of NUREG 0800 and RG 1.206 designates Section 5.4.7 for a description of the residual heat removal (RHR) system. The NuScale advanced modular reactor design does not include an RHR system allied with the RCS as would be found at a large light water reactor (LWR). Thus, Section 5.4.7 is not relevant to the NuScale design certification or to combined license applicants referencing the NuScale certified design. The NuScale design incorporates systems that fulfill decay heat removal functions similar to those served by a typical RHR system. These systems are described in other portions of the DCD. NuScale DCD Section 5.4.7 will provide references to these other portions of the DCD, if/as appropriate. Thus, Item 11 should be revised in the NuScale DSRS Section 8.3.1 to reflect the above discussion.	Consider that Item 11 should be revised in the NuScale DSRS Section 8.3.1 to reflect the above discussion.
146.	8.3.1	Throughout section	AC POWER SYSTEMS (ONSITE)	{{ }}$^{3(a)-(c)}$ The above discussion should be reflected appropriately in the NuScale DSRS Section 8.3.1.	Consider the presented argument in development of the NuScale DSRS for this section.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
147.	8.3.1	Throughout section	AC POWER SYSTEMS (ONSITE)	SRP and mPower DSRS Sections 8.3.1 specify that GDC 17 applies to the onsite AC power system. The NuScale onsite AC power system satisfies the provision of GDC 17 specifying that an onsite power system be provided (with capacity and capability) to facilitate the functioning of SSCs important to safety. GDC 17 is further satisfied in that the onsite AC power system is designed in accordance with applicable industry codes and standards. This minimizes to the extent practical the likelihood of its failure under normal, abnormal, and accident conditions (e.g., as a result of, or coincident with, the loss of power generated by the nuclear plant or the loss of power from the onsite electric power supplies). {{ }}3(a)-(c)	Consider the presented argument in development of the NuScale DSRS for this section.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
148.	8.3.1	Throughout section	AC POWER SYSTEMS (ONSITE)	SRP and mPower DSRS Sections 8.3.1 specify that GDCs 33, 34, 35, 38, 41, and 44 apply to the onsite AC power system to ensure that safety functions of the systems described in these GDCs are accomplished. GDCs 33, 34, 35, 38, 41, and 44 contain criteria for safety systems, including provisions for sufficient redundancy such that, for offsite power system operation (if onsite power is not available) and for onsite power system operation (if offsite power is not available), the system safety function can be accomplished. These “redundancy provisions” are applied for reactor coolant makeup during small breaks (GDC 33), residual heat removal (GDC 34), emergency core cooling (GDC 35), containment heat removal (GDC 38), containment atmosphere cleanup (GDC 41), and cooling water for SSCs important to safety (GDC 44). As they relate to the operation of the onsite AC power system, the redundancy provisions of these criteria are satisfied for a typical reactor design by demonstrating that the minimum design provisions of GDC 17 are met. {{ }}$^{3(a)-(c)}$ The above discussion should be reflected appropriately in the NuScale DSRS Section 8.3.1.	Revise the applicability of the GDCs as discussed.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
149.	8.3.1	Throughout section	AC POWER SYSTEMS (ONSITE)	{{ }}3(a)-(c)	Revise the applicability of GDC 17, as discussed.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
150.	8.3.1	II. Acceptance Criteria DSRS Acceptance Criteria final paragraph p. 8.3.1-11	AC POWER SYSTEMS (ONSITE)	In the final paragraph before the heading "Technical Rationale" of both SRP and mPower DSRS Sections 8.3.1, reference is made to 10 CFR 50.34(f)(2)(xiii) and (xx). 10 CFR 50.34(f)(2)(xiii) is not technically relevant to the NuScale design, and consistent with 10 CFR 52.47(a)(8) and 10 CFR 50.34(f), NuScale compliance with this provision is neither appropriate nor required. Specifically, the NuScale design does not rely on pressurizer heaters to establish and maintain natural circulation in hot standby conditions. The portion of 10 CFR 50.34(f)(2)(xx) related to power supplies for level indicators is applicable to the NuScale design certification application. Aspects related to power supplies for power-operated relief and block valves are not applicable. Specifically, the NuScale design does not use power-operated relief valves or block valves. Therefore, these aspects are not technically relevant to the NuScale design, and consistent with 10 CFR 52.47(a)(8) and 10 CFR 50.34(f), NuScale compliance with this portion of these provisions is neither appropriate nor required. The above discussion should be reflected appropriately in the NuScale DSRS Section 8.3.1. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.	Consider that aspects related to power supplies for power-operated relief and block valves are not applicable.
151.	8.3.1	II. Acceptance Criteria Technical Rationale Item 3 p. 8.3.1-12	AC POWER SYSTEMS (ONSITE)	Item 3 states that "Compliance with GDC 5 requires that onsite power system SSCs important to safety not be shared among nuclear power units." This statement is not consistent with GDC 5, which allows for sharing of SSCs important to safety provided "…it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units." It is noted that in the NuScale design, Class 1E AC power is shared between units. However, such sharing satisfies the intent of the sharing exclusions of RG 1.32 and RG 1.81, and ensures that the sharing criterion of GDC 5 is satisfied. Specifically, in the NuScale advanced passive plant design, actuation of safety system functions is assured with no reliance on electrical power. (Class 1E power is only relied upon for post-accident monitoring and plant emergency lighting functions.) Furthermore, sufficient electrical power capacity is provided to preclude undesirable interactions that could adversely affect the ability of SSCs to perform their safety functions. Thus, the extent to which the NuScale design shares the Class 1E AC power system between (up to 12) reactor units ensures that the sharing criterion of GDC 5 is satisfied. Based on the above, NuScale recommends that Item 3 under "Technical Rationale" be revised for the NuScale DSRS Section 8.3.1 to allow for NuScale compliance with the sharing provisions of GDC 5.	Recommend that Item 3 under "Technical Rationale" be revised for the NuScale DSRS Section 8.3.1 to allow for NuScale compliance with the sharing provisions of GDC 5.
152.	8.3.1	II. Acceptance Criteria Requirements Items 1-6 p. 8.3.1-7	AC POWER SYSTEMS (ONSITE)	Items 1 through 6 specify GDCs 2, 4, 5, 17, 18, 33, 34, 35, 38, 41, and 44 as applicable to the onsite AC power system. See other NuScale comments on Section 8.3.1 regarding for clarification needed to be considered in the NuScale DSRS Section 8.3.1 regarding applicability of GDCs 2, 4, 5, 17, 18, 33, 34, 35, 38, 41, and 44.	Revise applicability of GDCs 2, 4, 5, 17, 18, 33, 34, 35, 38, 41, and 44.

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153.	8.3.1	II. Acceptance Criteria Requirements Item 8 p. 8.3.1-7	AC POWER SYSTEMS (ONSITE)	Item 8 refers to 10 CFR 50.63 for relevant requirements related to the establishment of a reliability program for emergency onsite AC power sources. The emergency AC power sources contemplated by 10 CFR 50.63 are the safety-related power sources (i.e., emergency diesel generators) relied upon by a typical LWR design. As an advanced passive reactor plant design, the NuScale plant neither requires nor uses safety-related emergency AC power sources. Note that Item 8 under "Areas of Review" of mPower DSRS Section 8.3.1, Page 8.3.1-3, appropriately captures this comment. Specifically, it states that the "…criteria regarding a reliability program for emergency onsite ac power source[s] are not applicable…" to passive designs that do not rely on onsite AC power to achieve and maintain safe-shutdown. Similar to the revised Item 8 under "Areas of Review" of mPower DSRS Section 8.3.1, NuScale recommends that for the NuScale DSRS Section 8.3.1, Item 8 under Section II, "Acceptance Criteria," be revised to reflect that a reliability program for emergency onsite ac power sources is not applicable.	Consider that as an advanced passive reactor plant design, the NuScale plant neither requires nor uses safety-related emergency AC power sources.
154.	8.3.1	II. Acceptance Criteria DSRS Acceptance Criteria Items 1-5 p. 8.3.1-9 and 8.3.1-10	AC POWER SYSTEMS (ONSITE)	Acceptance Criteria 1 through 5 specify GDCs 2, 4, 5, 17, and 18 as applicable to the onsite AC power system. See NuScale comments provided above on Section 8.3.1 for regarding clarification needed to be considered in the NuScale DSRS Section 8.3.1 regarding applicability of GDCs 2, 4, 5, 17, and 18 to the NuScale onsite AC power system.	Revise the applicability of the GDCs as discussed.
155.	8.3.1	II. Acceptance Criteria DSRS Acceptance Criteria Item 4.F p. 8.3.1-9	AC POWER SYSTEMS (ONSITE)	Acceptance Criterion 4.F and Review Procedure Item 4.F specify RG 1.204 and IEEE Std. 666-1991 (see Reference 59 in Section VI of DSRS Section 8.3.1) for acceptable guidelines related to lightning and surge protection for the onsite AC power system. As discussed in the NuScale gap analysis, the 1991 edition of IEEE Std 666, which is endorsed by RG 1.204, has been superseded by the 2007 edition. NuScale intends to use the current IEEE Std 666 2007, unless superseded by a future endorsed revision. The NuScale DSRS Section 8.3.1 should reflect the relevance of these and other subtier documents to the NuScale plant design, as documented in the NuScale gap analysis. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.	Consider that NuScale intends to use the current IEEE Std 666 2007, unless superseded by a future endorsed revision.
156.	8.3.1	II. Acceptance Criteria DSRS Acceptance Criteria Item 6 p. 8.3.1-10 II. Acceptance Criteria Technical Rationale Item 7 p. 8.3.1-14	AC POWER SYSTEMS (ONSITE)	Acceptance Criterion 6 and Item 7 under "Technical Rationale" specify RG 1.63 and IEEE Std. 741-1997 (see Reference 60 in Section VI of mPower DSRS Section 8.3.1) for acceptable guidelines related to protection of the onsite Class 1E AC power system. As discussed in the NuScale gap analysis, Regulatory Position C of RG 1.63 endorses Section 5.4 of IEEE Std. 741-1986 for external circuit protection of electric penetration assemblies. IEEE Std. 741 1986 has been superseded by IEEE Std. 741 1997. Consistent with Reference 60 in Section VI of mPower DSRS Section 8.3.1, NuScale intends to use IEEE Std. 741-1997. This version is not endorsed by a regulatory guide but its use is not anticipated to result in deviation from the design philosophy otherwise stated in RG 1.63 (to be verified by code reconciliation). The NuScale DSRS Section 8.3.1 should reflect the relevance of these and other subtier documents to the NuScale plant design, as documented in the NuScale gap analysis. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.	Based on the presented argument, in development of the NuScale DSRS for this section NuScale intends to use IEEE Std. 741-1997.

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157.	8.3.1	III. Review Procedures Item 3.A p. 8.3.1-15	AC POWER SYSTEMS (ONSITE)	Item 3.A states that the"…proposed design should not provide for sharing of the safety-related portions of the onsite AC power system between multiple modules at the same site." As discussed in the NuScale comment above on mPower DSRS Section 8.3.1, Technical Rationale Item 3, in the NuScale design, Class 1E power is shared between units. However, such sharing satisfies the intent of the sharing exclusions of RG 1.32 and RG 1.81, and ensures that the sharing criterion of GDC 5 is satisfied. Based on the above, NuScale recommends that Item 3.A be revised for the NuScale DSRS Section 8.3.1 to allow for NuScale compliance with the sharing provisions of GDC 5.	Recommend that Item 3.A be revised for the NuScale DSRS Section 8.3.1 to allow for NuScale compliance with the sharing provisions of GDC 5.
158.	8.3.1	III. Review Procedures Item 4.B p. 8.3.1-17	AC POWER SYSTEMS (ONSITE)	Item 4.B characterizes reactor coolant pumps and reactor recirculation pumps as balance of plant (BOP) loads. Consistent with the definitions in 10 CFR 50.2, reactor coolant pumps and reactor recirculation pumps are considered nuclear steam supply system (NSSS) loads rather than BOP loads. Thus, NuScale recommends that Item 4.B under Section III, "Review Procedures," of mPower DSRS Section 8.3.1 be revised to appropriately characterize these pump motor loads as NSSS loads. Notwithstanding this distinction, the NuScale reactor coolant system (RCS) design uses passive natural circulation, and thus includes neither reactor coolant pumps nor reactor recirculation pumps. Thus, these examples and the associated discussion of loss of forced RCS recirculation may be deleted from Item 4.B in the NuScale DSRS Section 8.3.1. In the NuScale design, a reactor unit trip or 100 percent load rejection does not result in a loss of power to plant motor loads (e.g., feedwater pumps). Thus, Item 4.B may be simplified for the NuScale DSRS Section 8.3.1 to state that the reviewer should verify that a reactor unit trip or a 100 percent load rejection does not result in a loss of power to plant motor loads that would result in a loss of RCS flow or reduced feedwater flow.	Consider that Item 4.B may be simplified for the NuScale DSRS Section 8.3.1.
159.	8.3.1	III. Review Procedures Item 9 and 9.A p. 8.3.1-21	AC POWER SYSTEMS (ONSITE)	Item 9 (and 9.A) is entitled "Reliability Program for Emergency Onsite AC Power Sources." Much of this item is not relevant to passive plant designs such as the NuScale design. As discussed in detail in the NuScale comment above on mPower DSRS Section 8.3.1, Requirement Item 8 of Section II, "Acceptance Criteria," the NuScale advanced passive plant neither requires nor uses safety-related emergency AC power sources. Note that Item 8 under "Areas of Review" of mPower DSRS Section 8.3.1, Page 8.3.1-3, appropriately captures this comment. Specifically, it states that the "…criteria regarding a reliability program for emergency onsite ac power source[s] are not applicable…" to passive designs that do not rely on onsite AC power to achieve and maintain safe-shutdown. Similar to the revised Item 8 under "Areas of Review" of mPower DSRS Section 8.3.1, NuScale recommends that for the NuScale DSRS Section 8.3.1, Item 9 under Section III, "Review Procedures," be revised to eliminate Item 9.A, or otherwise to reflect that a reliability program for emergency onsite ac power sources and the provisions of RG 1.9 are not applicable.	Recommend that the mentioned "Review Procedures," be revised to eliminate Item 9.A, or otherwise to reflect that a reliability program for emergency onsite ac power sources and the provisions of RG 1.9 are not applicable.

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160.	8.3.1	III. Review Procedures Item 9.B p. 8.3.1-22	AC POWER SYSTEMS (ONSITE)	Item 9.B states that "…it need not be evaluated for an SBO coping duration, provided the applicant has implemented an appropriate RTNSS process." As worded, the evaluation mentioned in this statement could be confused with the analysis required by 10 CFR 50.63(a)(2) and thus would appear to be inconsistent with the governing regulatory requirement for a coping analysis. Moreover, it appears that the scope of the review specified under Item 9.B is redundant with the review performed under DSRS Section 8.4. Thus, NuScale recommends that Item 9.B be eliminated from DSRS Section 8.3.1, or that the wording be clarified for passive designs such as the NuScale plant design. Suggested wording is as follows: Conformance with 10 CFR 50.63 is reviewed in accordance with DSRS Section 8.4. 10 CFR 50.63(a)(1) and 10 CFR 50.63(c)(1)(i) require each nuclear power plant to specify an SBO coping duration based on site- and plant-specific factors that contribute to the likelihood of and capability for restoring alternating current (AC) power following an SBO. These factors include consideration for redundancy and reliability of onsite emergency AC (EAC) power sources. Since passive plants do not have EAC power sources, passive plant designs meet the 10 CFR 50.63 requirements for specifying a coping duration by demonstrating that safety-related functions are assured for a minimum of 72 hours following an SBO event. The 72 hour coping duration for passive plant designs is consistent with the station blackout duration approved by the NRC staff for the AP1000 design, as reflected in SECY 94-084 (Reference 16).	Recommend that Item 9.B be eliminated from DSRS Section 8.3.1, or that the wording be clarified for passive designs such as the NuScale plant design.
161.	8.3.1	III. Review Procedures Item 6 p. 8.3.1-20	AC POWER SYSTEMS (ONSITE)	In Item 6, NuScale recommends replacing "2b)" with "2)" in the NuScale DSRS Sections 8.3.1.	Modify as requested.
162.	8.3.1	IV. Evaluation Findings Item 4 p 8.3.1-23	AC POWER SYSTEMS (ONSITE)	Item 4 specifies NUREG/CR-0660, "Enhancement of Onsite Emergency Diesel Generator Reliability." As discussed in detail in the NuScale comment above on mPower DSRS Section 8.3.1, Requirement Item 8 of Section II, "Acceptance Criteria," the NuScale advanced passive plant neither requires nor uses safety-related emergency AC power sources such as emergency diesel generators. Thus, this NUREG is not relevant to the NuScale design, and reference to NUREG/CR-0660 in Item 4 under Section IV, "Evaluation Findings," and in Reference 43 in Section VI, may be eliminated in the NuScale DSRS Section 8.3.1.	Remove reference to NUREG/CR-0660 based on the presented argument.
163.	8.3.1, 8.3.2	Throughout section	AC POWER SYSTEMS (ONSITE)	The NuScale gap analysis results for SRP Sections 8.3.1 and 8.3.2 were based on the assumption that the Class 1E AC distribution system (supplied by the Class 1E batteries and inverters) would be considered part of the Class 1E DC power system that is reviewed under SRP Section 8.3.2. This assumption is contrary to the structure and content reflected in draft mPower DSRS Sections 8.3.1 and 8.3.2. Specifically, the NRC Staff clearly delineates in these mPower DSRS sections that the Class 1E AC distribution system is considered within the scope of and reviewed under Section 8.3.1. The DC portions (i.e., batteries up to connection to inverters, and any DC distribution system SSCs [buses, cables, etc.]) are considered within the scope of and reviewed under Section 8.3.2.	None
164.	8.3.2	III. Review Procedures Item 4, Paragraph 2 p. 8.3.2-14	DC POWER SYSTEMS (ONSITE)	NuScale recommends that RG 1.212 be added as the NRC guidance that endorses IEEE Std. 485 1997. It is further recommended that an additional reference be added to Section VI for RG 1.212	Add RG 1.212 as recommended.

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165.	8.3.2	Throughout section	DC POWER SYSTEMS (ONSITE)	SRP and mPower DSRS Sections 8.3.2 refer to a number of subtier guidance documents (e.g., regulatory guides), generic communications, and industry codes and standards. Some of these subtier documents are not relevant or are only partially relevant to the NuScale design. Several of the NuScale comments provided above on mPower DSRS Section 8.3.2 represent examples of such documents. The NuScale DSRS Section 8.3.2 should reflect the relevance of these and other subtier documents to the NuScale plant design, as documented in the NuScale gap analysis. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.	The NuScale DSRS Section 8.3.2 should reflect the relevance of these and other subtier documents to the NuScale plant design. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.
166.	8.3.2	I. Areas of Review Items 2, 3 p. 8.3.2-2	DC POWER SYSTEMS (ONSITE)	Items 2 and 3 include guidance (including reference to RG 1.81) that precludes sharing of DC power systems between units. In the NuScale design, Class 1E DC power is shared between units, but such sharing is limited to electrical supply to monitoring and plant emergency lighting functions. In the NuScale advanced passive plant design, actuation of safety system functions is assured with no reliance on electrical power. Furthermore, sufficient electrical power capacity is provided to preclude undesirable interactions that could adversely affect the ability of SSCs to perform their safety functions. Thus, the extent to which the NuScale design shares the DC power system between (up to 12) reactor units satisfies the intent of the sharing exclusions of RG 1.81 and ensures that the sharing criterion of GDC 5 is satisfied. Based on the above, NuScale recommends that Items 2 and 3 under “Areas of Review” be revised for the NuScale DSRS Section 8.3.2 to allow for the means by which the NuScale design will demonstrate compliance with the sharing provisions of GDC 5.	Recommend that Items 2 and 3 under “Areas of Review” be revised for the NuScale DSRS Section 8.3.2, as described.
167.	8.3.2	I. Areas of Review Review Interfaces Item 8 p. 8.3.2-5	DC POWER SYSTEMS (ONSITE)	Item 8 refers, in part, to DSRS Sections 5.4.8 and 9.3.6. These references are not appropriate for the NuScale DSRS Section 8.3.2. The NRC guidance of NUREG 0800 and RG 1.206 designates Section 5.4.8 for a description of the reactor water cleanup system, a system applicable only to boiling water reactor designs. As the NuScale design is a pressurized water reactor, this section is not applicable to the NuScale design certification or to combined license applicants referencing the NuScale certified design. Thus, Item 8 should be revised in the NuScale DSRS Section 8.3.2 to eliminate the reference to DSRS Section 5.4.8. It appears that mPower DSRS Section 9.3.6 is a design-specific section that will govern the review of the mPower reactor coolant inventory and purification system. This review interface in Item 8 should be revised for the NuScale DSRS Section 8.3.2. Specifically, the NuScale design does not have a reactor coolant inventory and purification system, but it appears that the NuScale chemical and volume control system may serve similar functions. If this is the case, the appropriate reference for the NuScale DSRS would be Section 9.3.4 instead of Section 9.3.6.	Revise Item 8 NuScale DSRS Section 8.3.2 to eliminate the reference to DSRS Section 5.4.8.

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168.	8.3.2	I. Areas of Review Review Interfaces Item 9 p. 8.3.2-5	DC POWER SYSTEMS (ONSITE)	Item 9 refers, in part, to DSRS Section 6.2.2 for review of the adequacy of containment ventilation systems. It appears that the appropriate review guidance for containment ventilation systems may be DSRS Section 6.5.1 rather than DSRS Section 6.2.2 (containment heat removal). Nevertheless, both the discussion of containment ventilation systems and the reference to DSRS Section 6.2.2 for the reviews of such systems are not relevant to the NuScale design. Specifically, the NuScale design neither relies upon nor uses ventilation systems to maintain a controlled environment for safety-related electrical equipment inside the containment vessel. (The NuScale design does include a containment vessel evacuation system used to establish the partial vacuum condition inside the containment vessel prior to reactor startup; this system is anticipated to be described in DCD Section 9.3.6, and accordingly would be reviewed under new NuScale DSRS Section 9.3.6.) Thus, NuScale recommends that Item 9 be revised in the NuScale DSRS Section 8.3.2 to reflect the above discussion.	Recommend that Item 9 be revised in the NuScale DSRS Section 8.3.2, as discussed.
169.	8.3.2	I. Areas of Review Review Interfaces Item 6 p. 8.3.2-4	DC POWER SYSTEMS (ONSITE)	Item 6 refers, in part, to DSRS Section 10.4.9. This reference is not appropriate for the NuScale DSRS Section 8.3.2. The NRC guidance of NUREG 0800 and RG 1.206 designates Section 10.4.9 for a description of the auxiliary feedwater (AFW) system. The NuScale design neither requires nor uses an AFW system, and thus Section 10.4.9 is not applicable to the NuScale design certification application. The NuScale design does include the DHR system that fulfills a function substantively equivalent to that served by a typical AFW system. NuScale intends to use a new DCD Section 10.4.12 to describe the DHR system. Thus, Item 6 under “Review Interfaces” should be revised in the NuScale DSRS Section 8.3.2 to refer to the new DSRS Section 10.4.12 that will govern the NRC Staff's review of the NuScale DHR system.	Revise as described.
170.	8.3.2	I. Areas of Review Review Interfaces Item 10 p. 8.3.2-5	DC POWER SYSTEMS (ONSITE)	Item 10 refers, in part, to DSRS Section 5.4.7. This reference is not appropriate for the NuScale DSRS Section 8.3.2. Specifically, the NRC guidance of NUREG 0800 and RG 1.206 designates Section 5.4.7 for a description of the residual heat removal (RHR) system. The NuScale advanced modular reactor design does not include an RHR system allied with the RCS as would be found at a large light water reactor (LWR). Thus, Section 5.4.7 is not relevant to the NuScale design certification or to combined license applicants referencing the NuScale certified design. The NuScale design incorporates systems that fulfill decay heat removal functions similar to those served by a typical RHR system. These systems are described in other portions of the DCD. NuScale DCD Section 5.4.7 will provide references to these other portions of the DCD, if/as appropriate. Thus, Item 10 should be revised in the NuScale DSRS Section 8.3.2 reflect the above discussion.	Consider that the reference to Section 5.4.7 is not appropriate for NuScale.
171.	8.3.2	II. Acceptance Criteria	DC POWER SYSTEMS (ONSITE)	{{ }}$^{3(a)-(c)}$ The above discussion should be reflected appropriately in the NuScale DSRS Section 8.3.2.	Consider GDC applicability to the NuScale design.

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172.	8.3.2	II. Acceptance Criteria Item 4 p. 8.3.2-7 II. Acceptance Criteria Technical Rationale Item 3 p. 8.3.2-8 III. Review Procedures Item 4 p. 8.3.2-14	DC POWER SYSTEMS (ONSITE)	Acceptance Criterion 4 on page 8.3.2-7; Technical Rationale Item 3 on page 8.3.2 8; and Item 4 under Section III, "Review Procedures" on page 8.3.2-14 of mPower DSRS Section 8.3.2 specify the guidelines of RG 1.81, Position C.1, related to sharing of onsite DC power system SSCs between reactor units. See other NuScale comments on mPower DSRS Section 8.3.2 regarding sharing of the DC power system, and the means by which the NuScale design will demonstrate compliance with the sharing provisions of GDC 5 and RG 1.81.	Consider the discussion related to sharing of onsite DC power system SSCs between reactor units.
173.	8.3.2	Throughout section	DC POWER SYSTEMS (ONSITE)	Acceptance Criterion 10 on page 8.3.2-8 of mPower DSRS Section 8.3.2; Item 7 under "Technical Rationale" on page 8.3.2-11; and Item 6 under Section IV, "Evaluation Findings" (page 8.3.2-17) specify RG 1.63 (see Reference 8 in Section VI of mPower DSRS Section 8.3.2) for acceptable guidelines related to ensuring the capability of the containment penetration assemblies. As discussed in the NuScale gap analysis, Regulatory Position C of RG 1.63 endorses Section 5.4 of IEEE Std. 741-1986 for external circuit protection of electric penetration assemblies. IEEE Std. 741 1986 has been superseded by IEEE Std. 741 1997. NuScale intends to use IEEE Std. 741-1997. This version is not endorsed by a regulatory guide but its use is not anticipated to result in deviation from the design philosophy otherwise stated in RG 1.63 (to be verified by code reconciliation). The NuScale DSRS Section 8.3.2 should reflect the relevance of these and other subtier documents to the NuScale plant design, as documented in the NuScale gap analysis. Conforming changes will be necessary to Table 8-1 in NuScale DSRS Section 8.1.	Reflect the relevance of subtier documents to the NuScale plant design, as discussed.
174.	8.3.2	IV. Evaluation Findings Item 3 p 8.3.2-16	DC POWER SYSTEMS (ONSITE)	Item 3 specifies that onsite DC power system SSCs shall not be shared between reactor units. See other NuScale comments on mPower DSRS Section 8.3.2 regarding sharing of the DC power system, and the means by which the NuScale design will demonstrate compliance with the sharing provisions of GDC 5 and RG 1.81.	Consider the applicability of sharing provisions for the NuScale design.
175.	8.3.2, 8.3.1	Throughout section	DC POWER SYSTEMS (ONSITE)	The NuScale gap analysis results for SRP Sections 8.3.1 and 8.3.2 were based on the assumption that the Class 1E AC distribution system (supplied by the Class 1E batteries and inverters) would be considered part of the Class 1E DC power system that is reviewed under SRP Section 8.3.2. This assumption is contrary to the structure and content reflected in draft mPower DSRS Sections 8.3.1 and 8.3.2. Specifically, the NRC staff clearly delineates in these mPower DSRS sections that the Class 1E AC distribution system is considered within the scope of and reviewed under Section 8.3.1. The DC portions (i.e., batteries up to connection to inverters, and any DC distribution system SSCs [buses, cables, etc.]) are considered within the scope of and reviewed under Section 8.3.2.	Consider that NuScale will adhere to the format and contents as is presented in the mPower DSRS.

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176.	8.4	I. Areas of Review Item 2 p. 8.4-2	STATION BLACKOUT	Item 2 directs the reviewer to determine that the capability to achieve and maintain safe-shutdown and containment integrity during an SBO conforms to the guidance provided in Regulatory Position C.3.2 of RG 1.155. Certain aspects of Regulatory Position C.3.2 of RG 1.155 are not relevant to the NuScale passive plant design. For example, the NuScale passive plant design meets the Commission policy criteria for passive plants that obviate the need for an alternate AC (AAC) power source to satisfy the station blackout rule. Thus, the AAC power source provisions of Regulatory Position C.3.2.5 are not applicable to the NuScale passive plant design. Based on the above, NuScale recommends that for NuScale DSRS Section 8.4, the wording of Item 2 be clarified, such that "…conforms to the guidance provided in Section C.3.2 of RG 1.155" instead reads as "…conforms to the guidance provided in Regulatory Position C.3.2 of RG 1.155 that is relevant to passive plants." In addition, NuScale recommends that for consistency with language in 10 CFR 50.63 and SBO guidance, the first sentence is revised to replace "…achieve and maintain safe-shutdown and containment integrity (non-design-basis accident (DBA))…" with "…achieve and maintain safe-shutdown (non-design-basis accident (DBA)), core cooling, and containment integrity…."	Consider the applicability of the mentioned regulations to the NuScale design, and clarify wording in Item 2 in "Areas of Review."
177.	8.4	I. Areas of Review Item 4 p. 8.4-2	STATION BLACKOUT	Item 4 directs the reviewer to determine that procedures and training conform to the guidance provided in Regulatory Positions C.1.3, C.2, and C.3.4 of RG 1.155. The provisions of Regulatory Position C.1.3 are directed towards the restoration of emergency AC power sources. As such, this guidance is not directly relevant to the NuScale nonsafety-related standby diesel generators. However, consistent with the intent of Regulatory Position C.1.3, guidelines and procedures for actions to restore standby AC power when the standby diesel generator system is unavailable will be integrated with plant-specific technical guidelines and emergency operating procedures. Based on the above, NuScale recommends that for NuScale DSRS Section 8.4, the wording of Item 4 be clarified, such that "…conform to the guidance in Sections C.1.3, C.2, and C.3.4 of RG 1.155" instead reads as "…conforms to the guidance provided in Regulatory Positions C.1.3, C.2, and C.3.4 of RG 1.155 that is relevant to passive plants."	Clarify the relevance and applicability of the regulations, as described.
178.	8.4	I. Areas of Review Item 5 p. 8.4-2	STATION BLACKOUT	Item 5 directs the reviewer to determine that QA activities and specifications for nonsafety-related equipment used to meet SBO requirements conform to the guidance provided in Regulatory Position C.3.5 and Appendix A of RG 1.155. The NuScale plant design conforms to the provisions of Regulatory Position C.3.5 of Regulatory Guide 1.155, except for portions that govern systems and equipment that are not relevant to the NuScale passive plant. Specifically, Regulatory Position C.3.5 specifies the implementation of Appendices A and B of RG 1.155. The NuScale plant design conforms to the QA provisions of Appendix A, as these QA provisions are applied to nonsafety related systems and equipment used in the NuScale plant design to meet the station blackout requirements of 10 CFR 50.63. However, certain systems and equipment listed in Appendix B of RG 1.155 are not relied upon for station blackout in the NuScale plant design. Based on the above, NuScale recommends that for NuScale DSRS Section 8.4, the wording of Item 5 be clarified, such that "…conform to the recommendations in Section C.3.5 and Appendix A of RG 1.155" instead reads as "…conform to the relevant guidance provided in Regulatory Position C.3.5 and Appendix A of RG 1.155."	Clarify the wording of Item 5, as discussed.

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179.	8.4	I. Areas of Review Item 1 p. 8.4-1 and 8.4-2	STATION BLACKOUT	NuScale recommends that Item 1 be clarified to ensure consistency and alignment with the governing requirements of 10 CFR 50.63 and Commission policy. Specifically, it appears that the scope of Item 1 is as follows: • The first paragraph is related to specifying a plant coping duration pursuant to 10 CFR 50.63(a)(1) and 10 CFR 50.63(c)(1)(i). • The second paragraph is related to the performance of a coping analysis required by 10 CFR 50.63(a)(2) to demonstrate the capability for coping with a station blackout of the duration specified pursuant to 10 CFR 50.63(a)(1) and 10 CFR 50.63(c)(1)(i). However, the content of Item 1 is subject to interpretation, and as worded it is not clear if the scope surmised above is the Staff's intent. For example, the discussion in the first paragraph related to "…an analysis of site- and plant-specific factors…" and "applicants for…[passive] plants need not evaluate SBO coping duration…" could be confused with the analysis required by 10 CFR 50.63(a)(2) and thus would appear to be inconsistent with the governing regulatory requirement for a coping analysis. In addition, the first paragraph refers to SECY 90 016 for the Commission policy establishing the 72-hour minimum duration for passive plants. It appears that this reference should be SECY-94-084 rather than SECY 90 016. It is requested that the wording of this paragraph be clarified to address the issues identified above. For example, wording similar to the following is recommended for passive designs such as the NuScale plant design: 10 CFR 50.63(a)(1) and 10 CFR 50.63(c)(1)(i) require each nuclear power plant to specify an SBO coping duration based on site- and plant-specific factors that contribute to the likelihood of and capability for restoring alternating current (AC) power following of an SBO. These factors include consideration for redundancy and reliability of onsite emergency AC (EAC) power sources. Since passive plants do not have EAC power sources, passive plant designs meet the 10 CFR 50.63 requirements for specifying a coping duration by demonstrating that safety-related functions are assured for a minimum of 72 hours following an SBO event. The 72 hour coping duration for passive plant designs is consistent with the station blackout duration approved by the NRC staff for the AP1000 design, as reflected in SECY 94-084 (Reference 25). The discussion in the second paragraph of Item 1 (page 8.4-2) begins: "The SBO analysis presented in Chapter 15 of the applicant's SAR should demonstrate…." (See also the last sentence of Item 3 under "Technical Rationale" on page 8.4 6.) This appears to refer to the coping analysis required by 10 CFR 50.63(a)(2). The NuScale coping analysis is to be described in DCD Section 8.4 rather than in Chapter 15. Thus, NuScale recommends that this sentence be revised in the NuScale DSRS Section 8.4 to state: "The SBO coping analysis required by 10 CFR 50.63(a)(2) should demonstrate…."	Recommend that Item 1 under "Areas of Review" be clarified to ensure consistency and alignment with the governing requirements of 10 CFR 50.63 and Commission policy.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
180.	8.4	I. Areas of Review Review Interfaces Item 3 p. 8.4-3	STATION BLACKOUT	Item 3 refers, in part, to DSRS Sections 5.4.7 and 9.3.6. These references are not appropriate for the NuScale DSRS Section 8.4. Specifically, the NRC guidance of NUREG 0800 and RG 1.206 designates Section 5.4.7 for a description of the residual heat removal (RHR) system. The NuScale advanced modular reactor design does not include an RHR system allied with the RCS as would be found at a large light water reactor (LWR). Thus, Section 5.4.7 is not relevant to the NuScale design certification or to combined license applicants referencing the NuScale certified design. The NuScale design incorporates systems that fulfill decay heat removal functions similar to those served by a typical RHR system. These systems are described in other portions of the DCD. NuScale DCD Section 5.4.7 will provide references to these other portions of the DCD, if/as appropriate. Thus, Item 3 should be revised in the NuScale DSRS Section 8.4 to reflect the above discussion. It appears that mPower DSRS Section 9.3.6 is a new mPower design-specific section that will govern the review of the mPower reactor coolant inventory and purification system. This review interface in Item 3 should be revised for the NuScale DSRS Section 8.4. Specifically, the NuScale design does not have a reactor coolant inventory and purification system, but it appears that the NuScale chemical and volume control system may serve similar functions. If this is the case, the appropriate reference for the NuScale DSRS would be Section 9.3.4 instead of Section 9.3.6.	Consider that references to DSRS Sections 5.4.7 and 9.3.6 are not appropriate for the NuScale DSRS Section 8.4.
181.	8.4	III. Review Procedures Item 5.A p. 8.4-7 and 8.4-8	STATION BLACKOUT	NuScale recommends that Item 5.A be clarified to ensure consistency and alignment with the governing requirements of 10 CFR 50.63 and Commission policy. The basis for this recommendation and recommended wording to replace this content is described in the NuScale comment above on mPower DSRS Section 8.4, Item 1 under “Areas of Review” on Pages 8.4-1 and 8.4-2. The last sentence of Item 5.A on Page 8.4-8 refers to the guidance of RG 1.155, Regulatory Position C.3.1, as supplemented by DSRS Section 8.4, for review of the specified SBO coping duration. Regulatory Position C.3.1 of RG 1.155 is not appropriate for use in establishing a station blackout coping duration for passive plant designs such as the NuScale plant. Thus, NuScale recommends that this sentence be revised in the NuScale DSRS Section 8.4 to refer to SECY-94-084 and NuScale DSRS Section 8.4 instead of RG 1.155, Regulatory Position C.3.1.	Clarify Item 5.A in Review Procedures to ensure consistency and alignment with the governing requirements of 10 CFR 50.63 and Commission policy.
182.	8.4	III. Review Procedures Item 5.B p. 8.4-8	STATION BLACKOUT	Item 5.B directs the reviewer to determine that the capability to achieve and maintain adequate core cooling and containment integrity during an SBO conforms to the guidance provided in Regulatory Position C.3.2 of RG 1.155. As detailed in Comment 2 the NuScale comment on mPower DSRS Section 8.4, Item 2 under “Areas of Review” on Page 8.4-2 above, certain aspects of Regulatory Position C.3.2 of RG 1.155 are not relevant to the NuScale passive plant design. Thus, NuScale recommends that for NuScale DSRS Section 8.4, the wording of Item 5.B be clarified, such that “…conforms to the guidance in Section C.3.2 of RG 1.155” instead reads as “…conforms to the guidance provided in Regulatory Position C.3.2 of RG 1.155 that is relevant to passive plants.”	Recommend that the wording of Item 5.B be clarified, as proposed.
183.	8.4	III. Review Procedures Items 6.A and 6.B p. 8.4-8	STATION BLACKOUT	Items 6.A and 6.B appear to be written in contemplation of a single unit large water reactor design. NuScale recommends that for the NuScale DSRS Section 8.4, this content be revised to reflect coping analysis assumptions with consideration for up to 12 operating reactor modules at a single plant site.	Recommend the content be revised to reflect coping analysis assumptions with consideration for up to 12 operating reactor modules at a single plant site.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
184.	8.4	III. Review Procedures Item 6.G p. 8.4-9	STATION BLACKOUT	NuScale recommends that Item 6.G be revised for consistency with language in 10 CFR 50.63 and SBO guidance. Specifically, it is recommended that the phrase "…provide core cooling and decay heat removal following an SBO…" be replaced with "…provide core cooling and ensure containment integrity following an SBO…."	Replace the phrase as recommended.
185.	8.4	III. Review Procedures Item 8 p. 8.4-10	STATION BLACKOUT	Item 8 directs the reviewer to determine that procedures and training conform to the guidance provided in Regulatory Positions C.1.3, C.2, and C.3.4 and Appendix B of RG 1.155. As detailed in the NuScale comment on SRP and mPower Sections 8.4, Item 4 under "Areas of Review," Regulatory Position C.1.3 is not directly relevant to the NuScale nonsafety-related standby diesel generators. As detailed in the NuScale comment on SRP and mPower Sections 8.4, Item 5 under "Areas of Review," certain systems and equipment listed in Appendix B of RG 1.155 are not relied upon for station blackout in the NuScale plant design. Based on the above, NuScale recommends that for NuScale DSRS Section 8.4, the wording of Item 8 be clarified, such that "…conform to the guidance in Sections C.1.3, C.2, and C.3.4 and Appendix B of RG 1.155" instead reads as "…conforms to the guidance provided in Regulatory Positions C.1.3, C.2, and C.3.4 and Appendix B of RG 1.155 that is relevant to passive plants."	Recommend that the wording of Item 8 be clarified, as discussed.
186.	8.4	III. Review Procedures Item 10 p. 8.4-11	STATION BLACKOUT	Item 10 directs the reviewer to determine that QA activities and specifications for nonsafety-related equipment used to meet SBO requirements conform to the guidance provided in Regulatory Position C.3.5 and Appendices A and B of RG 1.155. As detailed in the NuScale comment on SRP and mPower Sections 8.4, Item 5 under "Areas of Review," the NuScale plant design conforms to the provisions of Regulatory Position C.3.5 of RG 1.155, except for portions that govern systems and equipment that are not relevant to the NuScale passive plant. Specifically, certain systems and equipment listed in Appendix B of RG 1.155 are not relied upon for station blackout in the NuScale plant design. For such systems and equipment, this guidance is not relevant to the NuScale plant design. Based on the above, NuScale recommends that for NuScale DSRS Section 8.4, the wording of Item 10 be clarified to indicate conformance to the portions of Regulatory Position C.3.5 and Appendices A and B of RG 1.155 that are relevant to passive plant designs.	Recommend that the wording of Item 10 be clarified to indicate conformance to the portions of Regulatory Position C.3.5 and Appendices A and B of RG 1.155 that are relevant to passive plant designs.
187.	8.4	IV. Evaluation Findings paragraph 1 p 8.4-12	STATION BLACKOUT	NuScale recommends that the first paragraph be revised to replace "…has appropriately evaluated the facility against the guidelines of RG 1.155…" with "…has appropriately evaluated the facility against the relevant guidelines of RG 1.155…." This recommendation is based on the fact that portions of RG 1.155 are not relevant to passive plant designs such as the NuScale design (see related comments above).	Revise the phrase as recommended.
188.	8.4	VI. References Item 17 p 8.4-13	STATION BLACKOUT	The mPower DSRS Section 8.4 includes Information Notice 97-21 as Reference 17 of Section VI, "References." This information notice pertains to availability of AAC power sources relied upon to cope with an SBO event. As discussed in the NuScale comment above on mPower DSRS Section 8.4, Item 2 under "Areas of Review" on Page 8.4-2, the NuScale passive plant design meets the Commission policy criteria for passive plants that obviate the need for an AAC power source to satisfy the station blackout rule. Thus, the AAC power source provisions of Information Notice 97-21 are not relevant to, and Reference 17 should be eliminated in, the NuScale DSRS Section 8.4.	The AAC power source provisions of Information Notice 97-21 are not relevant to, and Reference 17 should be eliminated.
189.	8.4	VI. References Item 32 p 8.4-14	STATION BLACKOUT	The mPower DSRS Section 8.4 includes Volume II of the EPRI Utility Requirements Document (URD) as Reference 32 of Section VI, "References." EPRI URD Volume II is for "Evolutionary Plants." The NuScale advanced passive design will use EPRI URD Volume III, which is specific to "Passive Plants." Thus, it is recommended that Reference 32 be revised in the NuScale DSRS Section 8.4 to reflect EPRI URD Volume III.	Recommend that Reference 32 be revised to reflect EPRI URD Volume III.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
190.	9.1.3	I. Areas of Review paragraph 1 p. 9.1.3-1	SPENT FUEL POOL COOLING AND CLEANUP SYSTEM	Spent Fuel Pool Cooling and Cleanup System, I, 1st paragraph, and throughout. The NuScale design does not have a refueling canal or a refueling water storage tank. For the NuScale DSRS, this paragraph should be revised to reflect the design.	Consider that the NuScale design does not have a refueling canal or a refueling water storage tank.
191.	9.1.3	Throughout section	SPENT FUEL POOL COOLING AND CLEANUP SYSTEM	{{ }}$^{3(a)}$ The NuScale DSRS should be developed accordingly.	Modify as described.
192.	9.1.3	Throughout section	SPENT FUEL POOL COOLING AND CLEANUP SYSTEM	{{ }}$^{3(a)}$ The NuScale DSRS for this section should be developed accordingly.	Modify as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
193.	9.2.1	Throughout section	STATION SERVICE WATER SYSTEM	NuScale does not have a service water system. However, the NuScale site cooling water system is an open-loop water cooling system analogous to the nonessential portion of a typical plant service water system. The mPower DSRS Section 9.2.1 is explicitly stated to be applicable to non-essential service water systems (as well as essential service water systems; see fourth paragraph under Section I, "Areas of Review," on Page 9.2.1-1). Thus, with revisions discussed further in this table, Section 9.2.1 of the NuScale DSRS would be appropriate for use in the staff's review of NuScale DCD Section 9.2.7, "Site Cooling Water System." Based on the contents of RG 1.206, Section 9.2.1, and mPower DSRS Section 9.2.1 (see fourth paragraph under Section I, "Areas of Review," on Page 9.2.1-1), Section 9.2.1 also may be used in the review of other NuScale open- and closed-loop water systems described in DCD Section 9.2. For example, aspects of the demineralized water system in DCD Section 9.2.10 and raw and utility water systems in DCD Section 9.2.11 may be reviewed under this guidance. The NuScale water systems (or portions thereof) that would be reviewed under NuScale DSRS Section 9.2.1 Site Cooling Water System are not important to safety (i.e., neither safety-related nor nonsafety-related, risk-significant). Thus, the considerable amount of DSRS Section 9.2.1 content specific to safety-related and RTNSS portions of the system is not relevant to NuScale. This includes the content specifying applicability of GDCs 1, 5, 44, 45, and 46, and Generic Letter (GL) 89-13 and GL 91-13, which are not relevant to systems that do not perform important-to-safety functions. (Note that the NuScale water systems to be reviewed under this section are not relied upon to achieve cold shutdown, and thus aspects of Section 9.2.1 related to ensuring this capability are not relevant to the NuScale design.) This section also specifies applicability of GDCs 2 and 4. For the NuScale water systems to be reviewed under Section 9.2.1, consideration of GDCs 2 and 4 is relevant only to the extent needed to ensure that operation or a failure of the system will not adversely impact important-to-safety SSCs. Based on the above, NuScale DSRS Section 9.2.1 would only contain review guidance related to those elements that are appropriate for review of a non-essential system. Those elements primarily are related to verifying: (1) that a potential water system failure will not adversely affect safety-related systems; and (2) adequate capabilities are provided to detect, control, and isolate system leakage, including radioactive leakage into and out of the system, and to prevent accidental releases to the environment.	Note that the considerable amount of the contents specific to safety-related and RTNSS portions of the system is not relevant to NuScale. This includes the content specifying applicability of GDCs 1, 5, 44, 45, and 46, and Generic Letter (GL) 89-13 and GL 91-13, which are not relevant to systems that do not perform important-to-safety functions.
194.	9.2.1	Throughout section	STATION SERVICE WATER SYSTEM	Significant portions of SRP and mPower DSRS Section 9.2.1 are not relevant to the NuScale design. For example, this section refers to the ultimate heat sink (UHS) as the source of water for the service water system. As indicated above, the NuScale design does not use a typical service water system that serves as the final heat transfer loop between various heat sources (including those from safety-related heat sources) and the UHS. Rather, the reactor modules are submerged in the UHS, such that no service water system is needed. The NuScale site cooling water system (that is one of the NuScale water systems that would be reviewed under Section 9.2.1) does not transfer heat to the UHS; rather it transfers heat from non-essential heat loads to the normal (nonsafety-related) heat sink. As another example, this section specifies addressing GL 96-06, which is not relevant to the NuScale design. Specifically, GL 96-06 is applicable only to LWR designs that use containment air coolers and/or isolated water-filled piping sections in containment. The NuScale design does not use containment air coolers, and the NuScale containment vessel does not contain isolated water-filled piping sections, the over-pressurization of which could jeopardize the performance of safety functions. These examples support the conclusion that much of the content of SRP and mPower DSRS Section 9.2.1 will require revision for the NuScale DSRS Section 9.2.1 to reflect appropriately the NuScale-specific water system design.	Note the major differences in design, as indicated.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
195.	9.2.1	I. Area of Review Review Interfaces Item 9 p. 9.2.1-7	STATION SERVICE WATER SYSTEM	Item 9 refers to Section 5.4.7 for review of essential reactor coolant system components. This reference is not relevant to the review of the non-essential water systems that would be reviewed under Section 9.2.1. Thus, this item should be deleted from the NuScale DSRS Section 9.2.1.	Consider that references to DSRS Sections 5.4.7 are not relevant.
196.	9.2.1	I. Area of Review Review Interfaces Item 10 p. 9.2.1-7	STATION SERVICE WATER SYSTEM	Item 10 refers to Section 6.2.4 for review of containment isolation provisions. The non-essential water systems that would be reviewed under NuScale DSRS Section 9.2.1 do not penetrate the containment vessels. (The NuScale reactor component cooling water system is the only water system described in DCD Section 9.2 that penetrates the containment vessels, and it is reviewed under DSRS Section 9.2.2.) Thus, this item should be deleted from the NuScale DSRS Section 9.2.1.	Delete the item based on the presented argument.
197.	9.2.1	I. Area of Review Review Interfaces Item 11 p. 9.2.1-7	STATION SERVICE WATER SYSTEM	Item 11 refers to Section 6.3 for review of essential emergency core cooling system components. As indicated in comments above, this reference is not relevant to the review of the non-essential water systems that would be reviewed under Section 9.2.1. Thus, this item should be deleted from the NuScale DSRS Section 9.2.1.	Delete the item based on the presented argument.
198.	9.2.1	I. Area of Review Review Interfaces Item 18 p. 9.2.1-7	STATION SERVICE WATER SYSTEM	Item 18 refers to Section 13.6 for review of security considerations. This reference is not relevant to the review of the non-essential water systems that would be reviewed under Section 9.2.1. Thus, this item should be deleted from the NuScale DSRS Section 9.2.1.	Consider that references to DSRS Sections 13.6 are not relevant.
199.	9.2.1	I. Area of Review Review Interfaces Item 20 p. 9.2.1-7	STATION SERVICE WATER SYSTEM	Item 20 refers to Chapter 15 for review of accident cooling functions. As indicated in comments above, the NuScale non-essential water systems that would be reviewed under NuScale DSRS Section 9.2.1 are not relied upon to perform cooling functions in the event of a postulated accident. Thus, this item should be deleted from the NuScale DSRS Section 9.2.1.	Delete the item based on the presented argument.
200.	9.2.1	I. Area of Review Review Interfaces Item 21 p. 9.2.1-7	STATION SERVICE WATER SYSTEM	Item 21 under “Review Interfaces” on page 9.2.1-7 refers to Section 16.0 for review of technical specifications. As indicated in comments above, this reference is not relevant to the review of the non-essential water systems that would be reviewed under Section 9.2.1 (i.e., there are not anticipated to be technical specification requirements for these non-essential systems). Thus, this item should be deleted from the NuScale DSRS Section 9.2.1.	Consider that the reference to Section 16.0 is not relevant to the review of the non-essential water systems.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
201.	9.2.1	Throughout section	STATION SERVICE WATER SYSTEM	There is an apparent inconsistency in how GDCs 60 and 64 are applied in various sections of the SRP and DSRS. In other mPower DSRS sections that govern SSCs that involve potential radiological release, the staff applies GDC 60 and GDC 64 (for radiological control and monitoring capability) where the current SRP section does not already specify it. For example, GDC 64 was added to mPower DSRS Sections 10.4.2 and 10.4.3 (as compared to the current SRP Sections 10.4.2 and 10.4.3). Item 5.D under "Review Procedures" on page 9.2.1-20 specifies provisions to detect and control leakage of radioactive contamination. However, contrary to the approach taken in other sections of the NRC's review guidance, Section 9.2.1 does not specify GDC 60 and GDC 64 as the underlying regulatory basis. (It is noted that these regulatory criteria are not "design-basis" [as defined in 10 CFR 50.2] requirements for the NuScale non-essential water systems to be reviewed under Section 9.2.1.) Thus, it is recommended that GDCs 60 and 64 be consistently applied in the mPower and NuScale DSRS, including but not limited to Section 9.2.1. See similar comment for Sections 10.4.1, 10.4.2, and 10.4.3.	Revise the inconsistency in applying GDCs 60 and 64, as described.
202.	9.2.2	Throughout section	REACTOR AUXILIARY COOLING WATER	For the NuScale design, the system function contemplated by SRP/DSRS Section 9.2.2 is similar to that provided by the reactor component cooling water (RCCW) system. Based on the contents of RG 1.206, Section 9.2.2, and mPower DSRS Section 9.2.2 (see third paragraph below Item 2 on Page 9.2.2-2), Section 9.2.2 also may be used in the staff's review of other NuScale closed-loop water systems described in DCD Section 9.2 (such as the balance of plant component cooling water [BCCW] system and chilled water system). Thus, with revisions discussed further in this table, Section 9.2.2 of the NuScale DSRS would be appropriate for use in the staff's review of NuScale DCD Section 9.2.2, "Reactor Component Cooling Water System," and DCD Sections 9.2.8 (chilled water system) and 9.2.9 (BCCW). Unlike a typical reactor auxiliary cooling water system, no portion of the NuScale RCCW system or other auxiliary cooling water systems that may be reviewed under Section 9.2.2 serves a safety-related or risk-significant cooling function. Thus, these systems are not considered to be important-to-safety (i.e., safety-related or RTNSS) systems. The only safety function performed by the RCCW system is containment isolation (as it has lines penetrating the containment vessel), which is reviewed under Section 6.2.4. Thus, the considerable amount of DSRS Section 9.2.2 content specific to safety-related and RTNSS portions of the system is not relevant to NuScale. This includes the content specifying applicability of GDCs 1, 5, 44 (including single failure criteria), 45, and 46, which are not relevant to systems that do not perform important-to-safety functions. This section also specifies applicability of GDCs 2 and 4. For the NuScale water systems to be reviewed under Section 9.2.2, consideration of GDCs 2 and 4 is relevant only to the extent needed to ensure that operation or a failure of the system will not adversely impact important-to-safety SSCs. Based on the above, NuScale DSRS Section 9.2.2 would only contain review guidance related to those elements that are appropriate for review of a non-essential system. Those elements primarily are related to verifying: (1) that a potential water system failure will not adversely affect safety-related systems; and (2) adequate capabilities are provided to detect, control, and isolate system leakage, including radioactive leakage into and out of the system, and to prevent accidental releases to the environment.	Consider that in the NuScale design, no portion of the NuScale RCCW system or other auxiliary cooling water systems serves a safety-related or risk-significant cooling function.

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203.	9.2.2	Throughout section	REACTOR AUXILIARY COOLING WATER	Significant portions of SRP and mPower DSRS Section 9.2.2 are not relevant to the NuScale design. For example, this section specifies guidance for reviewing cooling of reactor coolant pump seals and thermal barriers (including reference to Generic Letter [GL] 23). The NuScale design does not use reactor coolant pumps, and thus this guidance is not relevant to the NuScale design. As another example, this section specifies addressing GL 96-06, which is not relevant to the NuScale design. Specifically, GL 96-06 is applicable only to LWR designs that use containment air coolers and/or isolated water-filled piping sections in containment. The NuScale design does not use containment air coolers, and the NuScale containment vessel does not contain isolated water-filled piping sections, the over-pressurization of which could jeopardize the performance of safety functions. These examples support the conclusion that much of the content of SRP and mPower DSRS Section 9.2.2 will require revision for the NuScale DSRS Section 9.2.2 to reflect appropriately the NuScale-specific water system design.	Consider that the NuScale design does not use RCPs.
204.	9.2.2	I. Areas of Review Review Interfaces Item 9 p. 9.2.2-6	REACTOR AUXILIARY COOLING WATER	Item 9 refers to Section 5.4.7 and Section 6.3 for review of essential reactor coolant system components and essential emergency core cooling system components, respectively. As indicated above, these references are not relevant to the review of the non-essential water systems that would be reviewed under Section 9.2.2. Thus, this item should be deleted from the NuScale DSRS Section 9.2.2.	Consider the applicability of the requirements and interconnection among various sections.
205.	9.2.2	II. Acceptance Criteria DSRS Acceptance Criteria Item 5 p. 9.2.2-10	REACTOR AUXILIARY COOLING WATER	Acceptance Criterion II.5 requires substantial revision for the NuScale DSRS Section 9.2.2. The NuScale water systems to be reviewed under DSRS Section 9.2.2 have no cooling safety functions, and thus GDC 44 is not applicable. Furthermore, this acceptance criterion specifies codes, standards, and guidance applicable to safety systems, and thus is not applicable to the NuScale water systems to be reviewed under Section 9.2.2. Application of Regulatory Position C.3.3.4 of RG 1.155, as specified by this acceptance criterion, is not relevant to the NuScale advanced passive plant design. Specifically, the NuScale plant does not use reactor coolant pumps for which seal cooling or injection would be required. In addition, the NuScale plant does not require primary coolant charging and makeup in the event of a station blackout, and does not rely on active systems to maintain containment integrity. Finally, this acceptance criterion refers to “BTP ASB 3-3.” Recommend changing this reference to “BTP 3-3” (consistent with Reference 28 of mPower DSRS Section 9.2.2).	Consider that the NuScale water systems have no cooling safety functions, and thus GDC 44 is not applicable.
206.	9.2.4	I. Areas of Review paragraph 1 p. 9.2.4-1 I. Areas of Review Review Interfaces Item 2 p. 9.2.4-2	POTABLE AND SANITARY WATER SYSTEMS	The first paragraph under “Areas of Review” discusses the potential for the potable and sanitary water systems to penetrate primary containment, and the "Review Interfaces" portion of this section refers to Section 6.2.4 for review of containment isolation. The NuScale potable and sanitary water systems do not penetrate the containment vessels. Thus, review of the NuScale potable and sanitary water systems will not require review of containment isolation provisions, and this review interface should be deleted from the NuScale DSRS Section 9.2.4.	Consider that in the NuScale design potable and sanitary water systems do not penetrate the containment vessels.

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207.	9.2.5	Throughout section	ULTIMATE HEAT SINK AND NORMAL POWER HEAT SINK	The NuScale DSRS Section 9.2.5 will require significant revision to govern the review of the NuScale Seismic Category I ultimate heat sink (UHS). The NuScale UHS design fulfills safety functions substantively equivalent to those served by a typical reactor plant UHS. However, the design of the NuScale UHS is significantly different than that of a typical reactor plant UHS. As a consequence of these design differences:
				• Significant portions of SRP and mPower DSRS Section 9.2.5 of the NRC's review guidance are not relevant to the NuScale design. This conclusion is supported by the following examples:
				– The scope of mPower DSRS Section 9.2.5 includes the mPower UHS tank (relied upon for heat removal for the initial 72 hours) and the mPower normal power heat sink (relied upon for heat removal post-72 hours). These design-specific features have no relevance to the NuScale design. During normal operating conditions, the NuScale Seismic Category I UHS consists of the large combined reactor/refueling/spent fuel pool volume and its water-retaining structures (including the pool liner and leakage detection system). This large water volume eliminates much of the water makeup concerns that are addressed by portions of SRP and mPower DSRS Sections 9.2.5. {{
				
				}}$^{3(a)-(c)}$
				– mPower DSRS Section 9.2.5 contains considerable guidance for potential RTNSS SSCs (since it appears that portions of the mPower normal heat sink may be considered for RTNSS treatment). {{
				
				}}$^{3(a)-(c)}$
					Consider that the NuScale design will require significant revision to govern the review of the NuScale Seismic Category I ultimate heat sink (UHS), based on the presented argument.

208.	9.2.5	Throughout section	ULTIMATE HEAT SINK AND NORMAL POWER HEAT SINK	The mPower DSRS Section 9.2.5 in several instances refers to RG 1.27. Given the significant differences between the NuScale UHS and a typical UHS for which this guidance was developed, much of the specific language of this guidance is not applicable to the NuScale design. However, the NuScale UHS design will satisfy the intent of RG 1.27 by providing sufficient cooling water capability to fulfill its design-basis functions.	Consider that much of the specific language in the RG 1.27 is not applicable to the NuScale design.
209.	9.2.5	Throughout section	ULTIMATE HEAT SINK AND NORMAL POWER HEAT SINK	The mPower DSRS Section 9.2.5 in several instances refers to RG 1.72. The NuScale UHS design does not involve the use of spray ponds or fiberglass piping. Therefore, this regulatory guide should be deleted in the NuScale DSRS Section 9.2.5.	Delete RG 1.72, based on the presented argument.

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210.	9.2.5	Throughout section	ULTIMATE HEAT SINK AND NORMAL POWER HEAT SINK	A number of regulatory (design-basis) requirements are anticipated to be applicable to the NuScale UHS that are not relevant to typical UHS designs. For example, the NuScale UHS is a system that contains radioactivity, and also (as a result of the communication between the spent fuel pool and the reactor pool) comprises in part the spent fuel pool during normal operations. Thus, GDC 61 is applicable to the NuScale UHS. Since GDC 61 is not relevant to a typical UHS design, SRP and mPower DSRS Sections 9.2.5 do not include GDC 61 as an applicable regulatory requirement. This represents an example where the NuScale DSRS Section 9.2.5 will differ from the SRP/mPower DSRS Sections 9.2.5. Other examples are introduced by the unique NuScale configuration wherein the module containment vessels are partially submerged in the UHS with no intermediate cooling system (e.g., service water): – The NuScale UHS functions in conjunction with each reactor module's decay heat removal (DHR) system and/or emergency core cooling (ECC) system to provide a means to cool the reactor core and reactor coolant system to achieve and maintain safe shutdown. As such, under conditions involving DHR system and/or ECC system operation, the UHS contributes to fulfilling the residual heat removal provisions of GDC 34 and/or emergency core cooling provisions of GDC 35. SRP and mPower DSRS Sections 9.2.5 do not include GDC 34 or GDC 35 as applicable regulatory requirements. – The UHS also ensures adequate heat removal from each containment vessel following a postulated LOCA pursuant to GDC 38. Specifically, containment vessel heat removal is assured passively as an inherent consequence of the physical configuration wherein each module's containment vessel is partially submerged in the UHS. SRP and mPower DSRS Sections 9.2.5 do not include GDC 38 as an applicable regulatory requirement.	Consider that a number of regulatory (design-basis) requirements for the NuScale UHS are not relevant to typical UHS designs, based on the presented argument.
211.	9.2.6	Throughout section	CONDENSATE STORAGE FACILITIES	{{ }}3(a)	Consider the specific design feature as described.

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212.	9.2.6	I. Areas of Review Review Interfaces Items 6, 7 p. 9.2.6-3	CONDENSATE STORAGE FACILITIES	Items 6 and 7 govern review of electrical supply of risk-significant functions and UHS water supply, respectively. The NuScale condensate storage system is not relied upon for risk-significant functions and does not provide an assured supply of water to the UHS. Thus, these two review interfaces are not relevant to the NuScale design and should be deleted in NuScale DSRS Section 9.2.6.	Delete the two review interfaces in this section based on the presented argument.
213.	9.2.6	II. Acceptance Criteria DSRS Acceptance Criteria Item 1 p. 9.2.6-6	CONDENSATE STORAGE FACILITIES	Acceptance Criterion II.1 on Page 9.2.6-6, as well as other portions of SRP and mPower DSRS Sections 9.2.6, specify use of Regulatory Guides 1.117 (tornadoes) and 1.102 (flooding) to show compliance with GDC 2. For the design of the NuScale condensate storage facilities, it is not appropriate to apply RGs 1.117 and 1.102 to demonstrate compliance with GDC 2 (and GDC 4). Rather, in the NuScale design the condensate storage facilities are outside the reactor building, and essential SSCs and the main control room are inside the reactor building. Thus, a condensate storage system failure has no potential to impact important-to-safety SSCs or plant safety functions. See also NuScale gap analysis change GA- 2013-41-015-9.2.6	Revise applicability of the RGs 1.117 and 1.102 to demonstrate compliance with GDC 2 and GDC 4, as described.
214.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	The portion of this item that discusses the containment spray system is not applicable to the NuScale design because there is no containment spray system. Also, the containment atmosphere has no atmospheric cleanup systems in the NuScale design.	Consider that the NuScale design does not include containment spray system and the containment atmosphere has no atmospheric cleanup systems.
215.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}$^{3(a)}$	Consider the NuScale specific design for development of this section.
216.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}$^{3(a)-(c)}$	Consider the NuScale specific design for development of this section.
217.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	NuScale design does not have containment sump, but the sampling system will have the capability to obtain a liquid sample (if there is any liquid) from inside containment. NuScale containment is a vessel that immediately surrounds the reactor vessel.	Consider that the NuScale containment is a vessel that immediately surrounds the reactor vessel.
218.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	The NuScale sampling system design does not include containment isolation valves in the sample lines.	Consider that the NuScale design does not include containment isolation valves.
219.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}$^{3(a)-(c)}$	Consider the NuScale specific design for development of this section.

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220.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}3(a)-(c) The NuScale DSRS should be developed accordingly.	Consider the NuScale specific design for development of this section.
221.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}3(a)-(c) The NuScale DSRS should be developed accordingly.	Consider the specific design characteristics, as described.
222.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	The NuScale design has no post-accident sampling systems containment isolation valves.	Revise applicability, as described.
223.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	Section 9.3.2 of the NuScale DSRS will be applicable to both the primary sampling system and the secondary sampling system.	Consider this sections applicability for both the primary sampling system and the secondary sampling system.
224.	9.3.2	I. Areas of Review Paragraph 1	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}3(a)-(c)	Revise the paragraph in this section, as recommended.
225.	9.3.2	II. Acceptance Criteria DSRS Acceptance Criteria Item 1, Table p. 9.3.2-6	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}3(a)-(c)	Revise the table in section 9.3.2 should be revised, as described.
226.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}3(a)-(c)	Consider the NuScale specific design for development of this section.
227.	9.3.2	Throughout section	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	{{ }}3(a)	Consider the NuScale specific design for development of this section.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
228.	9.3.2	II. Acceptance Criteria DSRS Acceptance Criteria Item 4.F p. 9.3.2-7	PROCESS AND POST ACCIDENT SAMPLING SYSTEMS	This item concerns containment isolation valves in the process sampling system. The NuScale design has no PSS containment isolation valves. The NuScale DSRS should be developed accordingly.	Revise this section of the NuScale DSRS considering that the NuScale design has no process sampling system containment isolation valves.
229.	9.4.1	Throughout section	CONTROL ROOM AREA VENTILATION SYSTEM	{{ }}3(a)	Consider the NuScale specific design for development of this section.
230.	9.4.1	Throughout section	CONTROL ROOM AREA VENTILATION SYSTEM	In the NuScale DSRS paragraphs corresponding to Section I., 1st and 2nd paragraphs, should be modified, as these paragraphs do not reflect NuScale design. For example, NuScale does not have a two-unit module or a control building.	Revise this section for the NuScale DSRS according to the NuScale specific design.
231.	9.4.2	Throughout section	SPENT FUEL POOL AREA VENTILATION SYSTEM	The NuScale design includes the spent fuel pool in the reactor building. This section requires incorporation of the reactor building ventilation system to produce the NuScale DSRS. {{ }}3(a)	For the NuScale DSRS, this section requires incorporation of the reactor building ventilation system, as described.
232.	9.4.3	Throughout section	REACTOR SERVICE BUILDING HVAC SYSTEMS	{{ }}3(a)	Revise this section of the NuScale DSRS based on the specific design, as described.
233.	10.2	Throughout section	TURBINE GENERATOR	Based on the NuScale gap analysis results, SRP Section 10.2 was determined to be “Not Applicable” to the NuScale design. The basis for this determination was that adequate turbine missile protection does not rely on management of turbine missile generation or SSC failure probabilities. NuScale gap analysis concluded that the provisions of SRP Section 10.2 that are intended to ensure compliance with GDC 4 are not necessary or appropriate to apply to the NuScale design. NuScale recognizes that review guidance for the NuScale turbine generator may still be appropriate. NuScale intends to revise its gap analysis results to reflect the change in applicability of Section 10.2 from “Not Applicable” to “Partially Applicable” (i.e., “Use With Modification”). These modifications would include: • Revisions to Acceptance Criteria II.1 and II.2 to reflect that for the NuScale plant design, off-the-shelf overspeed protection and control design that is verified to have a quality track record, along with manufacturer recommended testing and inspection, provide the "suitable redundancy and diversity" to meet the underlying purpose of GDC 4. • Deletion of Acceptance Criterion II.3, since the NuScale design does not include safety-related SSCs in the turbine building. • Conforming changes to other portions of Section 10.2 to reflect the above two items.	

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
234.	10.3	I. Areas of Review Paragraph 3 p. 10.3-1	MAIN STEAM SUPPLY SYSTEM	Page 10.3-1, third paragraph, the first sentence includes the main steam safety relief valves as safety-related components of the MSSS. {{ }}[3(a)] The only safety functions associated with the NuScale MSSS are those associated with containment vessel isolation, main steam line isolation, and serving as part of the pressure boundary for the DHR system. Thus, NuScale recommends that the first sentence of the third paragraph be revised for the NuScale DSRS Section 10.3 to reflect the MSSS safety functions relevant to the NuScale design.	Consider the specific design feature as described.
235.	10.3	I. Areas of Review <u>Review Interfaces</u> Item 15 p. 10.3-4	MAIN STEAM SUPPLY SYSTEM	Page 10.3-4, Item 15 under "Review Interfaces" refers to DSRS Section 5.4.7 for review of design margins associated with decay heat removal during various accident conditions. The NuScale design does not include a residual heat removal (RHR) system, so Section 5.4.7 is not relevant to the NuScale design. The NuScale design incorporates systems that fulfill decay heat removal functions similar to those served by a typical RHR system. These systems are described in other portions of the DCD. NuScale DCD Section 5.4.7 will provide references to these other portions of the DCD, if/as appropriate., as follows: • With respect to the typical RHR system function of providing reactor coolant system cooling during and following shutdown, the NuScale decay heat removal (DHR) system provides a substantively equivalent function. As discussed in the NuScale comment on mPower DSRS Section 5.4.7, NuScale will describe the DHR system design in DCD Section 10.4.12. Thus, the corresponding review guidance reference for Item 15 in the NuScale DSRS Section 10.3 would be new NuScale DSRS Section 10.4.12 (rather than Section 5.4.7). • With respect to the typical RHR system function of providing low-pressure emergency core cooling, the NuScale emergency core cooling (ECC) system serves the function of providing emergency core cooling through the entire range of pressures that would be experienced as the plant is cooled from normal operating temperature to a cold shutdown condition. The design and operation of the NuScale ECC system are described in DCD Section 6.3. Thus, the corresponding review guidance reference for Item 15 in the NuScale DSRS Section 10.3 would be NuScale DSRS Section 6.3 (rather than Section 5.4.7).	Consider that the NuScale design incorporates systems that fulfill decay heat removal functions similar to those served by a typical RHR system.
236.	10.3	II. Acceptance Criteria <u>DSRS Acceptance Criteria</u> Item 5 p. 10.3-6	MAIN STEAM SUPPLY SYSTEM	As a means of meeting 10 CFR 50.63, Acceptance Criterion II.5 (of both mPower DSRS Section 10.3 and SRP Section 10.3) specifies meeting Regulatory Guide (RG) 1.155 as it relates to MSSS design. As discussed in the NuScale gap analysis results, the NuScale plant design does not rely on the MSSS to provide steam to safety-related SSCs (e.g., ESF pump turbine) in the event of a station blackout (SBO). In addition, due to design-specific passive features, the MSSS is not relied upon in response to a SBO, and RG 1.155 does not specify design provisions relevant to the NuScale plant MSSS design. Notwithstanding, the NuScale plant design meets the intent of RG 1.155 largely in its passive design and associated reduced reliance on electrical power in coping with SBO events. NuScale recommends that the above discussion be appropriately reflected in the NuScale DSRS Section 10.3.	Consider that the NuScale plant design does not rely on the MSSS to provide steam to safety-related SSCs (e.g., ESF pump turbine) in the event of a station blackout (SBO).

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237.	10.3	II. Acceptance Criteria Technical Rationale Item 1 p. 10.3-6 II. Acceptance Criteria Technical Rationale Items 2, 3 p. 10.3-7	MAIN STEAM SUPPLY SYSTEM	Identifies steam generator and MSSS overpressure protection as a safety function. {{ }}$^{3(a)}$ Safety functions are those functions relied upon to ensure the integrity of the reactor coolant pressure boundary; the capability to shut down the reactor and maintain it in a safe shutdown condition; or the capability to prevent or mitigate the consequences of accidents. The only safety functions associated with the NuScale MSSS are those associated with containment vessel isolation, main steam line isolation, and serving as part of the pressure boundary for the DHR system. Thus, NuScale recommends that the affected content be revised for the NuScale DSRS Section 10.3 to reflect the MSSS safety functions relevant to the NuScale design.	Consider the specific design feature as described.
238.	10.3	II. Acceptance Criteria Technical Rationale Item 4 p. 10.3-7	MAIN STEAM SUPPLY SYSTEM	Identifies decay heat removal/reactor core cooling as a safety function of the MSSS. Safety functions are those functions relied upon to ensure the integrity of the reactor coolant pressure boundary; the capability to shut down the reactor and maintain it in a safe shutdown condition; or the capability to prevent or mitigate the consequences of accidents. In the NuScale design, the MSSS is used during certain normal operating conditions to accomplish the GDC 34 function of providing core decay heat removal. However, this MSSS function is not relied upon to ensure the three criteria assigned to safety functions. The only safety functions associated with the NuScale MSSS are those associated with containment vessel isolation, main steam line isolation, and serving as part of the pressure boundary for the DHR system. Thus, NuScale recommends that Item 4 be revised for the NuScale DSRS Section 10.3 to reflect the MSSS safety functions relevant to the NuScale design.	Consider the specific design feature as described.
239.	10.3	II. Acceptance Criteria Technical Rationale Item 5 p. 10.3-7	MAIN STEAM SUPPLY SYSTEM	Specifies meeting the positions of RG 1.155 to provide assurance that the MSSS is capable of providing core cooling and safe shutdown in the event of an SBO. Due to design-specific passive features, there are certain provisions of RG 1.155 that are not relevant to the NuScale passive plant design. In the NuScale design, the MSSS is available – with no reliance on alternating current electrical power – to provide decay heat removal capability during an SBO. {{ }}$^{3(a)}$ and RG 1.155 does not specify design provisions relevant to the NuScale plant MSSS design. Notwithstanding, the NuScale plant design meets 10 CFR 50.63 and the intent of RG 1.155 largely in its passive design and associated reduced reliance on electrical power in coping with SBO events. NuScale recommends that the above discussion be appropriately reflected in the NuScale DSRS Section 10.3.	In development of the NuScale DSRS for this section consider that due to design-specific passive features, there are certain provisions of Regulatory Guide 1.155 that are not relevant to the NuScale passive plant design.
240.	10.3	III. Review Procedures Item 10 p. 10.3-11	MAIN STEAM SUPPLY SYSTEM	Item 10 directs the reviewer to determine compliance with RG 1.155, Positions C.3.2, C.3.3, and C.3.5, as they relate to the design of the MSSS. Due to the advanced passive design of the NuScale reactor plant, portions of these positions are not relevant to the NuScale design. NuScale recommends that Item 10 be clarified for the NuScale DSRS Section 10.3 to change "…determining compliance with RG 1.155, Positions C.3.2, C.3.3, and C.3.5, as they relate to the design of the MSSS" to "…determining compliance with RG 1.155, Positions C.3.2, C.3.3, and C.3.5, as they relate to the design of the MSSS and are relevant to passive plant designs" (or similar).	Consider that certain parts of RG 1.155, Positions C.3.2, C.3.3, and C.3.5, as they relate to the design of the MSSS, are not relevant to the NuScale passive design.

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241.	10.3	III. Review Procedures Item 6.B p. 10.3-9	MAIN STEAM SUPPLY SYSTEM	Refers to use of atmospheric dump valves to cool down to conditions allowing for actuation of the RHR system. The NuScale design does not include a residual heat removal (RHR) system. The NuScale design incorporates systems that fulfill decay heat removal functions similar to those served by a typical RHR system. However, actuation and operation of these systems do not require cooling via atmospheric dump valves. Thus, Item 6.B is not relevant to and may be deleted from the NuScale DSRS Section 10.3.	Consider that the NuScale design does not include a RHR.
242.	10.2.3 (All)	Throughout section	TURBINE ROTOR INTEGRITY	Based on the NuScale gap analysis results, SRP Section 10.2.3 was determined to be “Not Applicable” to the NuScale design. The basis for this determination was that due to design features unique to the NuScale reactor plant, adequate turbine missile protection does not rely on management of turbine missile generation or SSC failure probabilities. NuScale gap analysis concluded that the provisions of SRP Section 10.2.3 intended to ensure compliance with GDC 4 are not necessary or appropriate to apply to the NuScale design. NuScale recognizes that review of the NuScale turbine generator rotor design may still be appropriate. Thus, NuScale intends to revise its gap analysis results to reflect the change in applicability of Section 10.2.3 from “Not Applicable” to “Partially Applicable” (i.e., “Use With Modification”). The modifications necessary for the NuScale DSRS Section 10.2.3 are those that reflect that the NuScale plant design does not rely on management of turbine missile generation or SSC failure probabilities for protection of essential SSCs from turbine missiles. These modifications would include: revisions to Acceptance Criteria II.1 through II.5 to reflect that for the NuScale plant design, the following provide adequate assurance that the turbine(s) will not be a source of missiles that could damage systems, structures, and components (thus meeting the underlying purpose of GDC 4): – An off-the-shelf turbine and turbine rotor design that is verified to have a quality track record. – Manufacturer recommended pre-service and inservice testing and inspection. Conforming changes to other portions of Section 10.2.3 to reflect the above item.	Consider that NuScale plans to use this section with modification for the review of the turbine generator rotor.
243.	10.3	Throughout section	MAIN STEAM SUPPLY SYSTEM	The regulatory requirements (e.g., GDCs 2, 4, 5, and 34, and 10 CFR 50.63) applied in the review of the MSSS are reflected in various portions of mPower DSRS Section 10.3. These requirements are the same as those in the current revision of SRP Section 10.3. Some of these requirements constitute design-basis (as defined in 10 CFR 50.2) requirements. Due to unique aspects of the NuScale passive design, the NuScale MSSS (or portions thereof) may be relied upon to satisfy regulatory/design-basis requirements in addition to those specified in Section 10.3 of the NRC's review guidance. For example, under certain operating conditions, portions of the MSSS are relied upon to support operation of the decay heat removal system. GDCs 44, 45, and 46 are anticipated to be relevant to these portions of the NuScale MSSS. (Pursuant to GDC 44, these portions of the MSSS serve to transfer heat from structures, systems, and components important to safety to an ultimate heat sink under certain conditions. Pursuant to GDCs 45 and 46, these portions of the MSSS shall be designed to permit appropriate periodic inspection of important components to ensure the integrity and capability of the system.) Upon confirmation of this conclusion, GDCs 44, 45, and 46 would be added to the NuScale DSRS Section 10.3 as applicable regulatory requirements for the NuScale MSSS.	Consider that NuScale may plan to satisfy regulatory/design-basis requirements in addition to those specified in Section 10.3 of the NRC's review guidance.

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244.	10.3	II. Acceptance Criteria DSRS Acceptance Criteria Item 4.A p. 10.3-6	MAIN STEAM SUPPLY SYSTEM	As a means of meeting GDC 34, Acceptance Criterion II.4.A (of both mPower DSRS Section 10.3 and SRP Section 10.3) specifies meeting the design requirements of BTP 5-4 for systems (such as the MSSS at a typical large PWR) that provide a residual heat removal function. The NuScale design does not involve pumps, whether steam-driven or otherwise, and thus the NuScale MSSS does not provide steam to turbine-driven ESF pumps like would be the case at a large PWR. However, the NuScale MSSS does provide a residual heat removal function, and thus the functional criteria of BTP 5-4 (i.e., Item B.1) would be applicable to the MSSS. The system design criteria of BTP 5-4 are not appropriate to apply in this context (i.e., to the MSSS) since they are specific to a typical residual heat removal system and auxiliary feedwater system that are not included in the NuScale design.	Consider that in the NuScale design the MSSS does not provide steam to turbine-driven ESF pumps like would be the case at a large PWR.
245.	10.3	II. Acceptance Criteria Technical Rationale Item 5 p. 10.3-7	MAIN STEAM SUPPLY SYSTEM	Refers to use of the MSSS to "…supply steam to the auxiliary condenser, which may be used to provide the decay heat removal capability for core cooling and safe-shutdown (non-design-basis accident (DBA)), during an SBO." The NuScale plant design does not include an auxiliary condenser. Thus, NuScale recommends that Item 5 be revised for the NuScale DSRS Section 10.3 to reflect the NuScale design.	Consider the specific design feature as described.
246.	10.3.6	II. Acceptance Criteria Technical Rationale p. 10.3.6-6	STEAM AND FEEDWATER SYSTEM MATERIALS	Both paragraphs under "Technical Rationale" Page 10.3.6-6 identify steam and feedwater system pressure relief as a safety function. {{ }}[3(a)] Safety functions are those functions relied upon to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, or the capability to prevent or mitigate the consequences of accidents. The only safety functions associated with the NuScale steam and feedwater systems are those associated with containment and system isolation and serving as part of the pressure boundary for the DHR system. Thus, NuScale recommends that the affected content be revised for the NuScale DSRS Section 10.3.6 to reflect the safety functions relevant to the NuScale steam and feedwater systems design.	Consider the specific design feature as described.
247.	10.3.6	Throughout section	STEAM AND FEEDWATER SYSTEM MATERIALS	Regulatory Guide (RG) 1.37 is described in a number of sections of SRP Section 10.3.6 as containing acceptable criteria for control of cleaning of material and equipment (to show compliance with 10 CFR 50, Appendix B). It is noted that Section 1.9 of the NuScale DCD (conformance with regulatory guides) will reflect that RG 1.37 is not directly applicable to the NuScale design. Specifically, RG 1.37 endorses specific portions of NQA-1-1994. The NuScale design will be based on NQA-1-2008 and the NQA-1a-2009 addenda (rather than NQA-1-1994), as endorsed in RG 1.28, Rev. 4. Notwithstanding this conclusion, the NuScale design meets the intent of RG 1.37. Specifically, RG 1.37, Position C.1, reflects wording in NQA 1 1994 that is no longer contained in NQA-1-2008. However, the intent of this position is met by satisfying the requirement of 10 CFR 52.47(a)(9) for evaluating the design with respect to the applicable NRC review guidance in effect six (6) months before the application docket date. RG 1.37, Positions C.2 and C.3, are incorporated into NQA-1-2008 and/or the NQA-1a-2009 addenda, and thus NuScale's use of NQA 1 2008 and the NQA-1a-2009 addenda ensures that these RG 1.37 regulatory positions are satisfied.	Consider that RG 1.37 is not fully applicable to the NuScale design.
248.	10.4.1	Throughout section	MAIN CONDENSERS	The content of SRP and mPower DSRS Sections 10.4.1 reflects the design of a typical reactor unit that has a single large turbine generator and associated main condenser. For the NuScale DSRS Section 10.4.1, it should be noted that a NuScale plant may have up to 12 reactor modules, and each reactor module has its own dedicated turbine generator and main condenser.	Consider that the NuScale design may have up to 12 reactor modules.

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249.	10.4.2	Throughout section	MAIN CONDENSER EVACUATION SYSTEM	The content of SRP and mPower DSRS Sections 10.4.2 reflects the design of a typical reactor unit that has a single large turbine generator and associated main condenser. For the NuScale DSRS Section 10.4.2, it should be noted that a NuScale plant may have up to 12 reactor modules, and each reactor module has its own dedicated turbine generator, main condenser, and main condenser evacuation system.	Consider that the NuScale design may have up to 12 reactor modules.
250.	10.4.3	Throughout section	TURBINE GLAND SEALING SYSTEM	The content of SRP and mPower DSRS Sections 10.4.3 reflects the design of a typical reactor unit that has a single large turbine generator and associated main condenser and gland sealing system. For the NuScale DSRS Section 10.4.3, it should be noted that a NuScale plant may have up to 12 reactor modules, and each reactor module has its own dedicated turbine generator, main condenser, and turbine gland sealing system.	Consider that the NuScale design may have up to 12 reactor modules.
251.	10.4.4	Throughout section	TURBINE BYPASS SYSTEM	The content of SRP and mPower DSRS Sections 10.4.4 reflects the design of a typical reactor unit that has a single large turbine generator and associated turbine bypass system. For the NuScale DSRS Section 10.4.4, it should be noted that a NuScale plant may have up to 12 reactor modules, and each reactor module has its own dedicated turbine generator and turbine bypass system.	Consider that the NuScale design may have up to 12 reactor modules.
252.	10.4.5	Throughout section	CIRCULATING WATER SYSTEM	The content of SRP and mPower DSRS Sections 10.4.5 reflects the typical reactor design configuration wherein a single circulating water system serves one unit's large main condenser. (For example, phrases like "...the circulating water system provides cooling water to the main condenser....") For the NuScale DSRS Section 10.4.5, it should be noted that a NuScale plant may have up to 12 reactor modules, each with a dedicated main condenser. In the NuScale design, up to six main condensers are served by a single circulating water system. Thus, a 12-unit plant would have a minimum of two circulating water systems.	Consider that the NuScale design may have up to 12 reactor modules.
253.	10.4.6	Throughout section	CONDENSATE CLEANUP SYSTEM	The NuScale system that serves the function of the condensate cleanup system governed by this section is referred to by a different name – the condensate polishing system. Recommend that the NuScale DSRS Section 10.4.6 be titled and the content terminology revised to reflect the NuScale system name. Also, the content of SRP and mPower DSRS Sections 10.4.6 reflects the design of a typical reactor unit that has a single large turbine generator and associated main condenser, condensate system, and condensate cleanup system. For the NuScale DSRS Section 10.4.6, it should be noted that a NuScale plant may have up to 12 reactor modules, and each reactor module has its own dedicated turbine generator, main condenser, condensate system, and condensate polishing system.	Recommend that the NuScale DSRS Section 10.4.6 be titled and the content terminology revised to reflect the NuScale system name. Consider that the NuScale design may have up to 12 reactor modules.
254.	10.4.6	I. Areas of Review Review Interfaces Item 4 p. 10.4.6-2	CONDENSATE CLEANUP SYSTEM	Item 4 under “Review Interfaces” on Page 10.4.6-2 refers to the “condensate demineralized system.” The NuScale design does not use a separate system by this name. NuScale recommends that for the NuScale DSRS Section 10.4.6, Item 4 be revised to read: “Review of the shielding design for the condensate polishers is performed under DSRS Section 12.2.”	Recommend that for the NuScale DSRS Section 10.4.6, Item 4 be revised to read: “Review of the shielding design for the condensate polishers is performed under DSRS Section 12.2."

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
255.	10.4.6	II. Acceptance Criteria p. 10.4.6-3 IV. Evaluation Findings p. 10.4.6-4	CONDENSATE CLEANUP SYSTEM	Acceptance Criterion II.1 cites (via DSRS Section 5.4.2.1) the latest version of the EPRI PWR Secondary Water Chemistry Guidelines as the criteria to be applied to demonstrate acceptable secondary water chemistry. This expectation (to use the EPRI guidance) is reiterated in the second paragraph of Section IV, Evaluation Findings (Page 10.4.6-4). As detailed in the NuScale gap analysis, based on the NuScale steam generator design, there may be selected aspects of the EPRI water chemistry guidance which, as the design effort progresses, may be found to be inappropriate to apply to the NuScale design. Based on the current stage of design, it is not possible to determine with certainty which (if any) aspects of this guidance would be not relevant to the NuScale plant design. Therefore, for the NuScale DSRS Section 10.4.6, it is recommended that this acceptance criterion be revised to explicitly allow for alternative approaches to the EPRI guidance, provided sufficient justification demonstrates an equivalent level of assurance that GDC 14 is satisfied.	Recommend that this acceptance criterion be revised to explicitly allow for alternative approaches to the EPRI guidance, as described.
256.	10.4.7	Throughout section	CONDENSATE AND FEEDWATER SYSTEM	The content of SRP and mPower DSRS Sections 10.4.7 reflects the design of a typical reactor unit that has a single large turbine generator and associated main condenser and condensate and feedwater system. For the NuScale DSRS Section 10.4.7, it should be noted that a NuScale plant may have up to 12 reactor modules, and each reactor module has its own dedicated turbine generator, main condenser, and condensate and feedwater system.	Consider that the NuScale design may have up to 12 reactor modules.
257.	10.4.7	I. Areas of Review Review Interfaces	CONDENSATE AND FEEDWATER SYSTEM	The NuScale DSRS Section 10.4.7 will warrant an additional item under “Review Interfaces.” Specifically, in that a portion of the feedwater piping serves as a path (and pressure boundary) for the decay heat removal (DHR) system, that portion will also warrant review under new NuScale DSRS Section 10.4.12.	Consider that the portion of the feedwater piping that serves as a path (and pressure boundary) for the decay heat removal (DHR) should be reviewed, as described.
258.	10.4.7	Throughout section	CONDENSATE AND FEEDWATER SYSTEM	The regulatory requirements (e.g., GDCs 2, 4, 5, 44, 45, and 46) applied in the review of the condensate and feedwater system are reflected in various portions of mPower DSRS Section 10.4.7. These requirements are the same as those in the current revision of SRP Section 10.4.7. Some of these requirements constitute design-basis (as defined in 10 CFR 50.2) requirements. Due to unique aspects of the NuScale passive design, the NuScale condensate and feedwater system (or portions thereof) may be relied upon to satisfy regulatory/design-basis requirements in addition to those specified in Section 10.4.7 of the NRC's review guidance. For example, portions of the condensate and feedwater system are relied upon to support operation of the decay heat removal system. As such, GDC 34 is anticipated to be relevant to these portions of the NuScale condensate and feedwater system. Upon confirmation of this conclusion, GDC 34 would be added to the NuScale DSRS Section 10.4.7 as applicable regulatory requirements for the NuScale condensate and feedwater system.	Consider that due to unique aspects of the NuScale passive design, the NuScale condensate and feedwater system (or portions thereof) may be relied upon to satisfy regulatory/design-basis requirements in addition to those specified in Section 10.4.7 of the NRC's review guidance.
259.	11.1	Throughout section	COOLANT SOURCE TERMS	NuScale will be using a modified version of the GALE86 code with justification for changes and assumptions. This section will need to be modified for acceptance criteria for NuScale design.	Consider that NuScale will use a modified version of the GALE86.
260.	11.3, 11.4, 11.5	Throughout section	SOLID WASTE MANAGEMENT SYSTEM	The NuScale DSRS should be developed according to the NuScale design specific SSCs related to the solid waste management systems.	Use the design specific SSCs.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
261.	11.6	Throughout section	GUIDANCE ON INSTRUMENTATION AND CONTROL DESIGN FEATURES FOR PROCESS AND EFFLUENT RADIOLOGICAL MONITORING, AND AREA RADIATION AND AIRBORNE RADIOACTIVITY MONITORING	In the June 26, 2013 phone meeting with NRC Staff, the NRC indicated that since we are complying with the Chapter 7 DSRS, we will need to also comply with this review standard. NuScale will add this new section to the DCA.	None
262.	12.2	II. Acceptance Criteria DSRS Acceptance Criteria Item 5 p. 12.2-6	RADIATION SOURCES	The NuScale DSRS should be developed considering that NuScale design-specific SSCs will need to be reviewed against the system interface section for submittal to NRC. Under DSRS Acceptance Criteria, ANSI/ANS 18.1 has been replaced by NUREG-0017, Rev. 1. NuScale will be using a modified version of GALE for use in developing source term.	Substitute guidances as described.
263.	15.0.	I. Areas of Review Item 1. A p. 15.0-1	INTRODUCTION - TRANSIENT AND ACCIDENT ANALYSES	{{ }}$^{3(a)}$ This issue should be considered for the NuScale DSRS.	Consider that the design uses a different frequency criteria.
264.	15.0	I. Areas of Review Item 2. B p. 15.0-5	INTRODUCTION - TRANSIENT AND ACCIDENT ANALYSES	Add a new Acceptance Criterion B to list. {{ }}$^{3(a)}$	Add a new Acceptance Criteria as described.
265.	15.0	I. Areas of Review Item 1. A Paragraph 3 p. 15.0-1	INTRODUCTION - TRANSIENT AND ACCIDENT ANALYSES	In the NuScale DSRS, delete the discussion on Incidents of moderate frequency and reference to the ANS standard.	Delete the discussion for the NuScale DSRS as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
266.	15.0	I. Areas of Review Item 1. A Paragraph 4 p. 15.0-2	INTRODUCTION - TRANSIENT AND ACCIDENT ANALYSES	The following AOOs in the list of examples of AOOs on page 15.0-2 do not apply to the NuScale design and should be deleted: - Loss or interruption of core coolant flow, excluding reactor coolant pump locked rotor - Depressurization by spurious operation of an active element, such as a relief valve - Blowdown of reactor coolant through a safety valve Also, delete the large pipe crack portion (i.e., "or from a crack in a large pipe") from the following example: - Minor reactor coolant system (RCS) leak or loss of reactor coolant such as from a small ruptured pipe or from a crack in a large pipe	Delete the AOOs in the NuScale DSRS, as described.
267.	15.1.5	Throughout section	STEAM SYSTEM PIPING FAILURES INSIDE AND OUTSIDE OF CONTAINMENT (mPOWER iPWR)	Generally, in the NuScale DSRS, specific terminology related to the NuScale design should be used, e.g., several locations refer to CNX, the Auxiliary Condenser System, (DSRS Acceptance Criteria (Assumptions, Item 2) which is not applicable to NuScale. Suggest replacing with generic term to represent necessary functions or making design specific.	Modify the terminology as presented.
268.	15.1.5	Throughout section	STEAM SYSTEM PIPING FAILURES INSIDE AND OUTSIDE OF CONTAINMENT (mPOWER iPWR)	In the NuScale DSRs, references to RCP and seals should be removed and be replaced with applicable texts for natural circulation plant, as the NuScale design does not use reactor coolant pumps.	Consider that the NuScale design does not include the RCP and seals.
269.	15.1.5	I. Areas of Review <u>Review Interfaces</u> Items 4, 7 p. 15.1.5-3	STEAM SYSTEM PIPING FAILURES INSIDE AND OUTSIDE OF CONTAINMENT (mPOWER iPWR)	Review Interfaces: Interfaces #4, #7 explicitly require review of systems associated with mPower design to verify ability to function. Revision to Review Interfaces is required to be consistent with NuScale design: a.) e.g., DHR rather than ECCS would be applicable to plant response. b.) Some sections of the application may also be different (e.g., because new sections may be identified or applicable sections changed because of design differences.	Revise the review interfaces to make it consistent with the design as described.
270.	15.1.5	III. Review Procedures Item 2.D.5 p. 15.1.5-11	STEAM SYSTEM PIPING FAILURES INSIDE AND OUTSIDE OF CONTAINMENT (mPOWER iPWR)	Section III.3.D, Item 5 discusses reliability/integrity of the RCP seals. This is not applicable to NuScale.	Remove discussions related to RCP seals.
271.	15.1.5	Throughout section	STEAM SYSTEM PIPING FAILURES INSIDE AND OUTSIDE OF CONTAINMENT (mPOWER iPWR)	The NuScale DSRS should differ from the mPower DSRS in the following key areas: a) The mPower DSRS specifies that most limiting scenario for the number of RCPs in operation must be evaluated. As NuScale has no RCPs, the NuScale DSRS should consider the effect of such an event on natural circulation requirements. Suggest that the NuScale DSRS address requirements associated with a natural circulation plant. b) In the mPower DSRS, the parameters of importance (e.g., RCS pressure) are unchanged from SRP, but may vary somewhat (for various SMR designs) by design. For example, safety and relief valve flow rates are not applicable to NuScale.	Modify the NuScale DSRS for this section, as explained.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
272.	15.2.1-15.2.5	Throughout section	LOSS OF EXTERNAL LOAD; TURBINE TRIP; LOSS OF CONDENSER VACUUM; CLOSURE OF MAIN STEAM ISOLATION VALVE; AND STEAM PRESSURE REGULATOR FAILURE (CLOSED)	This section of the mPower DSRS includes mPower-specific design characteristics such as “once-through” steam generators and reactor coolant pumps. The NuScale DSRS should consider design features such as “helical” steam generators, and also should delete the discussion of RCP trip.	Replace the discussion about "once-through" SG with "helical" SG.
273.	15.2.1-15.2.5	I. Areas of Review Paragraph 2 p. 15.2.1-15.2.5-1	LOSS OF EXTERNAL LOAD; TURBINE TRIP; LOSS OF CONDENSER VACUUM; CLOSURE OF MAIN STEAM ISOLATION VALVE; AND STEAM PRESSURE REGULATOR FAILURE (CLOSED)	Includes an introductory statement that ECCS is safety-related and designed to provide core cooling using water stored inside containment for a minimum of 72 hours. The safety function is accomplished passively assuming a single failure. Introduction requires revision to be consistent with NuScale design, e.g., DHRS is the credited safety-related heat removal system for these events.	Revise the introduction for this section to make it consistent with the NuScale design, as described.
274.	15.2.6	I. Areas of Review Review Interfaces p. 15.2.6-2	LOSS OF NONEMERGENCY AC POWER TO THE STATION AUXILIARIES (mPOWER iPWR)	Review Interfaces: SRP 15.2.6 Interface 5 (related to reliability of the auxiliary feedwater system) has been deleted from mPower DSRS. The NuScale DHRS provides similar function. As such, this interface may be appropriate for NuScale DSRS.	Consider adding SRP 15.2.6 Interface 5 (related to reliability of the auxiliary feedwater system or equivalent) back to the NuScale DSRS.
275.	15.2.6	I. Areas of Review	LOSS OF NONEMERGENCY AC POWER TO THE STATION AUXILIARIES (mPOWER iPWR)	This section requires revision for consistency with NuScale design, e.g., DHRS is the credited safety-related heat removal system for these events.	Revise this section to make it consistent with the NuScale design, as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
276.	15.2.7	I. Areas of Review Item 1 p. 15.2.7-1	LOSS OF NORMAL FEEDWATER FLOW (mPOWER iPWR)	The “specific areas of review”, Item 1, requests reviewer to concentrate on ECCS. Other parts of the DSRS also refer to ECCS for response to this event. NuScale DSRS should reflect NuScale design, which uses DHR for LOFW response. Revision is required to be consistent with NuScale design.	Revise this section to make it consistent with the NuScale design, which uses DHR for LOFW response.
277.	15.2.7	I. Areas of Review p. 15.2.7-1	LOSS OF NORMAL FEEDWATER FLOW (mPOWER iPWR)	Includes an introductory statement that ECCS is safety-related and designed to provide core cooling using water stored inside containment for a minimum of 72 hours. The safety function is accomplished passively assuming a single failure. Revision is required to be consistent with NuScale design, e.g., DHRS is the credited safety-related heat removal system for these events. The NuScale DSRS should be developed accordingly.	Include an introductory statement as recommended.
278.	15.2.7	II. Acceptance Criteria	LOSS OF NORMAL FEEDWATER FLOW (mPOWER iPWR)	Requirements: TMI Action Plan requirements have been removed from the mPower DSRS. Was this intentional? Would they be applicable for NuScale design?	Clarify the reason for removing TMI Action plan from this section.
279.	15.2.7	III. Review Procedures p. 15.2.7-8	LOSS OF NORMAL FEEDWATER FLOW (mPOWER iPWR)	The section cites an example “a stuck open PORV on the pressurizer that could lead to a SBLOCA if not isolated”. While this is an example, the example may not be applicable to NuScale, so examples should be design specific.	Use a NuScale design specific example for this section.
280.	15.2.7	III. Review Procedures	LOSS OF NORMAL FEEDWATER FLOW (mPOWER iPWR)	In developing the NuScale DSRS, design specific parameters should be identified as review parameters. For example, for the NuScale initial pool temperature, inventory is expected to be reviewed.	Use a NuScale design specific example for this section.
281.	15.2.8	I. Areas of Review	FEEDWATER SYSTEM PIPE BREAK INSIDE AND OUTSIDE CONTAINMENT	The introductory description does not apply to NuScale, which uses helical coil steam generators vs. shell and tube. The method of compensating for a break differs from mPower (DHRS vs. ECCS). Significant revision is needed with regard to reflect NuScale design.	Revise the introductory description for the NuScale DSRS, as described.
282.	15.2.8	I. Areas of Review Item 1.G p. 15.2.8-1	FEEDWATER SYSTEM PIPE BREAK INSIDE AND OUTSIDE CONTAINMENT	In the NuScale DSRS, the parameters of importance reflect the design. For example, Item G is not applicable to the NuScale design, which does not have these valves.	Revise this section for the NuScale design as described.
283.	15.2.8	II. Acceptance Criteria DSRS Acceptance Criteria Item 4 p. 15.2.8-5	FEEDWATER SYSTEM PIPE BREAK INSIDE AND OUTSIDE CONTAINMENT	DSRS Acceptance Criteria: Criterion 4 provides ECCS requirements, which aren’t applicable for NuScale response to this event.	Revise this section to be consistent with the NuScale plant response to this event.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
284.	15.2.8	II. Acceptance Criteria	FEEDWATER SYSTEM PIPE BREAK INSIDE AND OUTSIDE CONTAINMENT	DSRS Acceptance Criteria: TMI Action Plan requirements have been removed from mPower DSRS. Would they be applicable for NuScale design?	Clarify whether removing the TMI Action plan from this section is applicable to the NuScale design.
285.	15.3.1-15.3.2	Throughout section	LOSS OF FORCED REACTOR COOLANT FLOW - TRIPS OF ONE OR MORE PUMP MOTORS AND FLOW CONTROLLER MALFUNCTIONS	This DSRS in not applicable to NuScale, which does not use reactor coolant pumps. This concept of loss of forced reactor coolant flow may be translated to loss of natural circulation flow. NuScale addresses this issue as part of other design basis accidents.	This section is not applicable to NuScale.
286.	15.3.3-15.3.4	Throughout section	REACTOR COOLANT PUMP ROTOR SEIZURE AND REACTOR COOLANT PUMP SHAFT SEIZURE AND BREAK ACCIDENTS	This section of the mPower DSRS is not applicable to NuScale which does not use reactor coolant pumps. The concept of loss of forced reactor coolant flow (due to shaft seizure) may be translated to loss of natural circulation flow. NuScale addresses this issue as part of other design basis accidents.	Consider that the NuScale design does not include RCPs and the concept of forced reactor coolant flow.
287.	15.4.1	I. Areas of Review	UNCONTROLLED CONTROL ROD ASSEMBLY WITHDRAWAL FROM A SUBCRITICAL OR LOW POWER STARTUP CONDITION	An introduction is added which itemizes high neutron flux trip, overpower and over temperature delta T trips, and pressurizer high-pressure and pressurizer water-level trips as mitigating the event. Ensure that specific trips are design specific, e.g., NuScale does not plan "overpressure or over-temperature delta T trips." The NuScale DSRS should be developed accordingly.	For the NuScale DSRS, make sure that trips are NuScale design specific.
288.	15.4.1	I. Areas of Review	UNCONTROLLED CONTROL ROD ASSEMBLY WITHDRAWAL FROM A SUBCRITICAL OR LOW POWER STARTUP CONDITION	Per draft report "Classification of Transients and Accidents for the NuScale Power Small Modular Reactor", {{ }}$^{3(a)}$ The NuScale DSRS should be developed accordingly.	Consider the NuScale classification for the transients and accidents.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
289.	15.4.10	Throughout section	STARTUP OF AN INACTIVE PUMP OR PUMPS AT AN INCORRECT TEMPERATURE, AND FLOW CONTROLLER MALFUNCTION CAUSING AN INCREASE IN CORE FLOW RATE	The mPower design uses 8 RCPs and two flow dividers which create two internal recirculation loops. The DSRS is intended to address a spectrum of AOOs associated with increased reactivity resulting from decreased moderator temperature or void fraction. This discussion is not relevant to the NuScale design, although it is possible that the concept could be relevant if operation with one of two SGs is authorized (resulting in unexpected startup of inactive SG.) The NuScale DSRS should be developed accordingly.	Revise this section of the NuScale DSRS according to the NuScale design.
290.	15.4.2	I. Areas of Review	UNCONTROLLED CONTROL ROD ASSEMBLY WITHDRAWAL AT POWER	An introduction is added which itemizes high neutron flux trip, overpower and over temperature delta T trips, and pressurizer high-pressure and pressurizer water-level trips as mitigating the event. Ensure that specific trips are design specific, e.g., NuScale does not plan “overpressure or over-temperature delta T trips”. The NuScale DSRS should be developed accordingly.	For the NuScale DSRS, make sure that trips are NuScale design specific.
291.	15.4.2	I. Areas of Review	UNCONTROLLED CONTROL ROD ASSEMBLY WITHDRAWAL AT POWER	Per draft report “Classification of Transients and Accidents for the NuScale Power Small Modular Reactor”, {{ }}[3(a)] The NuScale DSRS should be developed accordingly.	Consider the NuScale classification for the transients and accidents.
292.	15.5.1-15.5-2	I. Areas of Review	INADVERTENT OPERATION OF ECCS AND REACTOR COOLANT INVENTORY AND PURIFICATION SYSTEM (RCI) MALFUNCTION THAT INCREASES REACTOR COOLANT INVENTORY	For the purification system (RCI), DSRS describes mPower trip from high water level, high flux, high pressure, low pressure or safety injection signals. The systems are not applicable for NuScale design and DSRS should be revised to be consistent with NuScale system design and potential parameters of interest.	For the NuScale DSRS, NuScale design specific systems should be discussed.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
293.	15.5.1-15.5-2	I. Areas of Review	INADVERTENT OPERATION OF ECCS AND REACTOR COOLANT INVENTORY AND PURIFICATION SYSTEM (RCI) MALFUNCTION THAT INCREASES REACTOR COOLANT INVENTORY	This DSRS addresses unplanned increases in RCS inventory. NuScale does not inject ECCS from an external source, but could have an unplanned increase due to CVCS. This appears to be the only potential mechanism for such an unplanned RCS increase. DSRS should be revised to be consistent with NuScale design.	Consider that NuScale design does not inject ECCS from an external source, but could have an unplanned increase due to CVCS.
294.	15.5.1-15.5-2	I. Areas of Review II. Acceptance Criteria	INADVERTENT OPERATION OF ECCS AND REACTOR COOLANT INVENTORY AND PURIFICATION SYSTEM (RCI) MALFUNCTION THAT INCREASES REACTOR COOLANT INVENTORY	According to the draft report "Classification of Transients and Accidents for the NuScale Power Small Modular Reactor", {{ }}[3(a)]	Consider the NuScale classification for the transients and accidents.
295.	15.6.1	I. Areas of Review II. Acceptance Criteria	INADVERTENT OPENING OF A PRESSURIZER SAFETY VALVE, OR AN AUTOMATIC DEPRESSURIZ-ATION VALVE	The DSRS cites examples of reactor trips (e.g., low Pz pressure, over-temperature delta-T, low thermal margin, low DNBR trips) associated with this event. The examples should be consistent with NuScale design which doesn't use overpressure and over-temperature dT trips.	For the NuScale DSRS, make sure that trips are NuScale design specific.
296.	15.6.1	I. Areas of Review II. Acceptance Criteria	INADVERTENT OPENING OF A PRESSURIZER SAFETY VALVE, OR AN AUTOMATIC DEPRESSURIZ-ATION VALVE	Per draft report "Classification of Transients and Accidents for the NuScale Power Small Modular Reactor", {{ }}[3(a)]	Consider the NuScale classification for the transients and accidents.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
297.	15.6.5	II. Acceptance Criteria DSRS Acceptance Criteria Item 4 p. 15.6.5-6	LOSS-OF-COOLANT ACCIDENTS RESULTING FROM SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY	Added Programmatic Requirements: Note other DSRS do not address programmatic requirements in Section II. Suggest that the issue be addressed consistently for all DSRS sections unless there is a reason for the difference.	Clarify the use of programmatic requirements in this section.
298.	15.6.5	I. Areas of Review	LOSS-OF-COOLANT ACCIDENTS RESULTING FROM SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY	In this section ECCS functions are divided into four categories: Auto depressurization, passive cooling, emergency decay heat removal and long term cooling. For the NuScale DSRS, the description of the plant response should be consistent with design.	Revise this section according to the NuScale specific design.
299.	15.6.5	I. Areas of Review	LOSS-OF-COOLANT ACCIDENTS RESULTING FROM SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY	For the NuScale DSRS this section should be modified consistent with NuScale design. For example, ECCS injection line, RCI system, and gravity drain phase, are not part of the NuScale design.	Revise this section according to the NuScale specific design.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
300.	15.6.5	I. Areas of Review Review Interfaces Item 7 p. 15.6.5-4	LOSS-OF-COOLANT ACCIDENTS RESULTING FROM SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY	For the NuScale DSRS, this section, Review Interfaces: Item 7, should be modified to reflect the NuScale design. For example, RCI is not a NuScale system and NuScale does not use RCPs. As such, the seal discussion is not applicable.	Revise this section according to the NuScale specific design, as described.
301.	15.6.5	III. Review Procedures Items 7.F, 13 pp. 15.6.5-10, 15.6.5-12	LOSS-OF-COOLANT ACCIDENTS RESULTING FROM SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY	Items 7F, 13 discusses RCP consideration in the analysis, which is not applicable to NuScale, which does not have RCPs.	In the NuScale DSRS for this section consider that NuScale design does not include RCPs.
302.	15.6.5	III. Review Procedures Item 7.I p. 15.6.5-11	LOSS-OF-COOLANT ACCIDENTS RESULTING FROM SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY	Item 7.I. discusses debris wash-down and recirculation. Discussion should be consistent with design, e.g., debris washdown to reactor cavity is not applicable to NuScale design.	Revise this section according to the NuScale specific design, as described.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
303.	15.6.5	III. Review Procedures Item 9 p. 15.6.5-11	LOSS-OF-COOLANT ACCIDENTS RESULTING FROM SPECTRUM OF POSTULATED PIPING BREAKS WITHIN THE REACTOR COOLANT PRESSURE BOUNDARY	Item 9 identifies variables of interest for review. The variables should be specific to the design and predicted level of core uncovery, e.g., for NuScale, flow through ECCS valves, UHS performance may be of interest.	Revise this section according to the NuScale specific design, as described.
304.	BTP 5-4		DESIGN REQUIREMENTS OF THE RESIDUAL HEAT REMOVAL SYSTEM	Design Requirements of the Residual Heat Removal System in the NuScale DSRS should be developed in keeping with the fact that the NuScale design does not include a residual heat removal system. The most closely aligned system is the decay heat removal system (DHR). As such, BTP 5-4 functional requirements may be applied to the DHR. BTP 5-4 isolation requirements are not applicable to DHR since the system does not directly interface with the RCS. BTP 5-4 pressure relief requirements require revision to accommodate the NuScale design. BTP 5-4 pump protection requirements are not applicable to DHR as there are no pumps. BTP 5-4 test requirements need to be modified to accommodate the NuScale design features.	Modify design requirements for the RHR based on the NuScale DHR specify design.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
305.	BTP 8-2	Throughout section	USE OF ONSITE AC POWER SOURCES FOR PEAKING	The draft mPower BTP 8-2 replaces the current SRP BTP 8-2 wording "emergency diesel generators" with "onsite AC power sources." This addresses much of the comment noted in the NuScale gap analysis for this section. The intent of this guidance is to ensure that the provision of GDC 17 is met with respect to minimizing the probability of concurrent loss of electrical power sources. Accordingly, this guidance precludes the use of onsite AC power sources for peaking service since such use involves the interconnection of the preferred and standby power supplies, increasing the probability of their common failure. {{ }}3(a)-(c)	Revise GDC applicability based on the presented argument.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
306.	BTP 8-3	Throughout section	STABILITY OF OFFSITE POWER SYSTEMS	As compared to Standard Review Plan (SRP) BTP 8-3, the first sentence in Section A of draft mPower DSRS BTP 8-3 has been changed from "The staff has traditionally required each applicant to perform stability studies for the electrical transmission grid…" to "General Design Criterion (GDC) 17 requires applicants to perform stability studies for the electrical transmission grid…." NuScale does not believe this change is appropriate. Specifically, GDC 17 does not specify any requirement for transmission grid stability studies. Rather, grid stability studies are established by Commission policy issuances (e.g., SECY 05-0219 and associated Staff Requirements Memorandum dated December 20, 2005), generic communications (e.g., RIS 2004 05, Generic Letter 2006 02, etc.), and other guidance (e.g., SRP Section 8.2, BTP 8 3, etc.) as an acceptable means of demonstrating that the criteria of GDC 17 are satisfied. Thus, NuScale recommends revising the first sentence of SRP and mPower DSRS BTP 8-3 to reflect the above discussion. {{ }}3(a)-(c)	Revise GDC applicability based on the presented argument.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
307.	BTP 8-3	Throughout section	STABILITY OF OFFSITE POWER SYSTEMS	Draft mPower DSRS BTP 8-3 provides additional clarification of the regulatory basis for applying this guidance to passive plant designs. With consideration for the comment above and the current stage of engineering design, this BTP as clarified currently is considered appropriate for the NuScale design.	Draft mPower DSRS BTP 8-3 provides additional clarification of the regulatory basis for applying this guidance to passive plant designs. With consideration for the NuScale comment on BTP 8-3, Chapter A, and the current stage of engineering design, this BTP as clarified currently is considered appropriate for the NuScale design. Thus, no change beyond that recommended in the NuScale comment on BTP 8-3, Chapter A, is needed.
308.	BTP 8-6	Throughout section	ADEQUACY OF STATION ELECTRIC DISTRIBUTION SYSTEM VOLTAGES (FOR PASSIVE DESIGN)	Standard Review Plan (SRP) BTP 8-6 provides guidance specific to active reactor plant designs for addressing potential degraded voltage conditions. As the NuScale plant is a passive design rather than an active design, the NuScale gap analysis resulted in the determination that SRP BTP 8-6 is not relevant to the NuScale design. The justification for this determination was that a loss of voltage or degraded voltage condition on the offsite power system would have no reasonable likelihood of adversely affecting the performance of NuScale plant passive safety functions. The SRP BTP 8-6 has been significantly revised for draft mPower DSRS BTP 8-6. The revised DSRS BTP 8 6 no longer contains the guidance provided in SRP BTP 8 6 for active plant design. Rather, draft mPower DSRS BTP 8-6 provides guidance for design, monitoring, and operating considerations needed to address potential degraded grid conditions specifically for passive plant designs. The extent of this revision (as compared to the SRP BTP 8-6) is such that minimal substantive content remains in the revised DSRS BTP 8 6. In addition, it appears that the issues to be verified under draft mPower DSRS BTP 8-6, Technical Positions B.1, B.2, and B.3, are already addressed to some extent in DSRS Sections 8.2, 8.3.1, and/or 8.3.2. Thus, for efficiency of review, it is recommended that BTP 8-6 be eliminated for passive plant DSRSs, and that the Technical Positions B.1, B.2, and B.3 in DSRS BTP 8-6 be incorporated as appropriate into DSRS Sections 8.2, 8.3.1, and/or 8.3.2. Except as indicated in the comments below on mPower DSRS BTP 8-6, the guidance of Technical Positions B.1, B.2, and B.3 (whether ultimately left in NuScale DSRS BTP 8-6 or incorporated into NuScale DSRS Sections 8.2, 8.3.1, and/or 8.3.2 as recommended above) is appropriate for the NuScale design.	Based on the presented argument, consider eliminating BTP 8-6 for passive plant DSRS and the Technical Positions B.1, B.2, and B.3 in DSRS BTP 8-6 be incorporated as appropriate into DSRS Sections 8.2, 8.3.1, and/or 8.3.2.

COMMENT NO.	SECTION	AFFECTED PARAGRAPH ITEM PAGE	SECTION TITLE	COMMENTS / BASIS	RECOMMENDATION
309.	BTP 8-6	Technical Position B.1 p. BTP 8.6-2	ADEQUACY OF STATION ELECTRIC DISTRIBUTION SYSTEM VOLTAGES (FOR PASSIVE DESIGN)	The second sentence of mPower DSRS BTP 8-6, Technical Position B.1, refers to the battery chargers "...in a back-biased state...." This implies use of a blocking diode. The NuScale design will include features to prevent the battery chargers from becoming a load on the battery in the event of a degraded AC voltage condition. However, these features may not involve the use of a blocking diode. Based on the above, NuScale recommends that the second sentence of Technical Position B.1 be revised for the NuScale DSRS to state that the battery chargers will include features to prevent the battery chargers from becoming a load on the battery in the event of a degraded AC voltage condition. The second sentence of Position B.1 also has seemingly contradictory language related to the batteries supplying DC loads without drawing down the batteries. Clarification/correction of this language is recommended.	Clarify/correct the contradictory statement, as explained.
310.	BTP 8-6	B. Technical Position B.1 p. BTP 8.6-2	ADEQUACY OF STATION ELECTRIC DISTRIBUTION SYSTEM VOLTAGES (FOR PASSIVE DESIGN)	The first sentence of mPower DSRS BTP 8-6, Technical Position B.1, refers to "Class 1E battery chargers…." In the NuScale design, portions of the battery chargers are anticipated to be Class 1E, but not necessarily the entire charger. At a minimum, Class 1E portions are anticipated to include battery charger components that serve to prevent the chargers from becoming a load on the battery in the event of a degraded AC voltage or SBO condition, and components that serve to protect the DC power system from degraded conditions or transients originating from the offsite or onsite AC power systems. Based on the above, NuScale recommends that the first sentence of Technical Position B.1 be revised for the NuScale DSRS to allow for the classification of portions of the battery chargers as non-Class 1E, as appropriate.	Revise the NuScale DSRS to allow for the classification of portions of the battery chargers as non-Class 1E, as described.
311.	BTP 8-6	C. References Items 4, 5 p. BTP 8.6-2	ADEQUACY OF STATION ELECTRIC DISTRIBUTION SYSTEM VOLTAGES (FOR PASSIVE DESIGN)	References C.4 and C.5 on Page BTP 8.6-2 of mPower DSRS BTP 8-6 cite IEEE Std. 279-1971 and IEEE Std. 603-1991 as references for this guidance. However, IEEE Std. 279-1971 and IEEE Std. 603-1991 are not cited in the body of mPower DSRS BTP 8 6, and thus it is not clear the context in which these are appropriate references for BTP 8-6. Notwithstanding this observation, per 10 CFR 50.55a(h), the standards of IEEE Std. 603-1991 – rather than IEEE Std. 279 1971 – are the applicable criteria to be applied to the NuScale design of safety systems. Thus, NuScale recommends that IEEE Std. 279-1971 be eliminated as a reference in the NuScale DSRS BTP 8-6.	Revise this section to eliminate IEEE Std. 279-1971 in the NuScale DSRS BTP 8-6, as explained.