

August 22, 2017

MEMORANDUM TO: Joseph Colaccino, Chief
Licensing Branch 3
Division of New Reactor Licensing
Office of New Reactors

FROM: Mallecia Sutton, Project Manager **/RA/**
Licensing Branch 3
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: AUDIT PLAN FOR THE REGULATORY AUDIT OF ENVIRONMENTAL
REPORT FOR NUSCALE POWER, LLC REGARDING THE SEVERE
ACCIDENT MITIGATION DESIGN ALTERNATIVE ANALYSIS

By letter dated December 31, 2016, NuScale Power, LLC (NuScale) submitted a Design Control Document and Environmental Report (ER) for its Design Certification (DC) application of the NuScale design review (Agencywide Documents Access and Management System Accession No. ML17013A229). The NRC staff started its detailed technical review of NuScale's DC application on March 27, 2017.

The NRC staff has identified a need for an audit of NuScale's design and severe accident mitigation design alternatives. The NRC staff determined that efficiency gains would be realized by auditing the documents supporting the information presented in the ER and supporting documents. The NRC staff also determined an audit would be effective in identifying specific information needs to support the necessary regulatory findings required under Title 10 of the *Code of Federal Regulations* Part 51.

The audit will take place at NuScale's office in Rockville, Maryland, and/or online via NuScale's electronic reading room. The audit is currently scheduled to start on August 21, 2017 through November 30, 2017. The audit plan is provided as an enclosure.

Docket No. 52-048

Enclosure: As stated

cc w/encl.: DC NuScale Power, LLC Listserv

CONTACT: Mallecia Sutton, NRO/DNRL
301-415-0673

AUDIT PLAN FOR THE REGULATORY AUDIT OF THE ENVIRONMENTAL REPORT FOR
 NUSCALE POWER, LLC REGARDING THE SEVERE ACCIDENT MITIGATION DESIGN
 ALTERNATIVE ANALYSIS AUGUST 22, 2017

DISTRIBUTION:

PUBLIC

Reading File

RidsOgcMailCenterResource

MSutton, NRO

RidsNroDnrl

RidsNroDsea

MSutton, NRO

DPalmrose, NRO

LBurkhart, NRO

MHayes, NRO

JColaccino, NRO

MCaruso, NRO

JSchaperow, NRO

TNakanishi, NRO

HEsmaili, NRO

SCampbell, NRO

ADAMS Accession No.: ML17179A287

***via email**

NRO-002

OFFICE	DNRL/LB3:PM*	DNRL/LB3:LA*	DSEA/RPAC:BC*	DNRL/LB3:BC
NAME	MSutton	SGreen	LBurkhart	JColaccino
DATE	08/07/2017	08/07/2017	08/08/2017	8/22/17

OFFICIAL RECORD COPY

AUDIT PLAN FOR THE REGULATORY AUDIT OF THE ENVIRONMENTAL REPORT FOR NUSCALE POWER, LLC REGARDING THE SEVERE ACCIDENT MITIGATION DESIGN ALTERNATIVE ANALYSIS

A. Background

By letter dated December 31, 2016, NuScale Power, LLC (Nuscale) submitted a Design Control Document (DCD) for its Design Certification Application (DCA) of the NuScale design to the U. S. Nuclear Regulatory Commission (NRC) for review (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17013A229). On March 15, 2017, the NRC staff accepted the DCA for docketing and initiated its technical review. The purpose of the audit is to facilitate the NRC staff's review of information related to the environmental analyses evaluating the severe accident mitigation design alternatives (SAMDA) of the DC application, to support the staff in performing confirmatory analysis, and to complete its environmental assessment of the application in accordance with NRC regulations and NRC staff guidance. The expected outcome of the audit is for the staff to obtain sufficient information with appropriate documentation from the applicant to support the staff in reaching a regulatory environmental finding. The NRC staff is planning an audit as follows:

- Documents will be reviewed via the NuScale Electronic Reading Room (eRR), in addition to direct discussion with subject matter experts that would be carried out at the NuScale office in Rockville, Maryland that will commence on August 21, 2017. During this audit, the NRC staff will examine the Environmental Report (ER), calculation packages, and supporting documents related to the areas described below, associated with the NuScale environmental review.
- Should the NRC staff need to re-examine documents after the audit to determine if a request for additional information (RAI) is needed, arrangements will be coordinated with NuScale, as needed, to make the documents available. The NRC staff does not anticipate the need to augment the audit report under these circumstances.

The staff expects the applicant may choose to revise the ER to incorporate the information, references, and additional analyses which will be identified from the audit as necessary to aid the staff in complying with Section 102(2) of the National Environmental Policy Act (NEPA) Title 10 of the *Code of Federal Regulations* (10 CFR) 51.41.

The environmental audit is being coordinated with the DCD Chapter 19, "Probabilistic Risk Assessment," safety review. As such, some of the documents that will be reviewed as part of this audit have been reviewed as part of the safety audit and review. Reviewing the same documents as part of two different reviews is necessary because these shared documents contain information from the Level 1 and Level 2 PRA being applied as part of the environmental analysis used to support the SAMDA determination.

B. Regulatory Audit Bases

The NRC staff's acceptance criteria are based on meeting the relevant requirements of the following NRC regulations:

- 10 CFR 52.47(b)(2), "Contents of applications: technical information"

- 10 CFR Part 51, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions”
 - 10 CFR 51.30, “Environmental assessment”
 - 10 CFR 51.41, “Requirement to submit environmental information”
 - 10 CFR 51.45, “Environmental report”
 - 10 CFR 51.55, “Environmental report—standard design certification”
- NUREG-1555, “Environmental Standard Review Plan—Standard Review Plans for Environmental Reviews for Nuclear Power Plants”, Sections 7.2 and 7.3, Main Report and 2007 Revisions

C. Regulatory Audit Scope or Methodology

- The area of focus for the audit is NuScale’s ER (Part 3 of the DCA) along with NuScale-provided supporting calculations and documentation.

D. Information and Other Background Material for the Regulatory Audit

Documents available on the docket:

- NuScale Power, LLC, Standard Design Certification Application, Part 3, Revision 0, December 2016, ADAMS Accession No. ML17013A296.
- NuScale Power, LLC, “A Risk Significance Determination,” TR-0515-13952-NP, Revision 0, ADAMS Accession No. ML16284A016.

Documents subject or topics to be made available to the NRC staff for review and discussion during the audit:

- SAMDA risk calculations
- SAMDA identification and screening process
- MACCS base case model along with the input and output decks
- Offsite consequences calculation files including sensitivity study cases
- System hazards analysis
- Multi-module risks assessments
- Dropped module analyses
- Seismic event analyses
- Reactor building crane analyses
- Unisolated accident analyses
- Other PRA documents which support the analysis in the ER

Other documents:

- Information Needs (see Attachment 1)

E. Audit Team

The following are the NRC audit team members:

Mallecia Sutton, NRC Project Manager, Lead
Michelle Hart, NRC Technical Reviewer
Donald Palmrose, NRC Technical Reviewer, Severe Accident/SAMDA
Jason Schaperow, NRC Technical Reviewer, Level 2 PRA Support
Tony Nakanishi, NRC Technical Reviewer, Level 1 PRA Support
Hossein Esmaili, NRC Technical Reviewer, Level 2 PRA Support
Shawn Campbell, NRC Technical Reviewer, Level 2 PRA Support
Marie Pohida, NRC Technical Reviewer, Level 2 PRA Support

F. Logistics

The audit will consist of two parts: 1) a review of NuScale documents that support the ER via an eRR available to the NRC staff from August 14, 2017 to September 22, 2017, and 2) an audit meeting with the appropriate NuScale staff responsible for the SAMDA analysis at the NuScale office in Rockville, Maryland, on August 28, 2017 through August 29, 2017. The audit would remain open until November 30, 2017.

The proposed audit meeting schedule is as follows:

Location: NuScale Power, LLC
Rockville Office
11333 Woodglen Ave., Suite 205
Rockville, Maryland 20852

Date: Monday, August 28, 2017

8:30 a.m.	Audit Meeting Opens
8:45 a.m.	Introductions and Safety Briefing
9:00 a.m.	Audit Meeting Begins
12:00 p.m.	Lunch
1:00 p.m.	Team Continues Audit
4:30 p.m.	Team Debrief
5:00 p.m.	Audit Meeting Adjourns for the Day

Date: Tuesday, August 29, 2017

8:30 a.m.	Audit Meeting Resumes
12:00 p.m.	Lunch
1:00 p.m.	Team Continues Audit
4:30 p.m.	Team Debrief
5:00 p.m.	Audit Meeting Adjourns for the Day

Date: September, 2017

TBD	Status Meeting
-----	----------------

Date: October, 2017

TBD Status Meeting

Date: Thursday, November 30, 2017

TBD Audit Exit

G. Deliverables

The audit team plans to issue an audit report within 90 days after completing the audit that will address the technical areas identified in the information needs table along with presenting the audit outcomes.

The NRC staff acknowledges the proprietary nature of portions of the information requested. This material, when identified by NuScale, will be handled appropriately throughout the audit. While the NRC staff will take notes, the NRC staff will not remove hard copies or electronic files from the audit.

At the completion of the audit, the NRC staff will prepare an audit report that will be declared and entered as an official agency record in ADAMS. The audit outcome may be used to identify any additional information to be submitted for making environmental findings, and will assist the NRC staff in the issuance of RAIs (if necessary) in completing its review of Part 3 of the NuScale DCA.

H. References

U.S. Nuclear Regulatory Commission. 2000. *Environmental Standard Review Plan—Standard Review Plans for Environmental Reviews for Nuclear Power Plants*. NUREG-1555, Main Report and 2007 Revisions, Washington, D.C. Available at <http://www.nrc.gov/readingrm/doc-collections/nuregs/staff/sr1555/toc/>.

ATTACHMENT 1
NuScale Environmental Report Informational Needs

Serial No.	Environmental Report Section	Page Number	Information Need
ER-01	---	---	<p>Provide access to NRC staff on the NuScale electronic reading room (eRR) for the NuScale documents as they relate to off-site consequence and risk including the following topic areas:</p> <ul style="list-style-type: none"> • Low power shutdown analyses • Dropped module consequence analyses • All transients resulting in offsite consequences • SAMDA maximum risk • SAMDA identification and screening process • Base case and sensitivity calculations using WinMACCS • The seismic evaluations for the Surry and Peach Bottom sites • PRA and analysis documentation for Reactor Building Crane failures • Unisolated accident analyses • Other PRA documents which support the analysis in the ER. <p>This information is needed since there is no specific listing or referencing in the ER of technical reports or other documents developed by NuScale regarding the technical information applied in support of the ER.</p>
ER-02	---	---	<p>Provide a Digital Versatile Disc (DVD) which contains WinMACCS input and output files in native format which were applied for the base case at the Surry site and the sensitivity case at the Peach Bottom site.</p> <p>This proprietary DVD will be used by the staff during the on-site portions of the audit.</p> <p>This information is needed per 10 CFR 51.41 and 10 CFR 51.45(c).</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-03	---	---	<p>Provide knowledgeable experts to discuss the systems, structures, and components of the NuScale design to discuss the potential applications of SSCs classified non-safety systems for possible consideration as severe accident mitigation design alternatives. For example:</p> <ul style="list-style-type: none"> • Non-safety systems which can inject additional water into the containment or reactor vessel module • Non-safety monitoring systems which could assist in assessing accident progression • Non-safety systems which could assist the mitigation of a release <p>This information was not provided in the ER and is needed to support the staff's regulatory environmental finding per 10 CFR 51.55(a) with respect to the bases for not incorporating severe accident mitigation design alternatives in the design to be certified.</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-04	---	---	<p>Provide knowledgeable experts to discuss the technical information from the NuScale Level 1 and Level 2 PRA applied in the analysis of off-site consequences, including:</p> <ul style="list-style-type: none"> • Development of hazard groups • Determination of PRA scenarios leading to a radiological offsite release (i.e., release categories) • Determination of release source terms and plume-related information for each release category (e.g., release fractions for each chemical group, number of plume segments, durations) • Determination of event timing, for example: the declaration of a general emergency and the start of the initial release <p>Specific information in regards to the above was not provided in the ER. Environmental Standard Review Plan, NUREG-1555, Section 7.2 under "Review Interfaces" states the reviewer of severe accidents should coordinate with the DCD Tier 2, Chapter 19 reviewer to ensure consistency with the severe-accident analyses given by the applicant in the ER. See NUREG-1555, Section 7.2, Subsection III, "Review Procedures," under item (2) for additional guidance if the application references a design undergoing certification.</p>
ER-05	---	---	<p>Provide knowledge experts to discuss the updated Table B-18 submitted to the NRC in NuScale transmittal dated July 7, 2017 (ADAMS Accession No. ML17188A452). Specifically, to discuss with the staff the effect on the analysis and on other tables in the ER whose the values were derived from the information presented in Table B-18.</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-06	---	---	<p>Provide knowledgeable experts to discuss results from the DCD Chapter 19 PRA safety audit which carry over into the analysis that supports the ER.</p> <p>Environmental Standard Review Plan, NUREG-1555, Section 7.2 under "Review Interfaces" states the reviewer of severe accidents should coordinate with the safety reviewer for DCD Tier 2, Chapter 19 to ensure consistency with the severe-accident analyses given by the applicant in the ER. Also see NUREG-1555, Section 7.2, Subsection III, "Review Procedures," under item (2) for additional guidance if the application references a design undergoing certification.</p>
ER-07	---	---	<p>Provide knowledgeable experts to discuss the use of references throughout the ER and in particularly for:</p> <ul style="list-style-type: none"> • Tables in the ER, in particular for tables presenting information from other parts of the application (e.g., from Chapter 19 of Part 2 of the DCA) • PRA-related information, for example the low power and shutdown PRA analysis • MACCS calculations and results including cases applied in the sensitivity study • The seismic CDFs for the Surry and Peach Bottom sites • Appendix B <p>The degree of detail provided by the applicant in their Environmental Report should satisfy Regulatory Guide 4.2, Revision 2, "Preparation of Environmental Reports for Nuclear Power Stations," Section A.7.c, "Presentation of Information," (see Regulatory Guide 4.2, Revision 2, page x under ADAMS Accession No. ML003739519).</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-08	4.0	4-13	<p>Provide knowledgeable experts to discuss the relationships the SAMDA analysis and DCD Chapter 19 may have with respect to DCD Chapter 20, Mitigation of Beyond-Design-Basis Events and in particular as related to the screening of potential SAMDA candidates.</p> <p>Environmental Standard Review Plan, NUREG-1555, Section 7.3 under “Data and Information Needs,” presents the type of data and information needed from the applicant will be affected by various factors including a description and list of any alternatives that have been or will be implemented to prevent or mitigate severe accidents or reduce the risk of a severe accident. DCD Chapter 20 discusses mitigating strategies that address an extended loss of alternating current power and loss of normal access to the ultimate heat sink resulting from severe accidents (i.e., beyond design basis external events). Therefore, efforts by NuScale to mitigate severe accidents as discussed in DCD Chapter 20 could have an impact as to the SAMDAs considered in the ER.</p>
ER-09	4.0	14-23	<p>Provide knowledgeable experts to discuss the process for creating NuScale specific SAMDAs as described in Section 4.1.1 through Section 4.1.13. One specific item for discussion is the reactor building crane failure being the significant risk scenario and the consideration of SAMDAs to address this risk.</p> <p>Environmental Standard Review Plan, NUREG-1555, Section 7.3 under Subsection II, “Acceptance Criteria,” presents the following acceptance criteria is used: Completeness and reasonableness, also with respect to the following: (1) the identification of SAMAs applicable to the plant or design under consideration. Therefore the staff must understand the process NuScale followed in identifying specific SAMDAs for consideration.</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-10	4.0	4-13	<p>Provide knowledgeable experts to discuss the PRA insights from DCD Chapter 19 (see the text on pages 4 and 5 of the ER) that were applied in Section 4.</p> <p>Specific PRA insight information from DCD Chapter 19 was not provided in the ER. Environmental Standard Review Plan, NUREG-1555, Section 7.2 under “Review Interfaces” states the reviewer of severe accidents should coordinate with the safety reviewer of DCD Tier 2, Chapter 19 to ensure consistency with the severe-accident analyses given by the applicant in the ER. This is also stated in the corresponding Section 7.3 under “Review Interfaces.”</p>
ER-11	4.1	14-23	<p>Provide knowledgeable experts to discuss the source of information from Part 2 DCA sections for the various NuScale SSCs that are described in Section 4.1 of the ER.</p> <p>This information was not provided in the ER. Environmental Standard Review Plan, NUREG-1555, Section 7.3 under “Data and Information Needs” states the following information should be obtained from the ER: The methodology, process, and rationale used by the applicant to identify, screen, and select design alternatives and procedural modifications.</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-12	4.0, 6.1.5, A	6-13; 38-39; A-21 - A-27	<p>Provide knowledgeable experts to discuss in detail the development and screening of NuScale design-specific SAMDAs from the discussion provided in Section 4 and Table 4-2, to the discussion in Section 6.1.5 and Tables 6-1 and 6-2 and to the final disposition of each NuScale design-specific SAMDA (Table A-1).</p> <p>Environmental Standard Review Plan, NUREG-1555, Section 7.3 under Subsection III, "Review Procedures," item (2) states for the staff to evaluate the applicant's methods for identifying the potential mitigation alternatives such that:</p> <ul style="list-style-type: none"> (a) Determine if this set of potential design alternatives and procedural modifications represents a reasonable range of preventive and mitigative alternatives. (b) Verify that the applicant's list of potential SAMAs includes a reasonable range of applicable SAMAs derived from consideration of previous analyses and based on insights from the Level 1 and Level 2 portions of the applicant's PRA or IPE/IPEEE.

Serial No.	Environmental Report Section	Page Number	Information Need
ER-13	5.2, 5.3	25-27	<p>Provide knowledgeable experts to discuss the MACCS calculations supporting the offsite consequences for population dose and economic costs.</p> <p>The information provided on these pages of the ER does not provide a source for the development of the offsite impacts (e.g., Appendix B). Environmental Standard Review Plan, NUREG-1555, Section 7.2 under Subsection III, "Review Procedures," states "[t]he environmental consequences of severe accidents are estimated using acceptable methodology (such as the MACCS2 code package..." and the staff should "...determine if the method (computer code) used to evaluate the environmental consequences is appropriate and that it evaluates the consequences to a distance of 80 km (50 mi)." Therefore, the staff needs to understand whether the application of the MACCS code package with related inputs, outputs, and results for the various analyses conducted under Part 3 of the DCA are appropriate and reasonable.</p>
ER-14	5.2, 5.3, B	24-27, B-34 and B-35	<p>Provide knowledgeable experts to discuss the absolute results for the offsite risks with the WinMACC code package. Make available to the NRC staff the internal calculation files and technical support documentation for these results and the conversion to risk values presented in ER Tables 5-1, 5-2, and B-19.</p> <p>Specific information was not provided in the ER. Environmental Standard Review Plan, NUREG-1555, Section 7.2 under Subsection III, "Review Procedures," states in item (3) "...determine if the method (computer code) used to evaluate the environmental consequences is appropriate and that it evaluates consequences to a distance of 80 km (50 mi)." Therefore, the staff needs to understand if results for the various analyses conducted under Part 3 of the DCA are appropriate and reasonable.</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-15	5.2, 5.8, B.1.6	25, 35-37, B-5	<p>Provide knowledgeable experts to discuss in detail the SOARCA site data for Surry and Peach Bottom applied for the analysis presented in the ER. This would include discussing sources of the information with subsequent use as a reference in the ER, the rationale for selecting the respective SOARCA site data given that the SOARCA study was not intended to evaluate economic impacts (see page C-14 of NUREG-1935, Volume 2, ADAMS Accession No. ML12332A058), specific changes or modifications made to this site data for factors such as current year or other adjustments (see page 63 of NUREG-1935, Volume 1, ADAMS Accession No. ML12332A057).</p> <p>This information was not provided in the ER. Environmental Standard Review Plan, NUREG-1555, Section 7.2 under Subsection III, "Review Procedures," in items (4) through (10) provides staff guidance for determining if the various data inputs to the consequence assessment methodology used to support the ER severe accident analysis is appropriate. Therefore, the staff needs to understand in detail the SOARCA site data for Surry and Peach Bottom being applied for the analysis</p>
ER-16	5.4, 5.5, 5.6	27-33	<p>Provide knowledgeable experts to discuss the analytical process for determining the various averted cost components.</p> <p>Environmental Standard Review Plan, NUREG-1555, Section 7.3 under Subsection III, "Review Procedures," in items (4) and (5) has the staff assessing whether the applicant's cost estimates for the SAMDAs and the benefit-cost comparison are reasonable.</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-17	5.7, 5.8	33-37	<p>Provide knowledgeable experts to discuss the maximum benefit and the maximum benefit sensitivity results.</p> <p>Environmental Standard Review Plan, NUREG-1555, Section 7.3 under Subsection III, "Review Procedures," in items (4) and (5) has the staff assessing whether the applicant's cost estimates for the SAMDAs and the benefit-cost comparison are reasonable. Additional guidance is provided in NEI 05-01A Section 8 for sensitivity analysis (see NuScale reference 8.1-1).</p>
ER-18	5.8	35-37	<p>Provide knowledgeable experts to discuss the WinMACCS calculations for the sensitivity cases discussed in ER Section 5.8, Maximum Benefit Sensitivity Study. Provide for NRC staff review the internal calculation files and technical support documentation for the cases applied in the sensitivity study.</p> <p>Environmental Standard Review Plan, NUREG-1555, Section 7.3 under Subsection III, "Review Procedures," in items (4) and (5) has the staff assessing whether the applicant's cost estimates for the SAMDAs and the benefit-cost comparison are reasonable. Additional guidance is provided in NEI 05-01A Section 8 for sensitivity analysis (see NuScale reference 8.1-1).</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-19	5.8, 6.3, Table A-1	35-37, 40, A-1 - A-27	<p>Provide knowledgeable experts to discuss the assessment of potentially cost beneficial SAMDAs as presented in ER Section 6.3 based on the maximum benefit sensitivity cases for the Peach Bottom site (Case 6) and the real discount rate of three percent (Case 9) versus the SAMDAs in Table A-1 with cost of implementation less than the maximum benefit of Cases 6 and 9.</p> <p>Severe Accident Mitigation Alternatives (SAMA) Analysis, NEI 05-01A, which is based on Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission, NUREG/BR-0058, and Regulatory Analysis Technical Evaluation Handbook, NUREG/BR-0184, and is applied in the ER by NuScale, states in several parts of Section 8, Sensitivity Analysis, to “[p]rovide pertinent results and discuss how they affect the conclusions of the SAMA analysis. If SAMAs appear cost-beneficial in the sensitivity results, discussion of conservatisms in the analysis, (e.g., conservatisms in cost estimates discussed in Section 7.2), and their impact on the results may be appropriate.”</p>
ER-20	6.2 and 6.3	53-54	<p>Provide knowledgeable experts to discuss the evaluation of potentially cost-beneficial SAMDAs based on a comparison to the Maximum Benefit sensitivity calculations.</p> <p>Several of the SAMDAs screened out by NuScale are potentially cost-beneficial based on several of the sensitivity calculations but further analysis as to why these could be screened out is not discussed. As noted in ER-19, NEI 05-01A states that “[i]f SAMAs appear cost-beneficial in the sensitivity results, discussion of conservatisms in the analysis, (e.g., conservatisms in cost estimates discussed in Section 7.2), and their impact on the results may be appropriate.”</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-21	Table A-1	A-1 - A-27	<p>Provide knowledgeable experts to discuss the assessment of the SAMDAs in Table A-1 for each of the Phase I screening categories with specific emphasis for “excessive implementation cost” and “very low benefit” screening categories.</p> <p>Per 10 CFR 51.41, the staff must be responsible for the reliability of any information which it uses. Therefore, the staff needs to understand how NuScale determined it was appropriate to bin individual SAMDAs into these categories.</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-22	B	---	<p>Provide knowledgeable experts to discuss the assumptions and sources of information for the setting of WinMACCS input parameter values including the relevant technical documents where the values were ascertained for the Surry and Peach Bottom sites. Provide to the NRC staff at the start of the audit a list of the associated publicly available and non-publicly available documents.</p> <p>This information was not provided in the ER. Per 10 CFR 51.41, the staff must be responsible for the reliability of any information which it uses. Therefore, the staff needs to understand how NuScale determined it was appropriate to apply the selected WinMACCS input parameter values for the analyses presented in the ER. For example, NUREG/BR-0184 in Section B.4.2, "MACCS Input Parameter Assumptions," cites to NUREG/CR-4551, Volume 2, Revision 1, Part 7 (Sprung et al., 1990) as a source for MACCS input parameter values. While the Peach Bottom and Surry SOARCA integrated analysis documents (NUREG/CR-7110, Vol. 1 and 2, respectively) in Appendix C provide the input parameters applied in SOARCA, the ER does not provide an explanation as to the basis for these values as well as the input parameters being appropriate for NuScale's analyses. Please review the Commission's order CLI-16-07 (ADAMS Accession No. ML16125A150) and the note on page 47 the Commission's statement regarding "...being able to explain and make available underlying assumptions in our environmental analyses."</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-23	B	B-34	<p>Provide knowledgeable experts to discuss the rationale and methodology for establishing the arrangement of the various hazard groups (i.e., internal events, internal fires, internal flooding, low power and shutdown, external flooding, high winds, crane failure) to release categories 1 through 8 as shown in Table B-17 of the ER.</p> <p>This information was not provided in the ER. Environmental Standard Review Plan, NUREG-1555, Section 7.3 under “Data and Information Needs,” states the following data or information should be obtained:</p> <ul style="list-style-type: none"> • a list of release sequences (accident classes) for severe accidents with their associated core damage frequencies and source terms (from the ER and the design certification probable risk assessment submittal). <p>Additionally, under Subsection III, “Review Procedures,” item (2)(a)) states for the staff to “...determine if the information given in the ER on which the applicant’s analysis is based is appropriate (release sequences, core damage frequencies, and source terms).”</p>
ER-24	B	B-11 - B-34	<p>Provide knowledgeable experts to discuss the rationale and/or calculations that justify no plume heat content (i.e., 0.0 watts) for 6 out of 8 release categories. See ER Tables B-6, B-7, B-9, B-10, B-12, B-13, B-14, and B-16.</p> <p>This information was not provided in the ER. Per 10 CFR 51.41, the staff must be responsible for the reliability of any information which it uses. From the review of the ER, NuScale does not provide a discussion for the how and why the plume heat content was set to the values provided in the cited Appendix B tables. Therefore, the staff needs to understand how NuScale determined it was appropriate to apply the selected values.</p>

Serial No.	Environmental Report Section	Page Number	Information Need
ER-25	B	B-18, B-19, B-23 - B-25	<p>Provide knowledgeable experts to discuss for Release Categories 3 and 5 concerning the release mechanisms and the lack of plume heat content in regards to information in ER Tables B-9 and B-12 (e.g. flow rate and gas density).</p> <p>This information was not provided in the ER. Environmental Standard Review Plan, NUREG-1555, Section 7.3 under Subsection III, "Review Procedures," item (2)(a) states "...determine if the information given in the ER on which the applicant's analysis is based is appropriate (release sequences, core damage frequencies, and source terms)."</p>
ER-26	B.2.9	B-34	<p>Provide knowledgeable experts to discuss the rationale for the two release categories identified in the Level 2 PRA that were further refined into eight release categories to more realistically estimate the offsite risks of severe accidents (See pages 25 of the ER and Table B-17).</p> <p>This information was not provided in the ER. Environmental Standard Review Plan, NUREG-1555, Section 7.2 under Subsection I in "Review Interfaces," states the reviewer of severe accidents should coordinate with the safety reviewer of DCD Tier 2, Chapter 19 to ensure consistency with the severe-accident analyses given by the applicant in the ER.</p>