UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 7, 2018

MEMORANDUM TO: Samuel S. Lee, Chief
Licensing Branch 1
Division of Licensing, Siting,
and Environmental Analysis
Office of New Reactors

FROM: Getachew Tesfaye, Senior Project Manager ***/RA/***
Licensing Branch 1
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Office of New Reactors

SUBJECT: AUDIT SUMMARY FOR THE PHASE II REGULATORY AUDIT OF THE POOL LEAKAGE DETECTION SYSTEM FOR THE ULTIMATE HEAT SINK FOR NUSCALE POWER, LLC

NuScale Power, LLC (NuScale), submitted by letter dated December 31, 2016, to the U.S. Nuclear Regulatory Commission (NRC), a Design Control Document for its Design Certification Application (DCA) of the NuScale small modular reactor (SMR) design (Agencywide Documents Access and Management System Accession (ADAMS) No. ML17013A229). The NRC staff started its detailed technical review of NuScale's DCA on March 27, 2017.

The purpose of this focused NRC Phase II Regulatory Audit was for the NRC staff to obtain additional information for the responses provided for Request for Additional Information (RAI) Nos. 9292, Questions 12.03-43, 12.03-44, 12.03-45, 12.03-46, and 12.03-47, as they relate to the pool leakage detection system (PLDS) for the ultimate heat sink (UHS) described by NuScale. In addition the NRC staff obtained additional information for RAI Nos. 8963, Question 03.08.05-23; and RAI 9328, Question 09.01.02-36, since these RAIs relate to concerns being addressed by RAI 9292. The NRC staff's review scope was communicated in the audit plan (ADAMS Accession No. ML18158A164). The audit process allowed the NRC staff to access support documentation that was identified as potentially significant to the review, such as figures, system diagrams, and non-docketed information in NuScale's Electronic Reading Room (eRR). Where clarification of RAI responses was needed, the NRC staff used information available through the audit to examine the design drawings and held discussions with the applicant.

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This audit took place at NuScale's offices, in Rockville, Maryland, and/or via the NRC staff's review of electronic information to which NuScale granted electronic access to via the eRR. The audit was conducted in accordance with the NRC, Office of New Reactors (NRO) Office Instruction, NRO-REG-108, "Regulatory Audits" (ADAMS Accession No. ML081910260). The audit was conducted from June 14, 2018, and ended on July 12, 2018.

Enclosed with this memorandum are materials relevant to the closure of this audit. The enclosures are as follows: (1) NuScale Power, LLC, DCA PLDS for the UHS Audit Report, (2) Summary of the NRC Staff's Audit Review, and (3) Requests for Supplemental Information.

Docket No. 52-048

Enclosures:
1. Audit Report
2. Audit Summary
3. Requests for Supplemental Information

SUBJECT: AUDIT SUMMARY FOR THE REGULATORY AUDIT OF THE RADIOACTIVE WASTE MANAGEMENT SYSTEM FOR NUSCALE POWER, LLC
DATED: September 7, 2018

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OFFICE	DLSE/RPAC	DLSE/LB1: LA	DLSE/RPAC: BC	DLSE: DD	DLSE/LB1: PM
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DATE	08/28/2018	09/06/2018	08/28/2018	08/28/2018	9/7/2018

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U.S. NUCLEAR REGULATORY COMMISSION

NUSCALE POWER, LLC DESIGN CONTROL APPLICATION

THE POOL LEAKAGE DETECTION SYSTEM FOR THE ULTIMATE HEAT SINK

AUDIT REPORT

JUNE 14, 2018 - JULY 12, 2018

1. BACKGROUND

The purpose of this U.S. Nuclear Regulatory Commission's (NRC) regulatory audit was to facilitate the NRC staff's evaluation of information related to safety for the design of the Pool Leakage Detection System (PLDS) for the Ultimate Heat Sink (UHS). The NRC staff also:

- Gained a better understanding of the NuScale design;
- Assessed information submitted on the Electronic Reading Room (ERR);
- Identified information that will require docketing to support the licensing basis and/or regulatory decisions;
- Reviewed related non-docketed information to allow the NRC staff to better inform their regulatory decision making; and
- Developed follow-up requests for additional information.

The NRC staff focused its review on information related to the unique and novel features of the PLDS. In particular the NRC staff reviewed information on the PLDS to understand the information as described in DCD Tier 2, Revision 1, and to understand the responses to Request for Additional Information (RAI) No. 8963, Question 03.08.05-23, dated October 17 2017; and NRO/DLSE/RPAC staff issued RAI 9292, Questions 12.03-43, 12.03-44, 12.03-45, 12.03-46, and 12.03-47. In addition, RAI 9328, Question 9.01.02-36, was issued prior to the audit, to understand how the current design of the PLDS is capable of preventing degradation of the safety related reinforced concrete structures of the UHS. The NRC staff's review scope was communicated in the audit plan (Agencywide Documents Access and Management System Accession (ADAMS) No. ML18158A164).

2. Regulatory Basis

The NRC staff's acceptance criteria described in the Design Specific Review Standard (DSRS) and the Standard Review Plan (SRP) are based on meeting the relevant requirements of the following NRC regulations:

- 10 CFR Part 50, Appendix A GDC 2
- 10 CFR Part 50, Appendix A GDC 4
- 10 CFR 52.47(a)(6) in requiring compliance with 10 CFR 20.1406
- 10 CFR 52.47(a)(22)

- 10 CFR Part 20, Subpart F—Surveys and Monitoring
- 10 CFR 20.1003
- 10 CFR 20.1101(b)

3. Audit Agenda

The NRC staff held four meetings with the applicant throughout the audit at the NuScale office in Rockville, Maryland, at the NRC Headquarters, or by telephone with NuScale. The NRC staff used these meetings to facilitate an understanding of the NuScale DCA, and the information the applicant had made available for review by the NRC staff.

June 14, 2018	Entrance Meeting
June 26, 2018	Audit Meeting
July 10, 2018	Audit Meeting
July 12, 2018	Exit Meeting

4. Audit Participants

NRC Staff Participants:

- Zachary Gran (NRO, Technical Reviewer, Audit Lead)
- Ronald LaVera (NRO, Technical Reviewer)
- Edward Stutzcage (NRO, Technical Reviewer)
- Sean Meighan (NRO, Technical Reviewer)
- Raul Hernandez (NRO, Technical Reviewer)
- Ata Istar (NRO, Technical Reviewer)
- Robert Roche-Rivera (NRO, Technical Reviewer)
- Andrew Yeshnik (NRO, Technical Reviewer)
- Michael Dudek (NRO/RPAC Branch Chief)
- Getachew Tesfaye (NRO, Senior Project Manager)

NuScale (and Other Support Organization) Participants:

- Richard Biasca
- Lee Dougherty
- Carrie Fosaaen
- Andre L'Eplattenier
- Scott Harris
- Wayne Massie
- Steve Mirsky
- Jim Osborne

5. Information Made Available by NuScale for Review by the NRC Staff

During the course of the audit, NuScale provided the NRC staff with electronic access to information used in the review of the PLDS design for the UHS. The types of information included: P&IDs for the PLDS, P&IDs for the liquid radioactive drain system, Structural drawings of the UHS pool liner, Structural drawings of the Reactor Building Pool, Structural Drawing of the Reactor Building sumps, Related Construction Drawings for the UHS, and Design Drawings related to the PLDS.

In addition, the applicant communicated that the related fabrication drawings and procurement or product specifications containing welding process controls or relating to the quality of weldments were not available at the time the audit was conducted.

6. Deviations from the Audit Plan

There were no identified deviations from the audit plan.

7. Audit Activities

The NRC staff focused its review according to the information relayed in the audit plan (ADAMS Accession No. ML18158A164). The NRC staff used the supporting information contained in the DCA and the information supplemented by the ERR. Where clarification of the information on the ERR was needed, the NRC staff scheduled discussions with the applicant to communicate the NRC staff's review of the information provided on the ERR.

The DSRS and SRP are not a substitute for NRC regulations and compliance with them is not required. As an alternative, an applicant may identify any differences between a DSRS section and the design features, analytical techniques, and procedural measures proposed in an application and discuss how the proposed alternative provides an acceptable method of complying with NRC regulations that underlie the DSRS acceptance criteria. Where the DCA contents differed from the guidance contained in the DSRS, the NRC staff reviewed the associated analytical techniques, data and conclusions, associated with the proposed alternative.

Through interactions with the applicant during the NRC staff's review of the information described above, the NRC staff requested supplemental information be provided to the existing responses found in RAI No. 9292, Questions 12.03-43, 12.03-44, 12.03-45, 12.03-46, and 12.03-47. A summary of the NRC staff's review is found in Enclosure 2. Enclosure 3 contains a listing of the specific supplemental requests that were agreed upon with NuScale during the audit exit meeting.

8. Audit Exit Summary

The audit exit was held on July 12, 2018, at the NuScale offices in Rockville, MD. During the exit, the NRC staff described the specific areas reviewed during the course of the audit (also found in Enclosure 2). The NRC staff identified 6 items for which the staff is seeking supplemental responses. The 6 items that the staff requested supplemental responses to are described in Enclosure 3.

9. List of acronyms and abbreviations

ADAMS – Agencywide Documents Access and Management System
COL – Combined Operating License

DCA – Design Certification Application
DSRS – NuScale Design Specific Review Standard
ERR – Electronic Reading Room
FSAR – Final Safety Analysis Report
GDC – General Design Criterion
ITAAC – Inspections, Tests, Analyses, and Acceptance Criteria
LRWS – Liquid Radioactive Waste System
LWR – Light Water Reactor
NDE – Non-Destructive Examination
NEI – Nuclear Energy Institute
NPM – Nuclear Power Module
NPP – Nuclear Power Plant
NRC – U.S. Nuclear Regulatory Commission
NRO – Office of New Reactors
PLDS – Pool Leakage Detection System
PWR – Pressurized Water Reactor
P&ID – Piping and instrumentation diagrams
RAI – Request for Additional Information
RCS – Reactor Coolant System
RG – Regulatory Guide
RPAC – Radiation Protection and Accident Consequences Branch
RWB – Radioactive Waste Building
RXB – Reactor Building
SMR – Small Modular Reactor
SSC – Structures, Systems, and Components
SRP – Standard Review Plan (NUREG-0800)
TS – Technical Specifications
UHS – Ultimate Heat Sink
U.S. – United States
10 CFR – Title 10 of the *Code of Federal Regulations*

U.S. NUCLEAR REGULATORY COMMISSION

NUSCALE POWER, LLC DESIGN CONTROL APPLICATION

THE POOL LEAKAGE DETECTION SYSTEM FOR THE ULTIMATE HEAT SINK

SUMMARY OF THE NRC STAFF'S AUDIT REVIEW

The discussions provided below are a summary of the U.S. Nuclear Regulatory Commission (NRC) staff's findings made and communicated during the audit exit meeting.

1. **Feedback for Request or Additional Information (RAI) No. 9292, Question 12.03-43 (includes concerns related to RAIs 8963 and 9328)**

    a. **Feedback on item 1.a of scope.**

        i. In review of the design drawings the staff found that there are no leak chase channels for the ultimate heat sink (UHS) pool walls. Based on the lack of a leak chase channel system for the pool walls or an alternative means for identifying and minimizing the leakage of pool water in the wall, the staff cannot confirm that the wall leakage will not follow any potential cracks or gaps before it reaches the floor/wall joint area channels.

        ii. The review of the design drawings provided clarity with respect to how the floor/wall joint channel system is set up to collect floor leakage. However, consistent with the NRC staff feedback for item 1.a.i. above, the staff could not confirm the effectiveness of the floor/wall joint channel system for collecting the wall leakage given the lack of an effective configuration to direct the wall leakage into the floor/wall joint channel system.

        iii. As agreed during the audit exit meeting, NuScale will submit a supplemental response to either RAI 9328, Question 09.01.02-36 or RAI 9292, Question 12.03-43, to provide a comprehensive documentation/approach of their strategy to identify and minimize the flow of borated water into the UHS reinforced concrete to ensure that the structural integrity of the UHS walls will be maintained throughout of the life of the license. If different than the strategies implemented in the operating fleet, the documentation/approach to be provided should clearly describe and justify how such approach will ensure equivalent or better performance than the operating fleet. The response should also provide final safety analysis report (FSAR) markups with a summary of the aforementioned documentation/approach. Additionally, the proposed FSAR markups should address, applicable liner plate design codes and standards, quality assurance requirements, a description of the liner plate design analysis and results including design loads (e.g. demands due to elevated temperature, construction activities, etc.) and allowable limits in accordance with Title 10 of the *Code of Federal Regulations* (CFR), Part 50, Appendix A, General Design Criteria (GDC) 1, 2, and 4, and the described guidance in DSRS Section 3.8.4 (Appendix D, Subsection I.4 and I.6) and DSRS section 9.1.2 (Sub Section 9.1.2.III.4A). The applicant should provide docketed figures showing liner plate anchorage details and leak chase channel arrangements.

b. **Feedback on item 1.b of scope.**

i. In discussions during the audit the applicant discussed the ability of the floor leakage detection channels to isolate sections of the channel to identify the locations of the leak in the floor. In addition, clarification was received to state that in the event of ground water intrusion the level indication would still alarm and operators would be prompted for action. At that point visual verification and sampling and tests would be performed to verify leakage or ground water intrusion.

ii. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-46, to clarify the amount of leakage each sump of the Pool Leakage Detection System (PLDS) will be able to detect and alarm on.

c. **Feedback on item 1.c of scope.**

i. The review of documents provided on the reading room indicated that there are no procurement specifications and product specifications containing information related to welding processes controls or quality of weldments provided during the audit.

During the audit the applicant stated that the UHS will utilize a common industrial standard as the code of construction for the system. The NRC staff noted that the standard was created for nuclear piping systems. This standard has limited applicability to atmospheric pools and does not contain prescriptive requirements for this system (in contrast to a piping system). The NRC staff also noted that the use of “standard industry practices” supports the conclusion that leakage from the UHS liner should be comparable to the operating fleet rather than providing a basis for higher assurance of leak-tight integrity.

The Non-Destructive Examination (NDE) requirements specified in the FSAR and in the RAI responses apply to the fabrication of the UHS liner. The design drawings provided during the audit did not include NDE symbols. In addition, NuScale has not described any required in-service inspections for the weldments of the UHS liner as part of the licensing basis. Based upon these findings the staff could not verify how the applicant’s NDE inspections would verify (1) the initial quality of welds, (2) the metallurgical condition of the weldment, and (3) the condition of the weldment during operation.

Based upon the lack of a technical basis supporting the applicant’s assertions the staff concludes that the probability of leaks at or near the UHS liner weldments is comparable to the current operating fleet. This conclusion is based upon NuScale’s use of common materials and fabrication techniques compared to the currently operating fleet. The NRC staff does not find sufficient technical basis to support the applicant’s assertion that the liner weldments, “will only leak at damaged areas similar to unwelded plate areas.” The NRC staff concludes that degradation, and not necessarily damage, may cause the NuScale UHS liner to leak.

ii. As agreed during the audit exit meeting, NuScale will submit a supplemental response to either RAI 9328, Question 09.01.02-36, or RAI 9292, Question 12.03-43, to provide a comprehensive documentation/approach of their strategy to identify and minimize the flow of borated water into the UHS reinforced concrete to ensure that the structural integrity of the UHS walls will be maintained throughout of the life of the license. If different than the strategies implemented in the operating fleet, the documentation/approach to be provided should clearly describe and justify how such approach will ensure equivalent or better performance than the operating fleet. The response should also provide FSAR markups with a summary of the aforementioned documentation/approach. Additionally, the proposed FSAR markups should address, applicable liner plate design codes and standards, quality assurance requirements, a description of the liner plate design analysis and results including design loads (e.g. demands due to elevated temperature, construction activities, etc.) and allowable limits in accordance with 10 CFR Part 50, Appendix A, GDC 1, 2, and 4, and the described guidance in DSRS section 3.8.4 (Appendix D, Subsection I.4 and I.6) and DSRS Section 9.1.2 (Subsection 9.1.2.III.4A). The applicant should provide docketed figures showing liner plate anchorage details and leak chase channel arrangements.

d. **Feedback on item 1.d of scope.**

i. The review of the design drawings did not describe how the adverse effects from the borated water flowing into the wall will be mitigated or minimized. During the audit the NRC staff indicated that the operating fleet has implemented leak-chase channels in the walls to capture leakage at or near the weldments and direct it to the leakage collection areas. The applicant indicated that they had been considering establishing a quality assurance, inspection, and maintenance program to ensure that the performance of liner plate weldments with respect to leakage will be equivalent to the performance of away from weldments liner plate areas, thereby minimizing the potential for leakage into the wall. However, the details of such program are not currently available for the NRC staff review.

ii. As agreed during the audit exit meeting, NuScale will submit a supplemental response to either RAI 9328, Question 09.01.02-36 or RAI 9292, Question 12.03-43, to provide a comprehensive documentation/approach of their strategy to identify and minimize the flow of borated water into the UHS reinforced concrete to ensure that the structural integrity of the UHS walls will be maintained throughout of the life of the license. If different than the strategies implemented in the operating fleet, the documentation/approach to be provided should clearly describe and justify how such approach will ensure equivalent or better performance than the operating fleet. The response should also provide FSAR markups with a summary of the aforementioned documentation/approach. Additionally, the proposed FSAR markups should address, applicable liner plate design codes and standards, quality assurance requirements, a description of the liner plate design analysis and results including design loads (e.g. demands due to elevated temperature, construction activities, etc.) and allowable limits in

accordance with 10 CFR Part 50, Appendix A, GDC 1, 2, and 4, and the described guidance in DSRS Section 3.8.4 (Appendix D, Subsection I.4 and I.6) and DSRS Section 9.1.2 (Subsection 9.1.2.III.4A). The applicant should provide docketed figures showing liner plate anchorage details and leak chase channel arrangements.

e. **Feedback on item 1.e of scope.**

i. The review of the PLDS indicated a concern of how it will be ensured that the integrity of the welds will not be adversely affected due to construction activities (e.g. lifting of the liner plate assemblies, concrete pour, etc…). Documentation with respect to construction sequence was not available during the audit. The applicant briefly described aspects associated with the construction sequence for the pool liner plates.

ii. As agreed during the audit exit meeting, NuScale will submit a supplemental response to either RAI 9328, Question 09.01.02-36 or RAI 9292, Question 12.03-43, to provide a comprehensive documentation/approach to ensure that the integrity of the seam-welds between the pool liner plate segments is not adversely affected due to construction activities.

2. **Feedback for RAI 9292, Question 12.03-44**

a. In review of the documents, and through discussions with the applicant, the staff understands the methods that NuScale has for taking samples of the PLDS. Applicant discussed the ability to take direct samples of the Reactor Building Sumps, and also discussed taking samples directly at the PLDS channels, the NuScale design allows for the isolation of channels and direct sampling from the channels, but this information is not provided in the DCD. Figure NP12-00-B114-M—PD-1669-S03, “Piping & Instrumentation Diagram Radioactive Waste Drain System,” depicts the radioactive waste collection sumps. In their application and the responses to staff questions, the applicant has stated that the plant operator will have the ability to control all sources of water into the Radioactive Waste tanks. However, during the audit, the NRC staff noted that one of the PLDS drain lines goes to tank 00-RWD-TNK-0004. This tank has several apparently unisolatable inputs to the tank from which the PLDS sample is to be drawn.

b. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-44, to discuss the methods for taking a representative sample of the PLDS. In addition NuScale was requested to update DCD Table 9.3.2-4 to include the local sampling points for the PLDS.

3. **Feedback for RAI 9292, Question 12.03-45**

a. In review of the documents, and through discussions with the applicant, the NRC staff’s understanding is that information about the methods for cleaning and inspecting the east-west channels of the floor leakage detection system are not discussed in the DCD or RAI responses received by staff. In addition, the NRC staff seeks to understand the methods for inspecting and cleaning the channels beneath the NPMs. Also during the review of the audit the staff observed design drawings which specified carbon steel as the material for the PLDS channels. In

discussions held during the audit meetings, the applicant specified that stainless steel would be used instead.

b. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-45, to specify the cleaning and inspection methods for the east-west pool channels and the channels located under and around the NPMs. In addition NuScale was requested to update the design drawings and provide an updated RAI response to specify the materials being used for the PLDS channels.

4. **Feedback for RAI 9292, Question 12.03-46**

a. In review of the documents, and through discussions with Applicant, the staff seeks to further understand the leakage detection capability specified by NuScale in this response. NuScale states that the level detection instrumentation will have the capability of detecting 2 gallons per week (i.e., 0.76 milli-liters per minute) of unexpected leakage, from each zone. The NRC staff observes that for the 4 foot by 4 foot equipment drain sump volume, the addition of 2 gallons per week would result in a level change of about 0.2 inches per week. The applicant states that the Initial Test Program (ITP) described in FSAR Section 14.2-6 will test the Main Control Room alarm when the Radioactive Waste Drain System (RWDS) fill rate exceeds the PLDS leakage rate set point. While the local leakage collection isolation and sampling points would permit quantification of leakage at a flow rate of several gallons per week, it is not clear to the staff what amount of leakage the RWDS level detection and control system will be able to detect and alarm.

b. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-46 to clarify the amount of leakage each sump of the PLDS will be able to detect and alarm on.

5. **Feedback for RAI 9292, Question 12.03-47**

a. In review of the documents, and through discussions with the applicant, the NRC staff's understanding is that some of the information related to the sump, including the design of additional PLDS channels, sump pumps, and level detection instrumentation were being redesigned. The staff seeks clarification on the leakage collection methods provided for the area of the pool that drops below the normal (24 foot) bottom elevation of the pool.

b. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-47 that includes a discussions pertaining to the leakage collection methods for the 19' elevation leakage collection sumps, and for sampling from the corresponding 19' elevation channels. In addition, the staff seeks to understand if the same methods of preventing contamination for the higher elevation sumps are applicable to the 19' elevation sumps. If it is not applicable, the staff requests that NuScale update the RAI response to discuss the methods used to ensure the PLDS is not contaminated due to back flow.

U.S. NUCLEAR REGULATORY COMMISSION

NUSCALE POWER, LLC DESIGN CONTROL APPLICATION

THE POOL LEAKAGE DETECTION SYSTEM FOR THE ULTIMATE HEAT SINK

REQUESTS FOR SUPPLEMENTAL INFORMATION

The requests for supplemental information listed below are those items identified by the U.S. Nuclear Regulatory Commission (NRC) staff that did not warrant an additional requests for additional information (RAI), but were considered technical issues that NuScale Power, LLC (NuScale), had agreed to supplement in RAI 9292, Questions 12.03-43, 12.03-44, 12.03-45, 12.03-46, and 12.03-47. The NRC staff will review the information supplemented in the updated responses at that time it is submitted to the NRC on the docket and made available for review.

1. As agreed during the audit exit meeting, NuScale will submit a supplemental response to either RAI 9328, Question 09.01.02-36 or RAI 9292, Question 12.03-43, to provide a comprehensive documentation/approach of their strategy to identify and minimize the flow of borated water into the ultimate UHS reinforced concrete to ensure that the structural integrity of the UHS walls will be maintained throughout of the life of the license. If different than the strategies implemented in the operating fleet, the documentation/approach to be provided should clearly describe and justify how such approach will ensure equivalent or better performance than the operating fleet. The response should also provide FSAR markups with a summary of the aforementioned documentation/approach. Additionally, the proposed FSAR markups should address, applicable liner plate design codes and standards, quality assurance requirements, a description of the liner plate design analysis and results including design loads (e.g. demands due to elevated temperature, construction activities, etc.) and allowable limits in accordance with 10 CFR Part 50, Appendix A, GDC 1, 2, and 4, and the described guidance in DSRS section 3.8.4 (Appendix D, subsection I.4 and I.6) and DSRS section 9.1.2 (sub section 9.1.2.III.4A). The applicant should provide docketed figures showing liner plate anchorage details and leak chase channel arrangements.
2. As agreed during the audit exit meeting, NuScale will submit a supplemental response to either RAI 9328, Question 09.01.02-36 or RAI 9292, Question 12.03-43, to provide a comprehensive documentation/approach to ensure that the integrity of the seam-welds between the pool liner plate segments is not adversely affected due to construction activities.
3. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-44, to discuss the methods for taking a representative sample of the PLDS. In addition NuScale was requested to update DCD Table 9.3.2-4 to include the local sampling points for the PLDS.
4. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-45, to specify the cleaning and inspection methods for the east-west pool channels and the channels located under and around the NPMs. In addition NuScale was requested to update the design drawings and provide an updated RAI response to specify the materials being used for the PLDS channels.
5. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-46 to clarify the amount of leakage each sump of the PLDS will be able to detect and alarm on.

6. As agreed during the audit exit meeting, NuScale will submit a supplemental response to RAI 9292, Question 12.03-47 that includes a discussions pertaining to the leakage collection methods for the 19’ elevation leakage collection sumps, and for sampling from the corresponding 19’ elevation channels. In addition, the staff seeks clarification on if the same methods of preventing contamination for the higher elevation sumps are applicable to the 19’ elevation sumps. If it is not applicable, the staff requests that NuScale update the RAI response to discuss the methods used to ensure the PLDS is not contaminated due to back flow.