

July 24, 2017

Tom Bergman  
Vice President Regulatory Affairs  
NuScale Power, LLC  
1100 NE Circle Blvd., Suite 200  
Corvallis, OR 97330

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION OF THE QUALITY  
ASSURANCE PROGRAM IMPLEMENTATION INSPECTION OF NUSCALE  
POWER, LLC REPORT NO. 05200048/2017-201

Dear Mr. Bergman:

On June 5 through June 9, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection of NuScale Power, LLC (hereafter referred to as NuScale) at the NuScale's office facility in Corvallis, Oregon. The purpose of this limited scope inspection was to assess NuScale's implementation of the applicable requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 21, "Reporting of Defects and Noncompliance."

This inspection assessed aspects of NuScale's process, procedures and implementation for design control, open design items (ODIs), and engineering documentation supporting the NuScale design certification application (DCA) for the NuScale Small Modular Reactor. The inspection also assessed aspects of the corrective action process, including procedures and implementation, related to the DCA. The enclosed report presents the results of this inspection. This NRC inspection report does not constitute an NRC endorsement of NuScale's quality assurance and 10 CFR Part 21 programs.

The NRC inspection team reviewed a limited sample of ODIs which are used by NuScale to track issues that require additional work. The NRC inspection team noted a significant number of ODIs open at the time of the inspection and that NuScale had an appropriately low threshold for opening ODIs. The NRC plans to audit design documents and inspect quality activities to ensure that ODIs are sufficiently closed to enable the NRC to make its 52.54 finding for a design certification.

Within the scope of this inspection, no violations or nonconformances were identified.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of NRC's "Rules of Practice," a copy of this letter and its enclosures will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, it will not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If you request that such material be withheld from public disclosure,

you must specifically identify the portions that you seek to have withheld and provide, in detail, the bases for your claim (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,

Kerri A. Kavanagh, Chief **/RA/**  
Quality Assurance Vendor Inspection Branch-3  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

Docket No.: 05200048

Enclosure:  
Inspection Report No. 05200048/2017-201  
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION OF THE QUALITY ASSURANCE PROGRAM IMPLEMENTATION INSPECTION OF NUSCALE POWER, LLC REPORT NO. 05200048/2017-201

Dated: July 24, 2017

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NRO-002

<b>OFFICE</b>	NRO/DSRA	NRO/DSRA	NRO/DCIP
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<b>DATE</b>	07/21/2017	07/21/2017	07/21/2017
<b>OFFICE</b>	NRO/DSRA	NRO/DCIP	NRO/DCIP
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<b>DATE</b>	07/21/2017	07/21/2017	07/24/2017

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**U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NEW REACTORS  
DIVISION OF CONSTRUCTION INSPECTION AND  
OPERATIONAL PROGRAMS**

Docket No.: 05200048

Report No.: 05200048/2017-201

Applicant: NuScale Power, LLC  
1100 NE Circle Blvd., Suite 200  
Corvallis, OR 97330

Applicant Contact: Mr. Cyrus Afshar, Licensing Supervisor  
(541) 360-0609  
cafshar@nuscalepower.com

Nuclear Industry Activity: NuScale Power, LLC submitted its Design Certification (DC) application for the NuScale Small Modular Reactor in December 2016.

Inspection Dates: June 6-9, 2017

Inspection Team: Thomas Kendzia NRO/DCIP/QVIB-3 Team Leader  
Thomas Herrity NRO/DCIP/QVIB-2  
Timothy Drzewiecki NRO/DSRA/SRSB  
Jeffrey Schmidt NRO/DSRA/SRSB  
Rebecca Karas NRO/DSRA/SRSB

Approved by: Kerri A. Kavanagh, Chief  
Quality Assurance Vendor Inspection Branch-3  
Division of Construction Inspection  
and Operational Programs  
Office of New Reactors

Enclosure

## **EXECUTIVE SUMMARY**

NuScale Power, LLC.  
05200048/2017-201

The U.S. Nuclear Regulatory Commission (NRC) conducted this quality assurance (QA) program implementation inspection to verify that NuScale Power, LLC (hereafter referred to as NuScale), implemented an adequate QA program in compliance with the applicable requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 21, "Reporting of Defects and Noncompliance." The NRC inspection team conducted the inspection at the NuScale facility in Corvallis, Oregon.

This limited scope inspection assessed aspects of NuScale's QA activities, associated with the NuScale design certification application (DCA) for the NuScale Small Modular Reactor. Specifically the inspection assessed QA activities including process, procedures, and implementation, associated with design control, corrective action (including the interface with 10 CFR Part 21), and DCA submittal supporting activities. Review of the DCA submittal supporting activities was reviewed from the perspective of meeting the requirements Criterion III "Design Control," of Appendix B to 10 CFR Part 50. The inspection also focused on NuScale's implementation of their processes associated with identification and control of open design items in support of the NuScale DCA submittal. The NRC inspection team reviewed resolution of one set of testing anomalies from the NuScale Power Integral System Test-1 facility, and a small sample of supporting engineering documentation associated with the DCA submittal. Implementation was reviewed on a sampling basis, with the sample selected by considering significance and importance to nuclear safety.

The following regulations served as the bases for the NRC inspection:

- Appendix B to 10 CFR Part 50
- 10 CFR Part 21

During the planning and course of this inspection, the NRC inspection team followed Inspection Procedure (IP) 35017, "Quality Assurance Implementation Inspection"; with reference to IP 43002, "Routine Inspections of Nuclear Vendors;" and IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," as needed.

The information below summarizes the results of this inspection.

### Corrective Action

The NRC inspection team concluded that NuScale's program requirements for corrective action were consistent with the requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50, and 10 CFR Part 21 "Reporting of Defects and Noncompliance." Based on the limited sample of documents reviewed, the NRC inspection team also determined that NuScale is adequately implementing their corrective action program in support of NuScale's DCA submittal. No findings of significance were identified.

### Design Control

The NRC inspection team concluded that NuScale's program requirements for design control were consistent with the requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that NuScale is adequately implementing their design control program in support of NuScale's DCA submittal. No findings of significance were identified.

## **REPORT DETAILS**

### **1. Corrective Action**

#### **a. Scope**

The NRC inspection team reviewed NuScale Power, LLC's (hereafter referred to as NuScale) Quality Assurance (QA) manual, policies, and procedures that govern the implementation of corrective action, to ensure compliance with the requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. The NRC inspection team verified NuScale's process for corrective action requires promptly identifying and correcting conditions adverse to quality and screening for Part 21 reporting. The NRC inspection team also verified that for significant conditions adverse to quality, NuScale's process requires determining the cause, extent of condition, and taking action to prevent recurrence in addition to prompt identification and correction, as well as notification of management. The NRC inspection team reviewed the Condition Report (CR) list from May 2015 until May 2017 (a total of 1015) and selected 132 for detailed review. Specifically, the NRC inspection team verified for the CRs reviewed, that conditions adverse to quality were promptly identified and corrected, screened for Part 21 reporting, the disposition appeared appropriate and that none appeared to be significant conditions adverse to quality. The NRC inspection team also verified for the CRs reviewed, none required Part 21 reporting evaluation.

The NRC inspection team observed a corrective action review board meeting (which reviews CRs) to determine if NuScale is processing conditions adverse to quality in accordance with the regulation and their procedures. The NRC inspection team discussed the identification of conditions adverse to quality and the corrective action process with NuScale's management and technical staff. The attachment to this inspection report lists the individuals interviewed and documents reviewed by the NRC inspection team.

#### **b. Observations and Findings**

No findings of significance were identified.

#### **c. Conclusions**

The NRC inspection team concluded that NuScale's program requirements for corrective action were consistent with the requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50 and 10 CFR Part 21, "Reporting of Defects and Noncompliance." Based on the limited sample of documents reviewed, the NRC inspection team also determined that NuScale is adequately implementing their corrective action program in support of NuScale's Design Certification Application (DCA) submittal. No findings of significance were identified.

## 2. Design Control

### a. Scope

The NRC inspection team reviewed NuScale's policies and procedures for design control to verify compliance with Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. The NRC inspection team evaluated NuScale's implementation of the design control process and procedures established in NuScale's QA Program. Specifically, the NRC inspection team reviewed NuScale procedures QP-0303-10267, EP-0303-303, EP-0303-310 R6, EP-0303-52592 R1, and DI-0310-10783 R3 to verify that NuScale's process provides for maintaining adequate control of design inputs and outputs, analyses and testing, records and reports, and design changes. The NRC inspection team reviewed how data anomalies from NuScale Power Integral System Test (NIST)-1, test HP-02 on October 7, 2015, were dispositioned from a design control aspect. The NRC inspection team verified that the design process requires independent verification of the design and design changes, and the identification and tracking of unverified assumptions.

The NRC inspection team reviewed NuScale's open design item (ODI) procedure as described in EP-0303-310, "Open Design Item (ODI) Management," to ensure compliance with the requirements of Criterion XVI of Appendix B to 10 CFR Part 50. The NRC inspection team verified NuScale's process provides for tracking unverified assumptions and requires use of the design change process if the assumption is found to be incorrect or requires revision. The NRC inspection team reviewed how the ODI process interfaced with the DCA. The NRC inspection team reviewed the list of ODIs and selected a sample for more detailed review.

The NRC inspection team discussed the design control process and ODI process with NuScale's management and technical staff. The attachment to this inspection report lists the individuals interviewed and documents reviewed by the NRC inspection team.

### b. Observations and Findings

The NRC inspection team determined that NIST Nonconformance Report (NCR) 15091, "HP-02 Data Anomalies," dated October 7, 2015, documented NuScale's disposition of testing anomalies. The NuScale review primarily consisted of evaluating deviations between sets of measurements to determine the reliability of suspect data. The evaluation determined that a number of instruments and hence corresponding data should not be used for downstream processing. The NuScale evaluation documented the review process and incorporated feedback from the testing into the design process. The NRC inspection team determined that the NuScale individual assessments were reasonable. The NRC inspection team determined that the overall assessment of the acceptability of the testing to meet the overall testing objectives was not documented in this NCR. The overall assessment is being reviewed during the DCA review by the NRC technical staff, and will be reviewed further under that process.

The NRC inspection team determined ODI procedure EP-0303-310 provides a process for managing unverified assumptions that are required to be verified. ODIs are required to be identified in accordance with Design Control Process QP-0303-10267. An ODI is required to be created when an unverified assumption that requires verification is present in an engineering evaluation. The document where this assumption is



implemented is referred to as the implementing document. The document that provides the unverified assumption is defined as the source document and is expected to resolve the ODI when it is updated in a numbered version (NuScale's designation process uses letters for tracking drafts, and numbers for approved revisions). The design verification checklist, QP-0303-10267-F01, requires ODIs be created. The NuScale process specifies ODIs are to be reasonable assumptions. An ODI is resolved when a verified source for the ODI exists in an approved revision of the engineering document. Upon resolution of the ODI, implementing documents are required to be updated in accordance with the design control process. The design control process, QP-0303-10267, requires verification that ODIs are identified and assigned.

The NRC inspection team determined from the NuScale procedures and interviews that ODIs should not exist in the DCA submittal itself, but may exist in supporting documents, references and calculations.

NuScale performed a screening of the approximately 1,000 ODIs that existed at that time prior to DCA submittal. NuScale specified the following screening criteria in an internal memo:

- ODIs necessary for closure to support DCA submittal:
  - ODIs which address content, analysis, results or conclusions in the engineering deliverable, not yet determined and identified as required to satisfy review criteria in the SRP/DSRS (i.e. the content needed is not there)
- ODIs not necessary to be closed prior to DCA submittal:
  - ODIs that are confirmatory in nature (data/information obtained from other NuScale specific deliverable not yet finalized)
  - ODIs which address verification of content (assumptions) in engineering deliverables

NuScale identified 173 ODIs that required closure, and closed them, prior to submittal of the DCA. The NRC inspection team confirmed that NuScale is continuing to identify ODIs as part of their design process.

The NRC inspection team reviewed 170 ODIs from a list of 1,563, including open and closed ODIs. The NRC inspection team verified that in general, NuScale was following their procedures and the threshold for identifying items as ODIs was conservatively low. The NRC inspection team did not identify any ODIs that were incorrectly closed to support the DCA.

Neither the design control process, QP-0303-10267, nor the ODI procedure, EP-0303-310, have a requirement to establish a date or event (such as DCA submittal) to close the ODI. NuScale management stated that the ODIs require closure prior to the affected systems, structures, or components being considered operable. NQA-1 2008, requirement 3, Design Control, 500 (b) states, "Design verification shall be performed prior to releasing the design for procurement, manufacture, construction, or use by another design organization, except where this timing cannot be met, such as when insufficient data exist. In those cases, the unverified portion of the design shall be identified and controlled. In all cases the design verification shall be completed prior to relying upon the component, system, structure, or computer program to perform its function." The NRC inspection team noted that while the use of ODIs by NuScale was meeting the requirement, over 1,500 ODIs are a significant number of open items. The

NRC inspection team noted that as part of the DCA review, NRC technical staff audits and additional inspections of quality activities will be performed to ensure that ODIs are sufficiently closed to enable the NRC to make its 52.54 finding.

The NRC inspection team noticed several instances where the terms “RESERVED”, “To Be Determined”, “TBD” or “missing” were used by NuScale in a table of references or as bibliographical entries. Through interviews with NuScale staff, the NRC inspection team learned that NuScale had used these terms as placeholders for items that were yet to be developed by NuScale. The NRC inspection team did not find examples of these being used in the body of the documents reviewed.

The NRC inspection team also reviewed a small sample of design supporting documentation for the DCA. The NRC inspection team identified an example where inaccurate information was present in a topical report at the time of submittal. Specifically, the cover page to the calculation made a statement that a value was obtained by analysis, when it was an assumed value identified as an ODI. NuScale documented the issue in CR-0617-54417. The NRC inspection team identified an example, where an assumption was not identified as an ODI by NuScale. Specifically, NuScale made the assumption to neglect the main reactor pool heat input into the spent fuel pool heat load. In the DCA supporting documentation NuScale identified that this assumption should be verified, which is an ODI by NuScale definition. NuScale documented the issue in CR-0617-54426.

No findings of significance were identified.

c. Conclusions

The NRC inspection team concluded that NuScale’s program requirements for design control were consistent with the requirements of Criterion III “Design Control,” of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that NuScale is adequately implementing their design control program in support of NuScale’s DCA submittal. No findings of significance were identified.

3. Entrance and Exit Meetings

On June 5, 2017, the NRC inspection team discussed the scope of the inspection during an entrance meeting with Mr. Dale Atkinson, Chief Operating Officer/Chief Nuclear Officer and other NuScale Power personnel. On June 9, 2017, the NRC inspection team presented the inspection results during an exit meeting with Mr. Dale Atkinson and other NuScale Power, LLC personnel.

## ATTACHMENT

### 1. ENTRANCE/EXIT MEETING ATTENDEES

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
Kent Welter	NSE Manager	NuScale Power, LLC	X		
Robert Houser	T&CD Manager	NuScale Power, LLC	X		
Kyle Ugassin	CM Supervisor	NuScale Power, LLC	X		
Eric Young	Testing Supervisor	NuScale Power, LLC	X		
Wendell Wagner	Supervisor Core T&H	NuScale Power, LLC	X	X	X
Matt Kizeriar	NIST-1 Testing Program MGR	NuScale Power, LLC	X		
Jeff Kosky	Regulatory Affairs	NuScale Power, LLC	X		
Larry Linir	Fuels Engineer	NuScale Power, LLC	X	X	
Neil Oliver	Corp Services Dir.	NuScale Power, LLC	X		
Robert Gamble	Engineering VP	NuScale Power, LLC	X	X	
Dave Brood	NIST-1 QoC	NuScale Power, LLC	X		
John Hardy	NIST-1 Facility Manager	NuScale Power, LLC	X		
Larry Losh	Manager Nuclear Fuel	NuScale Power, LLC	X		
Dustin Greenwood	Operations	NuScale Power, LLC	X	X	
Jose Reyes	CTO	NuScale Power, LLC	X	X	
Allyson Kitto	Supervisor, Nuclear Analysis	NuScale Power, LLC	X		
Mark Chitty	Licensing Engineer	NuScale Power, LLC	X	X	
Bruce Foster	QA Director	NuScale Power, LLC	X	X	X
Tom Bergman	VP, Regulatory Affairs	NuScale Power, LLC	X	X	X
Audrey Anderson	Manager, Training	NuScale Power, LLC	X	X	X
Zackary Rad	Director, Regulatory Affairs	NuScale Power, LLC	X	X	

Kyra Perkins	Licensing Engineer	NuScale Power, LLC	X		
Cyrus Afshar	Licensing Supervisor	NuScale Power, LLC	X	X	X
Dale Atkinson	CNO/COO	NuScale Power, LLC	X	X	
Mark Peres	PM	NuScale Power, LLC	X	X	
Philip Hammond	PM	NuScale Power, LLC	X		
Mike Smith	Manager, Engineering Support	NuScale Power, LLC	X	X	
Geoffrey Quaid	Contract Licensing Engineer	NuScale Power, LLC			X
Carrie Fosaaen	Licensing Specialist 3	NuScale Power, LLC			X
Grant Buster	PRA Analyst	NuScale Power, LLC			X
Derrick Botha	Licensing Engineer 4	NuScale Power, LLC			X
Ross Sauggernd	Plant Operations Supervisor	NuScale Power, LLC			X
Liz English	Licensing Specialist 3	NuScale Power, LLC			X
Kenneth Anderson	Safety Analysis Engineer 4	NuScale Power, LLC			X
Janice LaSalle	Supervisor Performance Improvement	NuScale Power, LLC			X
Kent Welter	Manager Nuclear Safety Engineering	NuScale Power, LLC			X
Jeff Magedanz	Safety Analysis Engineer 2	NuScale Power, LLC			X
Megan McCloskey	Safety Analysis Engineer 4	NuScale Power, LLC			X
Colin Sexton	Mechanical Engineer 3	NuScale Power, LLC			X
Claudio Delfino	Supervisor Testing and Code Development	NuScale Power, LLC			X

Eric Coryell	Manager Code Development	NuScale Power, LLC			X
Kathy Warnock	QA Specialist	NuScale Power, LLC		X	
Jennie Wike	Manager, Licensing	NuScale Power, LLC		X	X
Tracey Brown	Operations Management	NuScale Power, LLC		X	
Amee Gurr	Licensing Coordinator	NuScale Power, LLC		X	
Connie Joki	Licensing Coordinator	NuScale Power, LLC		X	
Bob Temple	General Counsel (by phone)	NuScale Power, LLC		X	
Thomas Kendzia	Inspection Team Leader	NRC	X	X	
Thomas Herrity	Reactor Operations Engineer	NRC	X	X	
Rebecca Karas	Chief, Reactor Systems Branch	NRC	X		
Jeff Schmidt	Senior Reactor Systems Engineer	NRC	X		
Tim Drzewiecki	Reactor Systems Engineer	NRC	X		
Demetrious Murray	PM (by phone)	NRC		X	

2. INSPECTION PROCEDURES USED

Inspection Procedure 35017, "Quality Assurance Implementation Inspection," dated July 29, 2008

Inspection Procedure 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012

Inspection Procedure 43002, "Routine Inspections of Nuclear Vendors," dated January 27, 2017

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

#### 4. DOCUMENTS REVIEWED

##### **Condition Reports (CRs)**

- CR 0116-20446
- CR 0166-21292
- CR 0117-52732
- CR 0117-52888
- CR 0216-21543-R1
- CR 0216-21585-R1
- CR 0216-21758
- CR 0216-21829
- CR 0217-53009
- CR 0217-53192
- CR 0316-48100
- CR 0317-53341
- CR 0317-53423
- CR 0317-53454
- CR 0416-48496
- CR 0417-53679
- CR 0417-53709
- CR 0515-14397
- CR 0615-15157
- CR 0616-49700-R1
- CR 0616-50022
- CR 0716-50069
- CR 0815-16492
- CR 0815-16590
- CR 0816-50536
- CR 0816-50859
- CR 0816-50960
- CR 0915-17861
- CR 0916-51224
- CR 1015-18609
- CR 1015-18666
- CR 1016-51526
- CR 1016-51651
- CR 1016-51702
- CR 1016-51810
- CR 1115-19512
- CR 1116-52033
- CR 1116-52155
- CR 1215-20075
- CR 1215-20140
- CR 1215-20277
- CR 1216-52232
- CR 1216-52444
- CR 1216-52530
- CR 0116-20504
- CR 0166-21476
- CR 0117-52740
- CR 0117-52895
- CR 0216-21551
- CR 0216-21599
- CR 0216-21762
- CR 0216-21911
- CR 0217-53031
- CR 0217-53193
- CR 0316-48460
- CR 0317-53344
- CR 0317-53446
- CR 0317-53516
- CR 0416-48682
- CR 0417-53689
- CR 0417-53711
- CR 0516-49172
- CR 0615-15665
- CR 0616-49908
- CR 0715-15972
- CR 0716-50386
- CR 0815-16576
- CR 0816-50492
- CR 0816-50589
- CR 0816-50879
- CR 0915-17246
- CR 0916-51152-R1
- CR 0916-51363
- CR 1015-18661
- CR 1015-18882
- CR 1016-51566
- CR 1016-51667
- CR 1016-51753
- CR 1115-19105
- CR 1116-51906
- CR 1116-52143
- CR 1215-19715
- CR 1215-20093
- CR 1215-20141
- CR 1215-20295-R1
- CR 1216-52240
- CR 1216-52445
- CR 1216-52583
- CR 0116-20603
- CR 0117-52661
- CR 0117-52863
- CR 0117-52921
- CR 0216-21558
- CR 0216-21611
- CR 0216-21819
- CR 0217-52990
- CR 0217-53097
- CR 0316-22015
- CR 0317-53313
- CR 0317-53401
- CR 0317-53450
- CR 0317-53519
- CR 0417-53658
- CR 0417-53708
- CR 0417-53794
- CR 0615-15003
- CR 0616-49698
- CR 0616-49910
- CR 0715-16026
- CR 0716-50445
- CR 0815-16589
- CR 0816-50501
- CR 0816-50649
- CR 0816-50953
- CR 0915-17269
- CR 0916-51153
- CR 0916-51401
- CR 1015-18665
- CR 1016-51520
- CR 1016-51602
- CR 1016-51681
- CR 1016-51756
- CR 1115-19396-R1
- CR 1116-52010
- CR 1116-52154
- CR 1215-19736
- CR 1215-20096
- CR 1215-20177
- CR 1215-20323
- CR 1216-52443
- CR 1216-52526

### **CRs submitted during the NRC Inspection**

- CR 0617-54417
- CR 0617-54423
- CR 0617-54426

### **Open Design Items (ODIs)**

- |               |               |               |               |
|---------------|---------------|---------------|---------------|
| • ODI 15-0031 | • ODI 15-0032 | • ODI 15-0041 | • ODI 15-0058 |
| • ODI 15-0100 | • ODI 15-0144 | • ODI 15-0180 | • ODI 15-0182 |
| • ODI 15-0318 | • ODI 15-0319 | • ODI 15-0322 | • ODI 15-0320 |
| • ODI 15-0344 | • ODI 15-0367 | • ODI 15-0416 | • ODI 15-0428 |
| • ODI 15-0455 | • ODI 15-0456 | • ODI 16-0002 | • ODI 16-0004 |
| • ODI 16-0199 | • ODI 16-0240 | • ODI 16-0252 | • ODI 16-0339 |
| • ODI 16-0346 | • ODI 16-0393 | • ODI 16-0395 | • ODI 16-0438 |
| • ODI 16-0461 | • ODI 16-0474 | • ODI 16-0480 | • ODI 16-0484 |
| • ODI 16-0485 | • ODI 16-0486 | • ODI 16-0487 | • ODI 16-0497 |
| • ODI 16-0553 | • ODI 16-0595 | • ODI 16-0647 | • ODI 16-0707 |
| • ODI 16-0717 | • ODI 16-0750 | • ODI 16-0755 | • ODI 16-0758 |
| • ODI 16-0763 | • ODI 16-0785 | • ODI 16-0843 | • ODI 16-0854 |
| • ODI 16-0991 | • ODI 16-1051 | • ODI 17-0002 | • ODI 16-1086 |
| • ODI 16-1055 | • ODI 16-1035 | • ODI 16-1003 | • ODI 16-0921 |
| • ODI 16-0873 | • ODI 16-0855 | • ODI 16-0837 | • ODI 16-0803 |
| • ODI 16-0792 | • ODI 16-0709 | • ODI 16-0657 | • ODI 16-0643 |
| • ODI 16-0476 | • ODI 16-0423 | • ODI 16-0365 | • ODI 16-0357 |
| • ODI 16-0251 | • ODI 16-0248 | • ODI 16-0235 | • ODI 16-0190 |
| • ODI 16-0049 | • ODI 15-0445 | • ODI 15-0366 | • ODI 15-0365 |
| • ODI 15-0340 | • ODI 15-0339 | • ODI 15-0308 | • ODI 15-0248 |
| • ODI 15-0033 | • ODI 15-0021 | • ODI 15-0022 | • ODI 15-0020 |
| • ODI 15-0030 | • ODI 15-0042 | • ODI 15-0114 | • ODI 15-0123 |
| • ODI 15-0139 | • ODI 15-0142 | • ODI 15-0228 | • ODI 15-0345 |
| • ODI 15-0351 | • ODI 15-0372 | • ODI 15-0411 | • ODI 15-0412 |
| • ODI 15-0419 | • ODI 15-0421 | • ODI 15-0425 | • ODI 15-0431 |
| • ODI 15-0441 | • ODI 15-0442 | • ODI 15-0460 | • ODI 16-0007 |
| • ODI 16-0048 | • ODI 16-0050 | • ODI 15-0136 | • ODI 15-0198 |
| • ODI 15-0257 | • ODI 15-0296 | • ODI 15-0327 | • ODI 15-0317 |
| • ODI 16-0232 | • ODI 16-0234 | • ODI 16-0408 | • ODI 16-0570 |
| • ODI 16-0586 | • ODI 16-0589 | • ODI 16-0634 | • ODI 16-0644 |
| • ODI 16-0645 | • ODI 16-0691 | • ODI 16-0745 | • ODI 16-0787 |
| • ODI 16-0840 | • ODI 16-0842 | • ODI 16-0845 | • ODI 16-0846 |
| • ODI 16-0849 | • ODI 16-0851 | • ODI 16-0852 | • ODI 16-0855 |
| • ODI 16-0856 | • ODI 16-0858 | • ODI 16-0861 | • ODI 16-0865 |
| • ODI 16-0871 | • ODI 16-0873 | • ODI 16-0874 | • ODI 16-0870 |
| • ODI 16-0893 | • ODI 16-0898 | • ODI 16-0902 | • ODI 16-1003 |

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| • ODI 16-1018 | • ODI 16-1086 | • ODI 16-1084 | • ODI 16-0931 |
| • ODI 16-0891 | • ODI 16-0890 | • ODI 16-0889 | • ODI 16-0843 |
| • ODI 16-0847 | • ODI 16-0848 | • ODI 16-0850 | • ODI 16-0853 |
| • ODI 16-0854 | • ODI 16-0857 | • ODI 16-0859 | • ODI 16-0860 |
| • ODI 16-0862 | • ODI 16-0863 | • ODI 16-0864 | • ODI 16-0866 |
| • ODI 16-0867 | • ODI 16-0868 | • ODI 16-0869 | • ODI 16-0872 |
| • ODI 16-0875 | • ODI 16-0748 | • ODI 16-0683 | • ODI 16-0680 |
| • ODI 16-0569 | • ODI 16-0548 | • ODI 16-0549 | • ODI 16-0521 |
| • ODI 16-0489 | • ODI 16-0490 | • ODI 16-0488 | • ODI 16-0475 |

## **Procedures**

- DI-310-10783, "Open Design Item (ODI) Request, Re-Use, and Resolution instructions," Revision 3, dated July 6, 2016
- DI-12896-12927, "Managing Condition Reports," Revision 3, dated March 22, 2017
- DI-12986-12928, "Condition Report Evaluation," Revision 3, dated March 24, 2017
- EC-A021-5178, "The Enthalpy Rise Engineering Uncertainty Factor," Revision 0, dated April 4, 2017
- EP-0303-52592, "Engineering Change Control," Revision 1, dated March 30, 2017
- EP-0303-303, "Preparation and Approval of Engineering Calculations," Revision 14, dated February 20, 2017
- EP-0303-3340\_R4, "Preparation and Approval of Engineering Documents," Revision 4, dated February 20, 2017
- EP-0303-310, "Open Design Item (ODI) Management," Revision 6, dated February 2, 2017
- EP-0303-52592, "Engineering Change Control," Revision 1, dated March 30, 2017
- LP-1503-9815, "10 CFR Part 21 Reporting," Revision 3, dated April 12, 2017
- QP-0303-10267-F01, "Design Verification Checklist," Revision 1
- QP-0303-10267, "Design Control Process," Revision 6, dated February 20, 2017
- QP-1603-12896, "Corrective Action Program," Revision 4, dated March 23, 2017

## **Training Documents**

- CP-0203-49643, "Training Management Procedure," Revision 3, dated May 26, 2017
- "Technical Core Learning Path, Design Engineering Core," Version 5, dated May 23, 2017
- "Technical Core Learning Path, Engineering Core," Version 3, dated May 23, 2017
- "Technical Core Learning Path, Regulatory Affairs Contractor Core," Version 4, dated May 25, 2017



## **Engineering Reports**

- NCR-15091 HP-02, "Data Anomalies," dated October 7, 2015
- ER-0000-2337, "Subchannel Analysis Methodology," Rev. 4, dated November 29, 2016
- ER-0000-2379, "Non-LOCA Transient Analysis Methodology Report," Rev. 0, dated December 9, 2016
- EC-0000-4820, "Overcooling Return to Power Analysis," Rev. 0, dated December 27, 2016
- EC-A021-5056, "Core Physics Input to Overcooling Return to Power Analysis," Rev. 0, dated December 30, 2016
- EE-0000-4947, "Evaluation of Post Trip CHF for Representative Non-LOCA Transients," Rev. 0, dated January 6, 2017
- EP-0703-1417-F01, "NuScale SFP Thermal Hydraulic Analysis," Rev. 0, dated December 11, 2015