SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION REGARDING THE TOPICAL REPORT TR-121172-NP, REVISION 3, "CARBON FREE POWER PROJECT (CFPP) QUALITY ASSURANCE PROGRAM DESCRIPTION"

PROJECT NO.: 99902052

1.0 INTRODUCTION

By letter dated July 26, 2022 (Reference 1), NuScale Power, LLC, (NuScale), submitted for U.S. Nuclear Regulatory Commission (NRC) staff review Topical Report (TR)-121172-NP, Revision 0, "Carbon Free Power Project (CFPP) Quality Assurance Program Description," on behalf of CFPP LLC. NuScale submitted this TR in accordance with the guidance of NUREG-0800, "Standard Review Plan (SRP) for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 17.5, "Quality Assurance Program Description - Design Certification, Early Site Permit and New License Applicants" (Reference 2), and Nuclear Energy Institute (NEI) 11-04A, "Nuclear Generation Quality Assurance Program Description," Revision 0, endorsed by NRC.

The NRC staff held three teleconferences with NuScale and CFPP in which the staff asked clarifying questions. These teleconferences took place on August 23, 2022 (Agencywide Documents Access and Management System Accession No. ML22236A566), October 18, 2022 (ML22292A048), and January 24, 2023 (ML23044A588). Following those teleconferences, CFPP submitted Revision 1 (Reference 3), Revision 2 (Reference 4), and Revision 3 of the TR-121172-NP (Reference 16), by letters dated September 22, 2022, November 17, 2022, and February 13, 2023, respectively.

The CFPP's Quality Assurance Program Description (QAPD) TR is limited in scope (hereafter referred to as limited scope) in that the CFPP QAPD TR does not address all 18 criteria of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations*, Part 50 (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." Specifically, the CFPP QAPD TR provides information to demonstrate compliance with Criteria I - VII, and XVI - XVIII, in Appendix B to 10 CFR Part 50 (hereafter referred to as Appendix B) and applies only to activities affecting the quality and performance of safety-related structures, systems, and components (SSCs), including, but not limited to siting, design, and procurement. Additionally, the scope of the CFPP's QAPD TR commits to applicable requirements of the American Society of Mechanical Engineers (ASME) NQA-1-2008, "Quality Assurance Program Requirements for Nuclear Facilities," Edition (Reference 5) with NQA-1a-2009 Addenda (Reference 6), as endorsed by NRC Regulatory Guide (RG) 1.28, Revision 4, "Quality Assurance Program Criteria (Design and Construction)" (Reference 7).

The CFPP QAPD TR applies to activities conducted by or for the CFPP. When CFPP applies for a combined license application (COLA) and/or a limited work authorization, the CFPP QAPD TR will need to demonstrate compliance with Criteria VIII - XV in Appendix B and other

applicable requirements, such as those in ASME NQA-1-2008 with the NQA-1-2009 Addenda.

2.0 REGULATORY EVALUATION

The regulatory requirements related to quality assurance programs (QAPs) are set forth in 10 CFR 52.79(a)(25) and Appendix B. Specifically, 10 CFR 52.79(a) requires that a COL application contain the technically relevant information in a final safety analysis report (FSAR) that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the SSCs and of the facility as a whole. Additionally, 10 CFR 52.79(a)(25) states that the FSAR must include a description of the QAP, applied to the design, and to be applied to the fabrication, construction, and testing, of the SSCs of the facility. Appendix B sets forth the requirements for QAPs for nuclear power plants. The description of the QAP for a nuclear power plant must include a discussion of how the applicable requirements of Appendix B have been and will be satisfied, and a discussion of how the QAP will be implemented. Appendix B establishes quality assurance (QA) requirements for the design, fabrication, construction, and testing of SSCs for the facility. The pertinent requirements of Appendix B apply to all activities affecting the safety-related functions of those SSCs and include designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, and modifying SSCs.

3.0 EVALUATION

In evaluating the compliance of the CFPP's limited scope QAPD TR with applicable requirements, the NRC staff utilized the guidance contained in NUREG-0800 (SRP), Section 17.5, Revision 1, which provides an outline of an acceptable QAP template for design certification, early site permit, combined license, construction permit, and operating license applicants. SRP Section 17.5, Revision 1, describes regulatory and industry guidance determined to be acceptable methods for satisfying the requirements of Appendix B.

3.1 Quality Assurance Program Overview

3.1.1 Organization

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.A, for providing an organizational description that includes the organizational structure, functional responsibilities, levels of authority, and interfaces for establishing, executing, and verifying CFPP QAP implementation. Based on its review, the NRC staff finds that the CFPP QAPD TR establishes independence between the organization that performs oversight functions related to the QAP and the organization responsible for performing the function. The CFPP QAPD TR provides for applicable management to be responsible to size the QA organization commensurate with the duties and responsibilities assigned. Finally, responsibility and authority for planning, establishing, and implementing an effective overall QAP are clearly described and defined.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 1, without further clarifications or exceptions. The NRC staff finds that the description of CFPP's Organization, as described above, complies with the requirements of Criterion I of Appendix B, and therefore, is acceptable.

3.1.2 Quality Assurance Program

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.B, for establishing the necessary measures to implement a QAP to ensure that the COLA activities are in accordance with governing regulations and license requirements. The QAP applies to those quality-related activities that involve the functions of safety-related SSCs associated with COLA activities, and to the managerial and administrative controls to be used to assure the COLA activities comply with applicable regulatory requirements. Examples of COLA program safety-related activities include, but are not limited to, siting, design, and procurement.

A list identifying the SSCs and activities to which the CFPP QAPD TR applies is maintained by CFPP's Reactor Technology Provider. CFPP may delegate all or part of the activities for which they are responsible to others but retains overall responsibility for QAP effectiveness. The CFPP QAPD TR provides for measures to assess the adequacy of the QAP and to ensure its effective implementation, at least once each year or at least once during the life of the activity, whichever is shorter. In addition, consistent with SRP Section 17.5, Paragraph II.B.10, the CFPP QAPD TR allows for the application of a grace period of 90 days to activities that must be performed on a periodic basis. The grace period does not allow the "clock" for a particular activity to be reset forward. However, the "clock" for an activity is reset backwards by performing the activity early. Consistent with a recent NRC approved alternative (Reference 17), the CFPP QAPD TR applies an extension of the audit or survey interval up to 25% of the periodicity for audits and surveys to be performed during exigent conditions. The extension does allow the "clock" for a particular activity to be reset forward.

The CFPP QAPD TR commits to implement NQA-1-2008, Requirement 2. The CFPP QAPD TR provides the minimum training requirements for all personnel responsible for implementation of the CFPP QAP.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 2, without further clarifications or exceptions. The NRC staff finds that the description of CFPP's QAP, as described above, complies with the requirements of Criterion II of Appendix B, and, therefore, is acceptable.

3.1.3 Design Control

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.C, for establishing the necessary measures to control the design, design verification, and analysis activities of safety-related items and services that are subject to the provisions of the QAPD. The CFPP QAPD TR design process includes provisions to control design inputs, outputs, changes, interfaces, records, and organizational interfaces. These provisions ensure that the design inputs (such as design bases, performance and regulatory requirements, and codes and standards) are correctly translated into design outputs (such as analyses, specifications, drawings, procedures, and instructions). In addition, the CFPP QAPD TR provides for design documents to be reviewed by individuals knowledgeable in QA to ensure that the documents contain the necessary QA requirements.

Consistent with SRP Section 17.5, Paragraph II.C, the CFPP QAPD TR design processes provide for design verification to ensure that items and activities subject to the provisions of the QAP are suitable for their intended application and are consistent with their effect on safety. Design changes are subject to these controls, which include verification measures

commensurate with those applied to original plant design. The extent of the design verification required is a function of the importance to safety of the item under consideration, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proven designs. Verification methods may include, but are not limited to, design reviews, alternative calculations, and qualification testing.

Consistent with SRP Section 17.5, Paragraph II.C.2, the CFPP QAPD TR states, in Section 3, "Design Control," that design change processes are controlled by CFPP and contractor procedures. The TR also states that "changes to design inputs, final designs, field changes, and temporary and permanent modifications to operating facilities are justified and subject to design control measures commensurate with those applied to the original design." Design changes are reviewed and approved by the CFPP design organization or by other organizations so authorized by CFPP.

The CFPP QAPD TR governs the development, procurement, testing, maintenance, and use of computer application and digital equipment software when used in safety-related applications. CFPP and its suppliers are responsible for developing, approving, and issuing procedures, as necessary, to control the use of such computer application and digital equipment software. The CFPP QAPD TR states that the procedures shall require that the application software be assigned a proper quality classification and that the associated quality requirements be consistent with this classification.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, and NQA-1a-2009 Addenda, Requirement 3, Sections 100 through 900, as well as the standards contained in NQA-1-2008, and NQA-1a-2009 Addenda, Part II, Subpart 2.7, Subpart 2.14, and Subpart 2.20 respectively, without further clarifications or exceptions. The staff finds that the description of CFPP's Design Control, as described above, complies with the requirements of Criterion III of Appendix B and, therefore, is acceptable.

3.1.4 Procurement Document Control

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.D, for establishing the necessary measures and governing procedures for preparing and reviewing procurement documents to ensure that applicable regulatory, technical, and QA program requirements are included or referenced in procurement documents. The CFPP QAPD TR ensures that the procurement documents are developed and reviewed by relevant personnel and that changes are subject to the same degree of control as utilized in the preparation of the original documents.

The CFPP QAPD TR states that applicable technical, regulatory, administrative, quality, and reporting requirements (such as specifications, codes, standards, tests, inspections, special processes, 10 CFR Part 21, "Reporting of Defects and Noncompliance,") and 10 CFR 50.55(e) are invoked for the procurement of items and services.

The CFPP QAPD TR establishes that procurement documents shall require suppliers to have a documented QA program that is determined to meet the applicable requirements of Appendix B, as appropriate to the circumstances of procurement. The scope of procurement includes, but is not limited to, engineering, design, and testing services, as well as the procurement of safety-related software.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 4 without further clarifications or exceptions. The NRC staff finds that the description of CFPP's Procurement Document Control, as described above, complies with the requirements of Criterion IV of Appendix B, and, therefore, is acceptable.

3.1.5 Instructions, Procedures, and Drawings

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.E, for establishing the necessary measures and governing procedures to ensure that activities affecting quality are prescribed by, and performed in accordance with, documented instructions, procedures, or drawings of a type appropriate to the circumstances and which, where applicable, include quantitative or qualitative acceptance criteria to implement the QAPD TR.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 5, without further clarifications or exceptions. The NRC staff finds that the description of CFPP's Instructions, Procedures, and Drawings, as described above, complies with the requirements of Criterion V of Appendix B, and, therefore, is acceptable.

3.1.6 Document Control

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.F, for establishing the necessary measures and governing procedures to control the preparation, review, approval, issuance of, and changes to documents that specify quality requirements or prescribe how activities affecting quality, including organizational interfaces, are controlled. Measures are provided to assure that documents, including revisions or changes (other than those defined in implementing procedures as minor changes), are reviewed and approved by the same organization that performed the original review and approval, unless other organizations are specifically designated. A list of all controlled documents, identifying the current approved revision or date, is maintained so personnel can determine the appropriate document for use.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 6, without further clarifications or exceptions. The NRC staff finds that the description of CFPP's Document Control, as described above, complies with the requirements of Criterion VI of Appendix B, and, therefore, is acceptable.

3.1.7 Control of Purchased Material, Equipment, and Services

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.G, for establishing the necessary measures and governing procedures to control the procurement of items and services to ensure conformance with specified requirements. The CFPP QAPD TR provides measures for source evaluation and selection, evaluation of objective evidence of quality furnished by the supplier, source inspection, audit, and examination of items or services. The CFPP QAPD TR establishes and implements measures to assess the quality of

purchased items and services, whether purchased directly or through contractors, at intervals and to a depth consistent with the item's or service's importance to safety, complexity, quantity, and frequency of procurement.

The CFPP QAPD TR provides measures for evaluating prospective suppliers and selecting only qualified suppliers, as well as auditing and evaluating suppliers to ensure that qualified suppliers continue to provide acceptable products and services.

The CFPP QAPD TR also outlines acceptance actions, such as source verification, receipt inspection, certificates of conformance, and review of documentation (e.g., Certified Material Test Reports/Certificates) to ensure that the procurement, inspection, and test requirements have been satisfied before relying on the item to perform its intended safety function.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, and NQA-1a-2009 Addenda, Requirement 7, and NQA-1a-2009 Addenda, Subpart 2.14 with clarifications and exceptions. Specifically, the CFPP QAPD TR clarifies the controls established for purchasing items or services including purchasing commercial grade calibration or testing services. In addition, the CFPP QAPD TR clarifies the requirements for purchasing commercial grade items and includes a statement that CFPP has responsibility for 10 CFR Part 21 reporting. The NRC staff finds that the description of CFPP's Control of Purchased Material, Equipment, and Services, as described above, complies with the requirements of Criterion VII of Appendix B, and, therefore, is acceptable.

3.1.8 Identification and Control of Materials, Parts, and Components

The CFPP QAPD TR does not address Criterion VIII of Appendix B because it is not within the scope of the CFPP QAPD TR, Revision 3. Specifically, the TR does not describe the necessary measures and governing procedures that CFPP has established for the identification and control of materials, parts, and components.

The CFPP QAPD TR states that prior to initiating activities required by this criterion of Appendix B, CFPP will establish the necessary measures and governing procedures to identify and control items to prevent the use of incorrect or defective items.

The NRC staff notes that the CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 8, without further clarifications or exceptions. Nonetheless, because CFPP did not provide a sufficient description to address Criterion VIII of Appendix B in accordance with SRP Section 17.5, the NRC staff is unable to find that this section complies with the requirements of Appendix B and the guidance in SRP Section 17.5.

3.1.9 Control of Special Processes

The CFPP QAPD TR does not address Criterion IX of Appendix B because it is not within the scope of the CFPP QAPD TR, Revision 3. Specifically, the CFPP QAPD TR does not describe the necessary measures and governing procedures to assure that the special processes that require interim process controls to assure quality, such as welding, heat treating, and nondestructive examination, are controlled.

The CFPP QAPD TR states that prior to initiating activities required by this criterion of Appendix B, CFPP will establish the necessary measures and governing procedures to assure that the special processes that require interim process controls to assure quality, such as welding, heat treating, and nondestructive examination, are controlled.

The NRC staff notes that the CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 9, without further clarifications or exceptions. Nonetheless, because CFPP did not provide a sufficient description to address Criterion IX of Appendix B in accordance with SRP Section 17.5, the NRC staff is unable to find that this section complies with the requirements of Appendix B and the guidance in SRP Section 17.5.

3.1.10 Inspection

The CFPP QAPD TR does not address Criterion X of Appendix B because it is not within the scope of the CFPP QAPD TR, Revision 3. Specifically, the CFPP QAPD TR did not describe the necessary measures and governing procedures it has established for inspections.

The CFPP QAPD TR states that prior to initiating activities required by this criterion of Appendix B, CFPP will establish the necessary measures and governing procedures to implement inspections that assure that items, services, and activities affecting safety meet established requirements and conform to applicable documented specifications, instructions, procedures, and design documents.

The NRC staff notes that the CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 8, without further clarifications or exceptions. Nonetheless, because CFPP did not provide a sufficient description to address Criterion X of Appendix B in accordance with SRP Section 17.5, the NRC staff is unable to find that this section complies with the requirements of Appendix B and the guidance in SRP Section 17.5.

3.1.11 Test Control

The CFPP QAPD TR does not address Criterion XI of Appendix B because it is not within the scope of the CFPP QAPD TR, Revision 3. Specifically, the CFPP QAPD TR does not describe the necessary measures and governing procedures to demonstrate that items subject to the provisions of the CFPP QAPD TR will perform satisfactorily in service.

The CFPP QAPD TR states that prior to initiating activities required by this element of Appendix B, CFPP will establish the necessary measures and governing procedures to demonstrate that items subject to the provisions of the CFPP QAPD TR will perform satisfactorily in service.

The NRC staff notes that the CFPP QAPD TR commits to implement the quality standards described in NQA-1a-2009, Requirement 11, without further clarifications or exceptions. Nonetheless, because CFPP did not provide a sufficient description to address Criterion XI of Appendix B in accordance with SRP Section 17.5, the NRC staff is unable to find that this section complies with the requirements of Appendix B and the guidance in SRP Section 17.5.

3.1.12 Control of Measuring and Test Equipment

The CFPP QAPD TR does not address Criterion XII of Appendix B because it is not within the scope of the CFPP QAPD TR, Revision 3. Specifically, the CFPP QAPD TR does not describe the necessary measures and governing procedures to control the calibration, maintenance, and use of measuring and test equipment that provides data to verify that acceptance criteria are met or information important to safe plant operation.

The CFPP QAPD TR states that prior to initiating activities required by this criterion of Appendix B, CFPP will establish the necessary measures and governing procedures to control the calibration, maintenance, and use of measuring and test equipment that provides data to verify that acceptance criteria are met or information important to safe plant operation.

The NRC staff notes that the CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 12, without further clarifications or exceptions. Nonetheless, because CFPP did not provide a sufficient description to address Criterion XII of Appendix B in accordance with SRP Section 17.5, the NRC staff is unable to find that this section complies with the requirements of Appendix B and the guidance in SRP Section 17.5.

3.1.13 Handling, Storage, and Shipping

The CFPP QAPD TR does not address Criterion XIII of Appendix B because it is not within the scope of the CFPP QAPD TR, Revision 3. Specifically, the CFPP QAPD TR does not describe the necessary measures and governing procedures to control the handling, storage, packaging, shipping, cleaning, and preservation of items to prevent inadvertent damage or loss, and to minimize deterioration.

The CFPP QAPD TR states that prior to initiating activities required by this criterion of Appendix B, CFPP will establish the necessary measures and governing procedures to control the handling, storage, packaging, shipping, cleaning, and preservation of items to prevent inadvertent damage or loss, and to minimize deterioration.

The NRC staff notes that the CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 13, without further clarifications or exceptions. Nonetheless, because CFPP did not provide a sufficient description to address Criterion XIII of Appendix B in accordance with SRP Section 17.5, the NRC staff is unable to find that this section complies with the requirements of Appendix B and the guidance in SRP Section 17.5.

3.1.14 Inspection, Test, and Operating Status

The CFPP QAPD TR does not address Criterion XIV of Appendix B because it is not within the scope of the CFPP QAPD TR, Revision 3. Specifically, the CFPP QAPD TR does not describe the necessary measures and governing procedures to identify the inspection, test, and operating status of items and components subject to the provisions of the CFPP QAPD TR to maintain personnel and reactor safety and avoid inadvertent operation of equipment.

The CFPP QAPD TR states that prior to initiating activities required by this criterion of Appendix B, CFPP will establish the necessary measures and governing procedures to identify the inspection, test, and operating status of items and components subject to the provisions of

the QAPD to maintain personnel and reactor safety and avoid inadvertent operation of equipment.

The NRC staff notes that the CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 14, without further clarifications or exceptions. Nonetheless, because CFPP did not provide a sufficient description to address Criterion XIV of Appendix B in accordance with SRP Section 17.5, the NRC staff is unable to find that this section complies with the requirements of Appendix B and the guidance in SRP Section 17.5.

3.1.15 Nonconforming Materials, Parts, or Components

The CFPP QAPD TR does not address Criterion XV of Appendix B because it is not within the scope of the CFPP QAPD TR, Revision 3. Specifically, the CFPP QAPD TR does not describe the necessary measures and governing procedures to control materials, parts, or components, including services that do not conform to specified requirements to prevent inadvertent installation or use.

The CFPP QAPD TR states that prior to initiating activities required by this criterion of Appendix B, CFPP will establish the necessary measures and governing procedures to control items, including services that do not conform to specified requirements to prevent inadvertent installation or use.

The NRC staff notes that the CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 15, without further clarifications or exceptions. Nonetheless, because CFPP did not provide a sufficient description to address Criterion XV of Appendix B in accordance with SRP Section 17.5, the NRC staff is unable to find that this section complies with the requirements of Appendix B and the guidance in SRP Section 17.5.

3.1.16 Corrective Action

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.P, for establishing the necessary measures and governing procedures to promptly identify, control, document, classify, and correct conditions adverse to quality. The CFPP QAPD TR provides for procedures to ensure that corrective actions are documented and initiated following the determination of conditions adverse to quality in accordance with regulatory requirements and applicable quality standards.

The CFPP QAPD TR also, in Section 16, “Corrective Actions,” states that personnel are required to identify known conditions adverse to quality. The CFPP QAPD TR also states that reports of conditions adverse to quality are analyzed to identify trends. Significant conditions adverse to quality and significant adverse trends are documented and reported to responsible management. In the case of a significant condition adverse to quality, the cause is determined and actions to preclude recurrence are taken. In the case of suppliers or contractors working on safety-related activities, or other similar situations, CFPP may delegate specific responsibilities for corrective actions, but CFPP maintains overall responsibility for the effectiveness of corrective action measures and the corrective action program. CFPP has procedures to implement a program to identify, evaluate and report defects and non-compliances.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 16, without further clarifications or exceptions. The NRC staff finds that the description of CFPP's Corrective Action description complies with the requirements of Criterion XVI of Appendix B, and, therefore, is acceptable.

3.1.17 Quality Assurance Records

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.Q, for establishing the necessary measures to ensure that sufficient records of items and activities affecting quality are developed, reviewed, approved, issued, used, and revised to reflect completed work. The provisions of such procedures establish the scope of the records retention program for CFPP and include requirements for records administration including receipt, preservation, retention, storage, safekeeping, retrieval, access controls, user privileges, and final disposition.

The CFPP QAPD TR establishes measures to ensure that sufficient records of completed items and activities affecting quality are appropriately stored. The records and retention times are based on Regulatory Position C.1 of RG 1.28, Revision 4, and NQA-1-2008, and NQA-1a-2009 Addenda, Part III, Subpart 3.1 for Non-mandatory Appendix 17A-1, Section 200, as applicable for the CFPP QAPD TR. In all cases where state, local, or other agencies have more restrictive requirements for record retention, the CFPP QAPD TR provides that those more restrictive requirements will be met.

When using electronic records storage and retrieval systems, the CFPP QAPD TR provides for compliance with the NRC guidance contained in NRC Generic Letter 88-18, "Plant Record Storage on Optical Disks," (Reference 8), Regulatory Issue Summary (RIS) 2000-18, "Guidance on Managing Quality Assurance Records in Electronic Media," (Reference 9), and the associated Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guidelines (TG), including TG 11-1998, "Authentication of Records and Media," TG 15-1998, "Management of Electronic Records," TG 16-1998, "Software Configuration Management and Quality Assurance," and TG 21-1998, "Electronic Records Protection and Restoration."

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 17, NQA-1a-2009 Addenda, Part III, Subpart 3.1, and RG 1.28, Revision 4 without further clarifications or exceptions. The NRC staff finds that the description of CFPP's QA Records complies with the requirements of Criterion XVII of Appendix B and, therefore, is acceptable.

3.1.18 Audits

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.R, for establishing the necessary measures and governing procedures to implement audits to verify that activities covered by the QAP are performed in conformance with the requirements established. The audit programs are also themselves reviewed for effectiveness as part of the overall CFPP audit process.

The CFPP QAPD TR provides for conducting periodic internal and external audits/surveys. Internal audits are conducted to determine the adequacy of program and procedures, as well as to determine if they are meaningful and comply with the overall CFPP QAP. Internal audits are performed with a frequency commensurate with the safety significance of the activity. Internal audits of all applicable QA program elements should be completed for each function

area at least once each year or at least once during the life of the activity, whichever is shorter.

External audits determine the adequacy of supplier or contractor QAPs and additional controls for external audits are described in CFPP QAPD TR Part II, Section 7.2.

The scope of the audits is determined by the quality status and safety importance of the activities being performed. These audits are conducted by trained personnel not having direct responsibility in the area being audited and in accordance with preplanned and approved audit plans or checklists, under the direction of a qualified lead auditor and the cognizance of the CFPP QA manager.

The CFPP QAPD TR provides for all audit results to be documented and reviewed by responsible management. Management responds to all audit findings and initiates corrective actions where indicated. In addition, where corrective action measures are determined necessary, documented follow-up of applicable areas through inspections, review, re-audits, or other appropriate means, is conducted to verify the implementation and effectiveness of the assigned corrective actions.

The CFPP QAPD TR commits to implement the quality standards described in NQA-1-2008, Requirement 18, and the regulatory positions in RG 1.28, Revision 4, without further clarifications or exceptions. The NRC staff finds that the description of the CFPP's audits complies with the requirements of Criterion XVIII of Appendix B and, therefore, is acceptable.

3.2 Nonsafety-Related SSC Quality Control

3.2.1 Nonsafety-Related SSCs - Significant Contributors to Plant Safety

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.U.1, for establishing specific program controls to be applied to nonsafety-related SSCs that are significant contributors to plant safety, but for which the requirements of Appendix B are not applicable.

The CFPP QAPD TR applies specific controls to such items in a selected manner, targeted toward those characteristics or critical attributes that render the SSC a significant contributor to plant safety, consistent with applicable sections of the CFPP QAP.

The NRC staff has determined that this approach, as described in the CFPP QAPD TR, is acceptable to maintain alignment with SRP Section 17.5, Paragraph II.U.1.

3.2.2 Nonsafety-Related SSCs Credited for Regulated Events

In establishing the quality requirements for nonsafety-related SSCs credited for regulated events, the CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.U.2, and CFPP commits to implement the following regulatory guidance:

- The quality requirements for the fire protection system in accordance with Regulatory Position 1.7, "Quality Assurance," in RG 1.189, Revision 3, "Fire Protection for Nuclear Power Plants," (Reference 10), dated February 2018.

- The quality requirements for anticipated transient without scram (ATWS) equipment in accordance with NRC Generic Letter 85-06, “Quality Assurance Guidance for ATWS Equipment That Is Not Safety Related,” (Reference 11), dated January 16, 1985.

- The quality requirements for station blackout (SBO) equipment in accordance with Regulatory Position 3.5, “Quality Assurance and Specific Guidance for SBO Equipment That Is Not Safety Related,” and Appendix A, “Quality Assurance Guidance for Non-Safety Systems and Equipment,” in RG 1.155, “Station Blackout,” (Reference 12), dated August 1988.

The NRC staff has determined that this approach, as described in the CFPP QAPD TR, is acceptable to maintain alignment with SRP Section 17.5, Paragraph II.U.2.

3.3 Regulatory Commitments

The CFPP QAPD TR follows the guidance of SRP Section 17.5, Paragraph II.V, for establishing QA program commitments. Furthermore, the CFPP QAPD TR commits to comply with the following NRC RGs and other QA standards to supplement and support the QAP:

- RG 1.26, Revision 6, “Quality Group Classification and Standards for Water, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants,” (Reference 13), dated December 2021. RG 1.26 defines classification of systems and components.

- RG 1.28, Revision 4, “Quality Assurance Program Requirements (Design and Construction),” dated June 2010. RG 1.28 describes a method acceptable to the NRC staff for complying with the provisions of Appendix B regarding establishing and implementing the requisite QA program for the design of nuclear power plants.

- RG 1.29, Revision 6, “Seismic Design Classification,” (Reference 14), dated July 2021. RG 1.29 defines systems required to withstand a safe shutdown earthquake.

- RG 1.234, Revision 0, “Evaluating Deviations and Reporting Defects and Noncompliance Under 10 CFR Part 21,” (Reference 15), dated April 2018. RG 1.234 describes methods that the NRC staff considers acceptable for complying with the provisions of 10 CFR Part 21, “Reporting of Defects and Noncompliance.”

- ASME NQA-1-2008, and NQA-1a-2009 Addenda, “Quality Assurance Requirements for Nuclear Facility Applications,” Part I, Part II Subparts 2.7, 2.14, and 2.20, Part III Subpart 3.1 as described above in Sections 3.1.1 through 3.1.18 of this safety evaluation (SE).

- Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guides, as described in Section 3.1.17 of this SE.

The NRC staff has determined that this approach, as described in the CFPP QAPD TR, is acceptable to maintain alignment with SRP Section 17.5, Paragraph II.V.

4.0 CONCLUSION

The NRC staff concludes that the limited scope CFPP QAPD TR provides information that is sufficient to demonstrate compliance with Criteria I - VII, and XVI - XVIII, in Appendix B. The CFPP QAPD TR does not address Criteria VIII - XV in Appendix B.

The NRC staff finds that the limited scope CFPP QAPD TR follows NRC guidance contained within, and conforms to the format of, SRP Section 17.5 with regard to the activities and regulatory requirements that are explicitly addressed within the scope of the CFPP QAPD TR, i.e., Criteria I - VII and XVI - XVIII of Appendix B. The NRC staff used the acceptance criteria of SRP Section 17.5 as the basis for evaluating the acceptability of the CFPP QAPD TR in conformance with the provisions of 10 CFR 52.79(a)(25) and Appendix B. Based on its review of the CFPP QAPD TR, and to the limited extent set forth above, the NRC staff concludes that:

- The NRC staff-approved portions of the CFPP QAPD TR adequately describe the authority and responsibility of management and supervisory personnel, performance and verification personnel, and self-assessment personnel, in relation to activities to which the CFPP QAP is applicable.

- The NRC staff-approved portions of the CFPP QAPD TR adequately provide for organizations and personnel to perform verification and self-assessment functions related to CFPP activities that affect the quality of safety-related nuclear plant SSCs, as well as select non-safety-related SSCs, with these organizations and personnel having the authority and independence to conduct activities without undue influence from those directly responsible for costs and schedules.

- The NRC staff-approved portions of the CFPP QAPD TR adequately address activities and items that are important to safety.

- The limited scope CFPP QAPD TR, to the limited extent approved in this SE, adequately establishes controls that, when properly implemented, comply with the related limited scope requirements of 10 CFR Part 52, Appendix B, and 10 CFR Part 21, consistent with the criteria contained in SRP Section 17.5, as well as the relevant regulatory guidance.

- The limited scope CFPP QAPD TR does not address operations and as a result does not address RG 1.33 or make commitments to RG 1.33; therefore, the limited scope CFPP QAPD does not adequately address the guidance in RG 1.33.

- The limited scope QAPD TR does not address Criteria VIII - XV of Appendix B, and therefore, a finding of adequacy with respect to those criteria is not made in this safety evaluation.

Further, the NRC staff finds that CFPP can apply the limited scope QAPD TR to certain equipment and activities that are not safety-related, but support safe plant operations, or where other NRC guidance establishes program requirements.

Based on its review, the NRC staff has determined that the CFPP QAPD TR, Revision 3, adequately describes the limited scope CFPP QAPD with respect to Criteria I - VII and

XVI - XVIII of Appendix B, as set forth above. Accordingly, the NRC staff concludes that, to the extent set forth above, the limited scope CFPP QAPD TR complies with applicable NRC regulations and industry standards and can be used by CFPP for activities that support CFPP applications for a COLA and/or a limited work authorization, to the extent set forth herein.

5.0 LIMITATIONS AND CONDITIONS

This TR is specific to activities performed by or for CFPP. Any application that references the approved revision (or "-A" version) of the TR, TR-121172-NP, "Carbon Free Power Project (CFPP) Quality Assurance Program Description," shall include a description in its QAPD that meets Criteria VIII to XVIII of Appendix B to 10 CFR Part 50 and associated regulatory requirements.

5.0 REFERENCES

1. Letter from John Volkoff, NuScale Power, LLC, to the NRC Document Control Desk, "NuScale Power, LLC Submittal of Topical Report TR-121172, Revision 0, on behalf of CFPP, LLC for "Carbon Free Power Project (CFPP) Nuclear Quality Assurance Program Description," Revision 002 dated July 26, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22207A859)

2. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 17.5, "Quality Assurance Program Description - Design Certification, Early Site Permit and New License Applicants," dated August 2015 (ADAMS Accession No. ML15037A441)

3. Letter from John Volkoff, NuScale Power, LLC, to the NRC Document Control Desk, "NuScale Power, LLC Submittal of Topical Report TR-121172, Revision 1, on behalf of CFPP, LLC for the "Carbon Free Power Project (CFPP) Nuclear Quality Assurance Program Description," Revision 003 dated September 22, 2022 (ADAMS Accession No. ML22265A184)

4. Letter from John Volkoff, NuScale Power, LLC, to the NRC Document Control Desk, "NuScale Power, LLC Submittal of Topical Report TR-121172, Revision 2, on behalf of CFPP, LLC for the "Carbon Free Power Project (CFPP) Nuclear Quality Assurance Program Description," Revision 004 dated November 17, 2022 (ADAMS Accession No. ML22321A029)

5. American Society of Mechanical Engineers (ASME) NQA-1-2008, "Quality Assurance Program Requirements for Nuclear Facilities Applications," dated March 14, 2008

6. American Society of Mechanical Engineers (ASME) NQA-1a-2009, "Addenda to ASME NQA-1-2008, Quality Assurance Program Requirements for Nuclear Facilities Applications," dated August 11, 2009

7. RG 1.28, Revision 4, "Quality Assurance Program Criteria (Design and Construction)," dated June 2010 (ADAMS Accession No. ML100160003)

8. NRC Generic Letter 1988-18, "Plant Record Storage on Optical Disks," dated October 20, 1988

9. Regulatory Issue Summary 2000-18, "Guidance on Managing Quality Assurance Records in Electronic Media," dated October 23, 2000 (ADAMS Accession No. ML003739359)

10. RG 1.189, Revision 3, "Fire Protection for Nuclear Power Plants," dated February 2018 (ADAMS Accession No. ML17340A875)

11. NRC Generic Letter 1985-06, "Quality Assurance Guidance for ATWS Equipment That Is Not Safety Related," dated January 16, 1985

12. RG 1.155, "Station Blackout," dated August 1988 (ADAMS Accession No. ML003740034)

13. RG 1.26, Revision 6, “Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants,” dated December 2021 (ADAMS Accession No. ML21232A142)

14. RG 1.29, Revision 6, “Seismic Design Classification for Nuclear Power Plants,” dated July 2021 (ADAMS Accession No. ML21155A003)

15. RG 1.234, Revision 0, “Evaluating Deviations and Reporting Defects and Noncompliance Under 10 CFR Part 21,” dated April 2018 (ADAMS Accession No. ML17338A072)

16. Letter from John Volkoff, NuScale Power, LLC, to the NRC Document Control Desk, “NuScale Power, LLC Submittal of Topical Report TR-121172, Revision 3, on behalf of CFPP, LLC for the “Carbon Free Power Project (CFPP) Nuclear Quality Assurance Program Description,” Revision 005, dated February 13, 2023, (ADAMS Accession No. ML23044A588)

17. Letter from Mahesh Chawla, USNRC, to Fadi Diya, Ameren Missouri, “CALLAWAY PLANT, UNIT NO. 1 – OPERATING QUALITY ASSURANCE MANUAL CHANGE REVISION 34b (EPID L-2020-LLQ-0004 [COVID-19]),” dated August 6, 2020, (ADAMS Accession No. ML20216A681)