17. QUALITY ASSURANCE

17.5 Quality Assurance Program Description - Design Certification, Early Site Permit and New License Applicants

17.5.1 Introduction

In a letter to the U.S. Nuclear Regulatory Commission (NRC) dated May 12, 2016 (TVA, 2016 - Agencywide Documents Access and Management System (ADAMS) Accession No. ML16139A752), Tennessee Valley Authority (TVA) submitted an application for an early site permit (ESP) at the Clinch River Nuclear (CRN) Site in accordance with the requirements contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications and Approvals for the Nuclear Power Plants." The application was composed of several documents, including Part 8, "Enclosures." The enclosures included the TVA Nuclear Quality Assurance Plan (NQAP), Revision 32. The NRC staff reviewed and evaluated TVA's NQAP in accordance with the requirements of 10 CFR 52.17(a)(1)(xi) and (xii); Appendix B to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

17.5.2 Summary of Application

TVA ESP Site Safety Analysis Report (SSAR), Revision 1 (TVA, 2017 - ADAMS Accession No. ML18003A374), Section 17.5, "Quality Assurance Program Description – Design Certification, Early Site Permit and New License Applicants" stated the NQAP was implemented during the development of the ESPA. The NQAP, Revision 32, is a top-level policy document that defines the quality assurance policy and assigns major functional responsibilities. The NQAP controls TVA activities which affect the quality of safety-related structures, systems, and components (SSCs) of the proposed small modular reactors (SMRs) at CRN. The NQAP applies to safety-related SSCs as well as to selected elements of non-safety-related SSCs that are important to plant safety. The NQAP is included in Part 8 of the ESP application (ESPA).

The TVA NQAP references TVA nuclear personnel and organizations performing activities that affect quality-related SSCs at TVA's nuclear plants and independent spent fuel storage installations. The NQAP is formatted in such a manner to identify documents in the Nuclear Procedure System that were developed to implement the requirements.

During the course of the application review, the NRC staff issued one request for additional information (RAI) comprising eight questions, dated March 9, 2018 (NRC, 2018 - ADAMS Accession No. ML18096B685). By letter dated April 9, 2018, the applicant responded to the staff's questions (TVA, 2018 - ADAMS Accession No. ML18100A916). Following an April 16 - 20, 2018 quality assurance inspection, which is a standard aspect of NRC's ESP review process, TVA issued NQAP, Revision 36 (TVA, 2018 - ADAMS Accession No. ML18129A317), on May 8, 2018. The NRC staff used this version of the NQAP as the basis for its review of the QAP for the Clinch River ESPA.

17.5.3 Regulatory Basis

Title 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," establishes the NRC quality assurance (QA) requirements for the design, fabrication, construction, and testing of the facility SSCs. These requirements apply to all activities affecting the safety-related functions of those SSCs. This includes, but is not

limited to, designing, procuring, handling, testing, siting, inspecting, storing, training, and shipping.

The technical information requirements for ESP applications are in 10 CFR 52.17, “Contents of Applications; Technical Information.” 10 CFR 52.17(a)(1)(xi) requires that ESP applications provide a description of the QAP applied to site-related activities for the future design, fabrication, construction, and testing of the SSCs of a facility or facilities that may be constructed on the site.

10 CFR Part 52.17(a)(1)(xii), “Licenses, Certifications and Approvals for the Nuclear Power Plants,” requires that applications for ESPs include an evaluation of the site against the applicable sections of the standard review plan (SRP) that are in effect 6 months prior to the docket date of the application.

17.5.4 Technical Evaluation

The staff used SRP Section 17.5, “Quality Assurance Program Description – Design Certification, Early Site Permit and New License Applicants,” of NUREG–0800, “Standard Review Plan for the Review of Safety Analysis Report for Nuclear Power Plants (LWR Edition),” Revision 1, dated August 2015 (NRC, 2015 - ADAMS Accession No. ML15037A441), to evaluate the applicant’s QAP. As part of the guidance in SRP Section 17.5, the staff used the American Society of Mechanical Engineers (ASME) Nuclear Quality Assurance (NQA) Standard NQA-1-2008 and NQA-1a-2009 Addenda, “Quality Assurance Program Requirements for Nuclear Facility Applications,” as supplemented by other regulatory and industry guidance for nuclear operating facilities.

TVA submitted its application for an ESP in accordance with the requirements of 10 CFR Part 52. TVA stated in the application that the site suitability QAP for the Clinch River ESP is carried out in accordance with TVA’s NQAP which commits to Regulatory Guide (RG) 1.28, “Quality Assurance Program Criteria (Design and Construction),” Revision 3 (which endorses NQA-1-1983). Guidance in the latest revision (Revision 1) of SRP Section 17.5, is aligned with RG 1.28, Revision 4 (NRC 2010 - ADAMS Accession No. ML100160003), and ASME NQA-1-2008/2009a. Revision 1 of SRP Section 17.5, which is aligned with RG 1.28, Revision 4, was in effect more than six months prior to submittal of the ESPA, and it extends the scope of the NRC’s endorsement to include Part II of ASME NQA-1. Part II contains amplifying QA criteria for certain site-specific work activities occurring at various stages of a facility’s life. These work activities include, but are not limited to, management, planning, site investigation, design, computer software use, commercial-grade dedication, procurement, fabrication, installation, inspection, and testing.

The staff conducted a QA implementation inspection of TVA’s ESP activities for a proposed SMR at the CRN Site, from April 16 through April 20, 2018. The inspection was complementary to the staff’s safety review of the SSAR QAP programmatic description, as the inspection evaluated the implementation (verses description) of TVA’s QAP for the CRN Site ESP application. The areas inspected included 10 CFR Part 21, corrective actions, QA records, QAP, internal audits, QA organization, design control, procurement document control, control of purchased material, equipment, and services, and external audits. As described in Inspection Report 05200047/2018-201 (NRC, 2018 – ADAMS Accession No. ML18143B478), no findings of significance were identified during the inspection.

17.5.4.1 Organization

The staff reviewed the applicant's NQAP against Criterion I, "Organization" of 10 CFR Part 50, Appendix B and guidance of SRP Section 17.5, Paragraph II.A. Upon the staff's initial review, the NQAP did not meet organizational QA requirements and acceptance criteria described above in Section 17.5.4. For this reason, the staff issued eRAI-8798 (RAI no. 12) (NRC, 2018 - ADAMS Accession No. ML18096B685)**,** Questions 17.5-01, 17.5-02, and 17.5-03, requesting the applicant to provide a gap analysis and discuss how their QAP addresses differences between RG 1.28, Revision 3 and Revision 4. In addition, the staff requested that the applicant address the applicability of 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," to the NQAP because the NQAP did not reference 10 CFR Part 52 nor provide an indication the NQAP commits to 10 CFR Part 52 requirements. The staff was concerned with organizational elements under the cognizance of the QAP specifically for the SMR activities described in the ESP application. The applicant did not address the authority and duties of persons and organizations associated with Section 4.1.8 "Small Modular Reactor," and the organization chart of Appendix I in NQAP, Revision 32.

The applicant responded in the April 9, 2018 letter (TVA, 2018 - ADAMS Accession No. ML18100A916) that it would revise the NQAP to address several gaps in the QA requirements between 10 CFR Part 52 and the applicant's submitted NQAP. Also, the applicant proposed additional alternatives to address the gaps between RG 1.28, Revisions 3 and 4.

After reviewing TVA's responses to eRAI-8798 (RAI no. 12), Questions 17.5-01, 17.5-02, 17.5-03 and NQAP, Revision 36, the staff determined the applicant addressed the QA requirements in Criterion I of 10 CFR Part 50, Appendix B. NQAP, Revision 36, clarifies and describes the organizational elements for the CRN Site. In addition, the staff determined the applicant addressed organizational elements associated with SMR activities, implementing procedures, and management at Clinch River. The applicant added Appendices K, L, and M to the NQAP to address gaps between RG 1.28, Revisions 3 and 4. Appendix K identified site specific organization information. Appendix K and L identified SMR roles and responsibilities at the CRN Site. Appendix M identified TVA commitments for the CRN Site and clarification for the ESP QAP. Appendices K, L, and M also addressed the applicability of 10 CFR Part 52. The staff noted the NQAP provided an organizational description that includes an organizational structure, functional responsibilities, levels of authority, and interfaces to establish, execute, and verify NQAP implementation. The applicant also identified and described major delegation of work involved in establishing and implementing the QAP or any part thereof to other organizations. The staff compared the applicant's responses and revised NQAP, Revision 36 to RG 1.28, Revision 4, and determined that the added appendices adequately addressed the questions in the eRAI-8798 (RAI no. 12), Questions 17.5-01, 17.5-02, 17.5-03.

Based on the above, the staff finds the applicant's QAP meets Criterion I of 10 CFR Part 50, Appendix B.

17.5.4.2 Quality Assurance Program

The staff reviewed the applicant's NQAP against Criterion II, "Quality Assurance Program" of 10 CFR Part 50, Appendix B using the guidance of SRP Section 17.5, Paragraph II.B. Upon the staff's initial review, the NQAP did not specify how the independent assessment of the CRN Site would be implemented. For this reason, the staff issued eRAI-8798 (RAI no.12), Question 17.5-04, requesting the applicant to clarify how TVA's NQAP ensures effective implementation of the SMR Project QAP objective assessment at the CRN Site.

The applicant responded by letter on April 9, 2018 (TVA, 2018 - ADAMS Accession No. ML18100A916), that the QAP is regularly reviewed and commits to RG 1.28, Revision 3 and ANSI N45.2-1971, which states, in part, "the program shall provide for the regular review, by management of organizations participating in the program, of the status and adequacy of that part of the quality assurance program for which they have designated responsibility." In addition, the applicant would revise the NQAP to clarify the applicability of independent assessments to the CRN Site and ensure effective implementation at least once each year.

After reviewing TVA's response to eRAI-8798 (RAI no. 12), Question 17.5-04 and NQAP, Revision 36, the staff determined the applicant addressed the independent assessment of the SMR Project QAP for the CRN Site. The staff also noted the NQAP required written policies, procedures and instructions to be documented, adequate indoctrination and training of personnel performing activities, and regular management review of the QAP to assess the effectiveness and the adequacy of the scope and implementation of NQAP, Revision 36. Based on the above, the staff finds the applicant's QAP meets Criterion II of 10 CFR Part 50, Appendix B.

17.5.4.3 Design Control

The staff noted the applicant's NQAP meets Criterion III, "Design Control" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.C. The NQAP design process includes provisions to control design inputs, outputs, changes, interfaces, records, and organizational interfaces with the applicant and its suppliers. These provisions ensure the design inputs (e.g., design bases and the performance, regulatory, quality, and quality verification requirements) are correctly translated into design outputs (e.g., analyses, specifications, drawings, procedures, and instructions).

Based on the above, the staff finds the applicant's QAP meets Criterion III of 10 CFR Part 50, Appendix B.

17.5.4.4 Procurement Document Control

The staff noted the applicant's NQAP meets Criterion IV, "Procurement Document Control" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.D, for ensuring that procurement documents include or reference applicable regulatory, technical, and QAP requirements. These requirements (such as specifications, codes, standards, tests, inspections, special processes, and 10 CFR Part 21, "Reporting of Defects and Noncompliance") are invoked for procurement of items and services.

Based on the above, the staff finds the applicant's QAP meets Criterion IV of 10 CFR Part 50, Appendix B.

17.5.4.5 Instructions, Procedures and Drawings

The staff noted the applicant's NQAP meets Criterion V, "Instruction, Procedure, and Drawings" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.E, to establish the necessary measures and governing procedures to ensure that activities affecting quality are prescribed by, and performed in accordance with, documented instructions, procedures, and drawings. The staff also noted provisions for instructions, procedures, and drawings included appropriate acceptance criteria for determining that important activities have been satisfactorily accomplished.

Based on the above, the staff finds the applicant's QAP meets Criterion V of 10 CFR Part 50, Appendix B.

17.5.4.6 Document Control

The staff noted the applicant's NQAP meets Criterion VI, "Document Control" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.F, to control the preparation, review, approval, issuance, and changes of documents that specify quality requirements or prescribe measures for controlling activities that affect quality, including organizational interfaces. The NQAP provides measures to ensure that the same organization that performed the original review and approval also reviews and approves changes, unless other organizations are specifically designated.

Based on the above, the staff finds the applicant's QAP meets Criterion VI of 10 CFR Part 50, Appendix B.

17.5.4.7 Control of Purchased Material, Equipment, and Services

The staff reviewed the applicant's NQAP against Criterion VII, "Control of Purchased Material, Equipment, and Services," of 10 CFR Part 50, Appendix B using the guidance of SRP Section 17.5, Paragraph II.G. Upon the staff's initial review, the applicant's NQAP did not ensure 1) ILAC (International Laboratory Accreditation Cooperation) accreditation was a documented process, 2) the acceptance process was for commercial grade surveys instead of audits, and 3) at receipt inspection, there is objective evidence to validate the accreditation and the laboratory has certified that it provided the service in accordance with its accredited ISO/IEC 17025:2005 program. For this reason, the staff issued eRAI-8798 (RAI no. 12), Question 17.5-06, requesting the applicant clarify how conditions in NEI 14-05, "Guidelines for the use of Accreditation in lieu of Commercial Grade Surveys for Procurement of Laboratory Calibration and Test Services," (NRC, 2015 - ADAMS Accession No. ML14322A535) were addressed.

The applicant responded by letter on April 9, 2018 (TVA, 2018 - ADAMS Accession No. ML18100A916), and noted the NQAP would be revised to ensure performance of a documented review of the supplier's accreditation, replace the term "audit" with the term "survey" to be consistent with the guidance provided in NEI 14-05, and require that validation be performed at receipt inspection.

After reviewing the response to eRAI-8798 (RAI no. 12), Question 17.5-06 and NQAP, Revision 36, the staff determined the applicant has adequately addressed the conditions for using the ILAC accreditation in the NQAP.

Based on the above, the staff finds the applicant's QAP meets Criterion VII of 10 CFR Part 50, Appendix B.

17.5.4.8 Identification and Control of Materials, Parts, and Components

The staff noted that the applicant's NQAP meets Criterion VIII, "Identification and Control of Materials, Parts, and Components" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.H, for establishing the necessary measures for the identification and control of items such as materials (including consumables and items with limited shelf life), parts, components, and partially fabricated subassemblies. The identification of items is maintained throughout fabrication, erection, installation, and use so the item can be traced to its documentation.

Based on the above, the staff finds the applicant's QAP meets Criterion VIII of 10 CFR Part 50, Appendix B.

17.5.4.9 Control of Special Processes

Special processes (e.g., welding, heat treating, chemical cleaning, and nondestructive examinations) in accordance with Criterion IX, "Control of Special Processes" of 10 CFR Part 50, Appendix B and SRP Section 17.5, Paragraph II.I is not applicable to ESP activities. Control of Special Processes will be addressed in the combined license application (COLA). As such, this element was not reviewed or approved by the NRC staff.

17.5.4.10 Inspection

The staff noted the applicant's NQAP meets Criterion X, "Inspection" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.J, to ensure that items, services, and activities that affect safety meet requirements and conform to specifications, instructions, procedures, and design documents. The inspection program establishes requirements for planning inspections, determining applicable acceptance criteria, setting the frequency of inspection, and identifying special tools needed to perform the inspection. Inspectors are properly qualified personnel and independent of those who performed or directly supervised the work.

Based on the above, the staff finds the applicant's QAP meets Criterion X of 10 CFR Part 50, Appendix B.

17.5.4.11 Test Control

The staff noted the applicant's NQAP meets Criterion XI, "Test Control" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.K, to demonstrate that items subject to the provisions of the NQAP will perform satisfactorily in service, the plant can be operated safely as designed, and the operation of the plant, as a whole, is satisfactory.

Based on the above, the staff finds the applicant's QAP meets Criterion XI of 10 CFR Part 50, Appendix B.

17.5.4.12 Control of Measuring and Test Equipment

The staff noted the applicant's NQAP meets Criterion XII, "Control of Measuring and Test Equipment," of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.L, for controlling the calibration, maintenance, and use of measuring and test equipment that provides safety information.

Based on the above, the staff finds the applicant's QAP meets Criterion XII of 10 CFR Part 50, Appendix B.

17.5.4.13 Handling, Storage and Shipping

The staff noted the applicant's NQAP meets Criterion XIII, "Handling, Storage and Shipping" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.M, for controlling the handling, storage, packaging, shipping, cleaning, and preserving of items to prevent inadvertent damage or loss and to minimize deterioration.

Based on the above, the staff finds the applicant's QAP meets Criterion XIII of 10 CFR Part 50, Appendix B.

17.5.4.14 Inspection, Test, and Operating Status

Criterion XIV, "Inspection, Test, and Operating Status," of 10 CFR Part 50, Appendix B is not applicable to the Clinch River ESP application since they are not constructing a nuclear power plant, and therefore, they are not responsible to determine the operability of SSCs. Test and operating status will be addressed in the COLA. As such, this element was not reviewed or approved by the NRC staff.

17.5.4.15 Nonconforming Materials, Parts, or Components

The staff reviewed the applicant's NQAP against Criterion XV, "Nonconforming Materials, Parts, or Components" of 10 CFR Part 50, Appendix B and used the guidance of SRP Section 17.5, Paragraph II.O. Upon the staff's initial review, the NQAP did not ensure measures to notify affected organizations of nonconforming materials, parts or components. For this reason, the staff issued eRAI-8798 (RAI no. 12), Question 17.5-07, requesting the applicant clarify how the NQAP provides measures to notify affected organizations in regards to nonconforming items.

The applicant responded by letter on April 9, 2018 (ADAMS Accession No. ML18100A916), and stated the NQAP satisfies the notification of affected organizations in regards to nonconforming items in the NQAP Adverse Conditions section. The applicant indicated it commits to RG 1.28, Revision 3, and ANSI N45.2-1971, Section 16, which states, "measures shall include as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations."

After reviewing the applicant's response to eRAI-8798 (RAI no. 12), Question 17.5-07 and NQAP, Revision 36, the staff determined the applicant addressed measures to notify affected organizations of nonconforming items. The NQAP also controls items, including services that do not conform to specified requirements, to prevent inadvertent installation or use.

Based on the above, the staff finds the applicant's QAP meets Criterion XV of 10 CFR Part 50, Appendix B.

17.5.4.16 Corrective Action

The staff noted the applicant's NQAP meets Criterion XVI, "Corrective Action" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.P, to promptly identify, control, document, classify, and correct conditions adverse to quality. The NQAP requires personnel to identify conditions adverse to quality and find trends. Significant conditions adverse to quality are documented and reported to responsible management. In the case of suppliers working on safety-related activities or similar situations, the applicant or holder may delegate specific responsibility for the corrective action program, but the applicant or holder maintains responsibility for the program's effectiveness.

In addition, the staff noted the NQAP provides for establishing the necessary measures to implement a program to identify, evaluate, and report defects and non-compliances in accordance with the requirements of 10 CFR 50.55(e) and/or 10 CFR Part 21, as applicable.

Based on the above, the staff finds the applicant's QAP meets Criterion XVI of 10 CFR Part 50, Appendix B.

17.5.4.17 Quality Assurance Records

The staff reviewed the applicant's NQAP against Criterion XVII, "Quality Assurance Records" of 10 CFR Part 50, Appendix B and the guidance of SRP Section 17.5, Paragraph II.Q. Upon the staff's initial review, the NQAP did not identify the types of documents that should be included as QA records or demonstrate how the NQAP satisfies controls and measures for electronic records as described in Regulatory Issue Summary (RIS) 2000-18 (NRC, 2000 – ADAMS Accession No. ML003739359), "Guidance on Managing Quality Assurance Records in Electronic Media," and Nuclear Information and Records Management Association (NIRMA) (Technical Guides (TGs) 11, 15, 16, and 21). For this reason, the staff issued eRAI-8798 (RAI no. 12), Questions 17.5-08 and 17.5-09 requesting that the applicant identify the documents that are considered QA records and how the NQAP controls electronic quality records in accordance with RIS 2000-18 and NIRMA (TG-11,15,16, and 21).

The applicant responded to eRAI-8798 (RAI no. 12), Question 17.5-08 on April 9, 2018, and stated the NQAP would be revised to clarify the types of documents to be included as QA records and address the storage of QA records in electronic media. The revision would clarify that sufficient records would be maintained to furnish evidence of activities affecting quality, as related to the Clinch River ESPA, and complies with applicable ANSI N45.2.9-1974 requirements for ESP. The applicant added Appendix K, Section 5 to the NQAP to clarify records include, but are not limited to, geotechnical data, topographic and geological maps, plot plans showing locations of major structures and explorations, boring logs and logs of exploratory trenches and excavations, geologic profiles showing excavation limits of structures, geophysical data, photographs of soil samples and rock cores, field and final logs of all borings, program or design plan, qualified investigation procedures, procurement control records, personnel qualification records, measuring and test equipment control and calibration records, test records, and procedures.

The applicant also responded to eRAI-8798 (RAI no. 12), Question 17.5-09 on April 9, 2018, and stated the NQAP was being revised to address the storage of QA records in electronic media. With respect to electronic media, the revised NQAP would incorporate the requirements of ANSI/ANS-3.2-2012, Section 3.17.

After reviewing the responses to eRAI-8798 (RAI no. 12), Questions 17.5-01, 17.5-08 and 17.5-09, as well as the revised NQAP (Revision 36), the staff determined the applicant adequately addressed the QA records with respect to the types of quality documents and electronic media.

Based on the above, the staff finds the applicant's QAP meets Criterion XVII of 10 CFR Part 50, Appendix B.

17.5.4.18 Quality Assurance Audits

The staff noted that the applicant's NQAP meets Criterion XVIII, "Audits" of 10 CFR Part 50, Appendix B and addresses the acceptance criteria in SRP Section 17.5, Paragraph II.R. The NQAP provides for the applicant or holder to conduct periodic internal and external audits. Internal audits determine the adequacy of the program and its implementing procedures. Internal audits are performed with a frequency commensurate with safety significance. An audit of all applicable QAP elements is completed for each functional area within 2 years after the program is well established. External audits determine the adequacy of a supplier's or contractor's QAP. Audit results are documented and reviewed. Management responds to all audit findings and initiates corrective action. In addition, where corrective actions are indicated,

documented follow-up of applicable areas through inspections, review, re-audits, or other means is conducted to verify corrective action.

Based on the above, the staff finds the applicant's QAP meets Criterion XVIII of 10 CFR Part 50, Appendix B.

17.5.4.19 Non-Safety-Related SSC Quality Assurance Control

17.5.4.19.1 *Non-Safety-Related SSCs Important to Plant Safety*

The staff noted the guidance of SRP Section 17.5, Paragraph II.U, to establish specific program controls for non-safety-related SSCs that are important to plant safety does not apply to ESP applicants. Non-safety-related SSC QA control will be addressed in the COLA. As such, this element was not reviewed or approved by the NRC staff.

17.5.4.20 Regulatory Commitments

The staff reviewed the applicant's operational NQAP which commits to RG 1.28, Revision 3 (which endorses ANSI N.45.2-1971). Upon initial ESP review the staff determined the NQAP did not address the applicability, nor did it reference or provide an indication that the NQAP commits to 10 CFR Part 52 requirements; as stated above per Section 17.5.4. After reviewing the applicant's response to eRAI-8798 (RAI no. 12), Question 17.5-01, in addition to NQAP, Revision 36, the staff determined the applicant addressed QA requirements and acceptance criteria, as bulleted below. The applicant's RG conformance and alternatives are described in NQAP Appendix B, Tables 1 and 2. The NQAP addresses the acceptance criteria in SRP Section 17.5, Paragraph II.V, to establish QAP commitments. The NQAP commits to the following RGs and QA standards for ESP activities.

- The NQAP does not commit to RIS 2000-18. However, the NQAP commits to the requirements of ANSI/ANS-3.2.2012, Section 3.17, as an alternative to meet the intent of RIS 2000-18 and the associated NIRMA TGs: NIRMA TG 11-1998, NIRMA TG 15-1998, NIRMA TG 16-1998, and NIRMA TG 21-1998, as described in Section 17.5.4.17 of this report.

- RG 1.26, Revision 4, dated March 2007, "Quality Group Classification and Standards for Water, Steam, and Radioactive-Waste-Containing Components of Nuclear Power Plants."

- RG 1.28, Revision 4, June 2010, "Quality Assurance Program Criteria (Design and Construction)," describes a method acceptable to the NRC staff for complying with the provisions of 10 CFR Part 50, Appendix B, with regards to establishing and implementing the requisite QAP for the design and construction of nuclear power plants. The TVA NQAP commits to RG 1.28, Revision 3, but includes equivalent alternatives to address gaps between Revisions 3 and 4 of RG 1.28, as addressed in NQAP, Section 3.0, Appendix M for the CRN ESP QAP.

- RG 1.29, "Seismic Design Classification," Revision 5, dated July 2016, is committed to compliance in the TVA NQAP. Exceptions to this RG are addressed in SSAR Chapter 2, "Site Characteristics and Site Parameters."

- Appendix M of NQAP, Revision 36, commits to Generic Letter (GL) 89-02, "Actions to Improve the Detection of Counterfeit and Fraudulently Marketed Products," and GL 91-05, "Licensee Commercial-Grade Procurement and Dedication Programs."

- The following ANSI standards are committed to in the TVA NQAP, Revision 36, for compliance:

    - ANSI N45.2-1971, “Quality Assurance Program Requirements for Nuclear Power Plants”

    - ANSI N45.2.1-1973, “Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants”

    - ANSI N45.2.2-1972, “Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants (During Construction Phase)”

    - ANSI N45.2.3-1973, “Housekeeping during the Construction Phase of Nuclear Power Plants”

    - ANSI N45.2.4-1972, “Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations”

    - ANSI N45.2.5-1974, “Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants.”

    - ANSI N45.2.6-1978, “Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants”

    - ANSI N45.2.8-1975, “Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants”

    - ANSI N45.2.9-1974, “Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants”

    - ANSI N.45.2.10-1973, “Quality Assurance Terms and Definitions”

    - ANSI N.45.2.11-1974, “Quality Assurance Requirements for the Design of Nuclear Power Plants”

    - ANSI N.45.2.12-1977, “Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants”

    - ANSI N.45.2.13-1976, “Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants”

    - ANSI N45.2.15-1981, “Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants”

    - ANSI N45.2.20-1979, “Supplementary Quality Assurance Requirements for Subsurface Investigations for Nuclear Power Plants”

    - ANSI N45.2.23-1978, “Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants”

- ANSI N18.7-1976/ ANS-3.2, “Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants”

17.5.5 Conclusion

The staff used the provisions of 10 CFR Part 50, Appendix B, and the guidance of SRP Section 17.5 to evaluate the NQAP. The staff finds the following:

- The NQAP provides adequate guidance for an applicant to describe the authority and responsibility of management and supervisory personnel, performance and verification personnel, and self-assessment personnel.

- The NQAP gives adequate guidance for an applicant to provide for organizations and persons to perform verification and self-assessment functions with the authority and independence to conduct their activities without undue influence from those directly responsible for costs and schedules.

- The NQAP provides adequate guidance for an applicant to apply the NQAP to activities and items that are important to safety.

- The NQAP provides adequate guidance for establishing controls that, when properly implemented, comply with the requirements of 10 CFR Part 52, 10 CFR Part 50, Appendix B, 10 CFR Part 21, 10 CFR 50.55(e), with the acceptance criteria contained in SRP Section 17.5 and with the commitments to applicable regulatory guidance.

On the basis of the staff’s review of Chapter 17.5 of the CRN Site ESPA and NQAP, Revision 36, the staff concludes the applicant’s QAP description for the CRN Site ESPA meets the requirements of 10 CFR Part 50, Appendix B.