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Quality Assurance Program Description for the Appalachian Power
Small Modular Reactor Early Site Permit Activities

This letter transmits the subject topical report which provides the Appalachian Power (APCo) Nuclear Quality Assurance Program Description (QAPD) for the early site permit (ESP) activities affecting the quality and performance of safety-related structures, systems, and components, including, but not limited to siting and licensing. APCo is a fully owned subsidiary of American Electric Power Company, Inc. (AEP), and APCo is severally, not jointly liable with other subsidiaries of AEP for maintaining ultimate responsibility for the quality assurance program associated with the APCo ESP activities. This topical report is provided for U.S. Nuclear Regulatory Commission (NRC) review and approval and is expected to be referenced by future license applications by the APCo new nuclear program. The scope and schedule for submittal of this report was discussed in meetings with the NRC staff on December 13, 2024. APCo requests the review of the enclosed QAPD be completed commensurate with the NRC's normal review schedule of approximately one year.

Should you have any questions, please contact Mr. Timothy C. Siefer, Licensing Manager, at (269) 466-2573.

Sincerely,

Signed by:

A handwritten signature in blue ink that reads "Q. Shane Lies". The signature is written in a cursive, flowing style. Below the signature, the alphanumeric string "23B07F262EC9440..." is printed in a small, black font.

Q. Shane Lies
Executive Vice President, Projects and Services

BMC/sjh

Enclosure: Quality Assurance Program Description for the Appalachian Power Small Modular Reactor Early Site Permit Activities (Non-Proprietary)

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ENCLOSURE TO AEP-SMR-NRC-2025-001

Quality Assurance Program Description for the Appalachian Power
Small Modular Reactor Early Site Permit Activities (Non-Proprietary)

Appalachian Power

Quality Assurance Program Description for
Nuclear Quality Assurance Program

APCo ESP QAPD, Revision 0

January 2025

EXECUTIVE SUMMARY

This topical report details the Appalachian Power (APCo) Nuclear Quality Assurance Program Description (QAPD) for the early site permit (ESP) activities affecting the quality and performance of safety-related structures, systems, and components (SSC), including, but not limited to siting and licensing. Appalachian Power is a fully owned subsidiary of American Electric Power Company, Inc. (AEP), and APCo is severally, not jointly liable with other subsidiaries of AEP for maintaining ultimate responsibility for the quality assurance program associated with the APCo ESP activities. This QAPD contains information relevant to the project activities at this time and was developed in accordance with the requirements of Title 10, Part 50 of the Code of Federal Regulations (10 CFR 50), "Domestic Licensing of Production and Utilization Facilities," Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," and 10 CFR 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants". This QAPD commits to the requirements of American Society of Mechanical Engineers (ASME) NQA-1-2015 Edition "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, with specific reference to selected Part III appendices as identified in this QAPD, and Regulatory Guide (RG) 1.28, Revision 5, "Quality Assurance Program Criteria (Design and Construction)." This QAPD is based on the Nuclear Energy Institute (NEI) 11-04A, "Nuclear Generation Quality Assurance Program Description" template. As the NEI 11-04A template is based on ASME NQA-1-2008 Edition and NQA-1a-2009 Addenda, this QAPD has been updated to conform to requirements in NQA-1-2015.

Currently the Nuclear QA Program is not performing work activities pertaining to construction, testing, or operations of the plant. The scope of the current QAPD is such that all NQA-1-2015 requirements apply to only those sections that are applicable. For sections that are not yet within scope of the ESP, it is noted that they are still in conformance with applicable sections of NQA-1-2015 but are not yet implemented.

Appalachian Power
Nuclear Quality Assurance Program

POLICY STATEMENT

Appalachian Power Company (APCo) shall develop a licensing application in a manner that will ensure the health and safety of the public and workers, and protection of the environment. These activities shall be performed in compliance with the requirements of the Code of Federal Regulations (CFR), the applicable Nuclear Regulatory Commission (NRC) Facility Operating License(s) and applicable laws and regulations of the state and local governments.

The Nuclear QA Program is the Quality Assurance Program Description (QAPD) provided in this document and the associated implementing documents. Together they provide for control of APCo activities that affect the quality of safety-related nuclear plant structures, systems, and components (SSCs) and include all planned and systematic activities necessary to provide adequate confidence that such SSCs will perform satisfactorily in service. The QAPD may also be applied to certain equipment and activities that are not safety-related, but support safe plant operations, or where other NRC guidance establishes program requirements.

The QAPD is the top-level policy document that establishes the manner in which quality is to be achieved and presents APCo's overall philosophy regarding achievement and assurance of quality. Implementing documents assign more detailed responsibilities and requirements and define the organizational interfaces involved in conducting activities within the scope of the QAPD. Senior management establishes overall expectations for effective implementation of the quality assurance program and is responsible for obtaining the desired end result. Compliance with the QAPD and implementing documents is mandatory for personnel directly or indirectly associated with implementation of the Nuclear QA Program.

Signed by:



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Q. Shane Lies
Executive Vice President Projects and Services
January 28, 2025

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
A2LA	American Association for Laboratory Accreditation
ACLASS	ACLASS Accreditation Services
AEP	American Electric Power Company, Inc.
ANS	American Nuclear Society
APCo	Appalachian Power Company
ASME	American Society of Mechanical Engineers
CEO	Chief Executive Officer
CFR	Code of Federal Regulations
EPRI	Electric Power Research Institute
ESP	Early Site Permit
IAS	International Accreditation Service
IEC	International Electrotechnical Commission
ILAC	International Laboratory Accreditation Cooperation
ISO	International Organization for Standardization
L-A-B	Laboratory Accreditation Bureau
LAN	Local Area Network
MRA	Mutual Recognition Arrangement
M&TE	Measuring and Test Equipment
NEI	Nuclear Energy Institute
NIRMA	Nuclear Information Records Management Association
NRC	Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
QA	Quality Assurance
QAM	Quality Assurance Manager
QAP	Quality Assurance Program
QAPD	Quality Assurance Program Description
RG	Regulatory Guide
RIS	Regulatory Information Summary
SSC	Structures, systems, and components
SSE	Safe shutdown earthquake
TG	Technical Guideline
VP	Vice President
WAN	Wide Area Network

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PART I INTRODUCTION

SECTION 1 GENERAL

This Appalachian Power (APCo) Quality Assurance Program Description (QAPD) is the top-level policy document that establishes the quality assurance policy and assigns major functional responsibilities for Early Site Permit (ESP) activities conducted by or for APCo. The QAPD describes the methods and establishes quality assurance (QA) and administrative control requirements that meet 10 Code of Federal Regulations (CFR) 50, Appendix B and 10 CFR 52. The QAPD is based on the requirements and guidance of American Society of Mechanical Engineers (ASME) NQA-1-2015, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, with specific reference to selected Part III sections, as identified in this document.

The QA Program (QAP) is defined by the United States Nuclear Regulatory Commission (NRC)-approved regulatory document that describes the QA elements (i.e., the QAPD), along with the associated implementing documents. Procedures and instructions that control Nuclear QA Program activities will be developed prior to commencement of those activities. Policies establish high-level responsibilities and authority for carrying out important administrative functions which are outside the scope of the QAPD. Procedures establish practices for certain activities which are common to all Nuclear QA Program organizations performing those activities so that the activity is controlled and carried out in a manner that meets QAPD requirements. Procedures specific to a site, organization, or group establish detailed implementation requirements and methods, and may be used to implement policies or be unique to particular functions or work activities.

1.1 Scope/Applicability

The QAPD applies to ESP activities affecting the quality and performance of safety-related structures, systems, and components (SSC).

Safety-related SSCs, under the control of the QAPD, are identified by design documents. The technical aspects of these items are considered when determining program applicability, including, as appropriate, the item's design safety function. The QAPD may be applied to certain activities where regulations other than 10 CFR 50 and 10 CFR 52 establish QA requirements for activities within their scope.

The policy of the Nuclear QA Program is to assure a high degree of availability and reliability of the nuclear plant while ensuring the health and safety of its workers and the public, and protection of the environment. To this end, selected elements of the QAPD are also applied to certain equipment and activities that are not safety-related, but support safe, economical, and reliable plant operations, or where other NRC guidance establishes quality assurance requirements. Implementing documents establish program element applicability.

The definitions provided in ASME NQA-1-2015, Part I, Section 400, apply to select terms as used in this document.

PART II QAPD DETAILS

SECTION 1 ORGANIZATION

This section describes the APCo organizational structure, functional responsibilities, levels of authority and interfaces for establishing, executing, and verifying QAPD implementation. The organizational structure includes corporate, support, off-site, and on- site functions for the Nuclear QA Program including interface responsibilities for multiple organizations that perform quality-related functions. Implementing documents assign more specific responsibilities and duties, and define the organizational interfaces involved in conducting activities and duties within the scope of the QAPD. Management gives careful consideration to the timing, extent, and effects of organizational structure changes.

The Vice President New Nuclear is responsible to size the Quality Assurance staff commensurate with the duties and responsibilities assigned.

Contracting and supplier services are provided to the Nuclear QA Program development in accordance with the Suppliers' QAPDs, which shall be compliant with 10 CFR 50, Appendix B, or by contracted services working to the Nuclear QA Program.

The following sections describe the reporting relationships, functional responsibilities, and authorities for organizations implementing and supporting the Nuclear QA Program. The APCo organization is shown in Figure II.1-1.

1.1 Chief Executive Officer

The Chief Executive Officer (CEO) is responsible for all aspects of design, engineering, and procurement of any nuclear plant(s) developed under the Nuclear QA Program. The CEO is also responsible for all technical, quality, and administrative support activities provided by APCo and its contractors. The CEO delegates responsibilities of the APCo Nuclear QA Program to the Vice President (VP) New Nuclear.

1.2 Vice President New Nuclear

The VP New Nuclear reports to the AEP CEO and is responsible for new nuclear plant development activities as well as the safe, reliable, and efficient operation of the APCo plant(s). The VP New Nuclear may report through additional layers of management but shall maintain sufficient authority and organizational freedom to implement assigned responsibilities. The VP New Nuclear has the authority and responsibility for plant development, design, and construction and directs the planning and development of APCo staff and organization resources. The VP New Nuclear has the authority and responsibility for establishing, maintaining, and implementing this QAPD. The VP New Nuclear directs the Technical Services Management, the Project and Construction Management, and has overall responsibility for the Quality Assurance Program.

1.2.1 Technical Services Management

The Technical Services Management reports to the VP New Nuclear for functional activities and reports through additional layers of management for administrative activities. The Technical Services Management is responsible for the planning and organization of the engineering, licensing, including the ESP, document control, and other support services. The Technical Services Management assists in coordination of day-to-day activities for the Quality Assurance Organization during the ESP stage. Technical Services Management is responsible for verifying that personnel working in this area are properly trained and qualified to perform their scope of work. Technical Services Management may report through additional layers of management but shall maintain sufficient authority and organizational freedom to implement assigned responsibilities.

1.2.2 Project and Construction Management

The Project and Construction Management reports to the VP New Nuclear for functional activities and reports through additional layers of management for administrative activities. The Project and Construction Management is responsible for the planning and organization of the project management, construction, and supply chain. The Project and Construction Management is also responsible for ensuring safety, health, and procurement are effectively implemented per the QAPD. Project and Construction Management is responsible for verifying that personnel working in this area are properly trained and qualified to perform their scope of work. Project and Construction Management may report through additional layers of management but shall maintain sufficient authority and organizational freedom to implement assigned responsibilities.

1.2.3 Quality Assurance Manager

The Quality Assurance Manager (QAM) reports to the VP New Nuclear and coordinates with the Technical Services Management and Project and Construction Management for day-to-day activities. The QAM is responsible for independently planning and performing activities to verify effective development and implementation of this QAPD by maintaining the QAPD, evaluating compliance with the QAP requirements, and managing Quality Assurance resources. Managing Quality Assurance resources includes delegation of Quality Assurance administrative tasks to other Quality Assurance personnel on the APCo team but shall maintain overall responsibility for those delegated duties. The QAM is also responsible for verifying that Quality Assurance personnel and delegated personnel are properly trained and qualified to perform their scope of work. The QAM is responsible for assessing effective implementation of the QAPD by the onsite and offsite organizations that support activities affecting quality, which include, but are not limited to, Procurement, Engineering, Design, Document Control, Corrective Action and Licensing. The QAM has sufficient authority and organizational freedom to provide oversight of the following quality-related activities: verifying compliance with regulatory requirements and procedures through audits and technical reviews; monitoring organizational processes to ensure conformance to commitments and licensing document requirements; and ensuring that vendors providing quality services, parts, and materials to the Nuclear QA Program are meeting the requirements of 10 CFR 50, Appendix B.

The QAM has sufficient independence from other APCo priorities to bring forward issues affecting safety and quality and makes judgments regarding quality in all areas regarding APCo activities, as appropriate. The QAM may make recommendations to the APCo management regarding improving the quality of work processes. If the QAM disagrees with any actions taken by the APCo organization and is unable to obtain resolution, the QAM shall bring the matter to the attention of the VP New Nuclear, who will determine the final disposition, and escalate to the CEO, if necessary.

1.3 Authority to Stop Work

Quality Assurance and Quality Control Inspection personnel have the authority, and the responsibility, to stop work in progress which is not being done in accordance with approved procedures or where safety or SSC integrity may be jeopardized. This authority extends to off-site work performed by suppliers that furnish safety-related materials and services to APCo.

1.4 Quality Assurance Organizational Independence

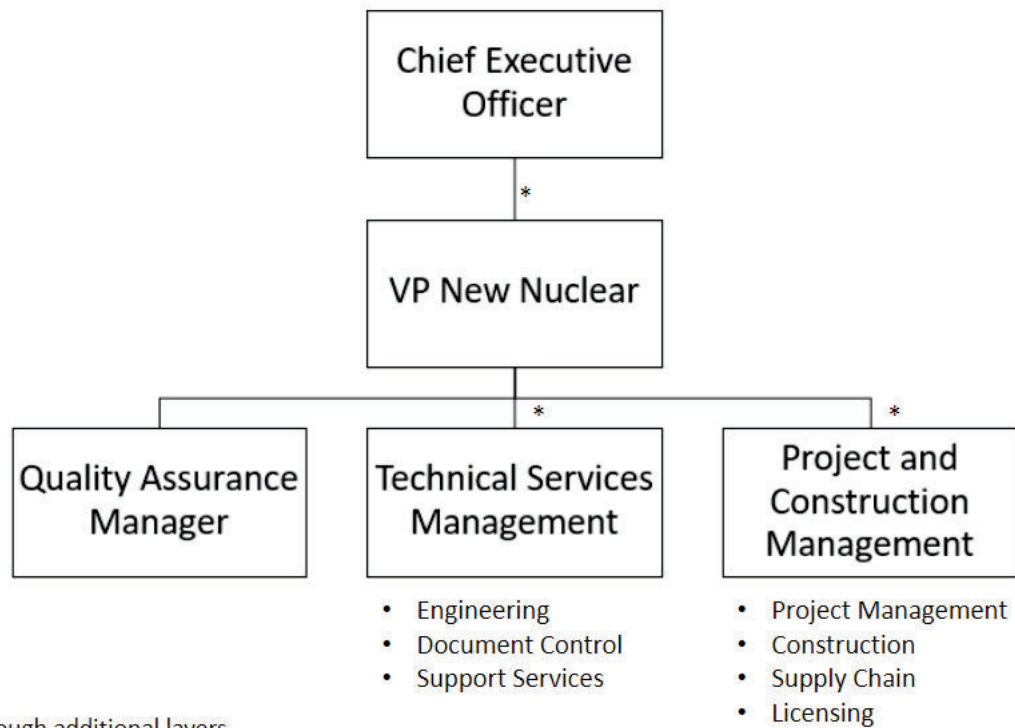
For the ESP, independence shall be maintained between the organization performing the checking (quality assurance and control) functions and the organizations performing the functions. This provision is not applicable to design review/verification.

1.5 NQA-1 Commitment

In establishing its organizational structure, APCo commits to compliance with NQA-1-2015, Part I, Requirement 1.

Figure II.1-1

APCo Organization



*Reporting may be through additional layers of management.

SECTION 2 QUALITY ASSURANCE PROGRAM

Prior to initiating the activities defined in this section, APCo shall establish the necessary measures and governing procedures to implement the QAP as described in the QAPD. APCo is committed to implementing the QAP in all aspects of work that are important to the safety of the nuclear plant as described and to the extent delineated in the QAPD. The QAP shall include monitoring activities against acceptance criteria in a manner sufficient to provide assurance that the activities important to safety are performed satisfactorily. Further, APCo ensures through the systematic process described herein that its suppliers of safety-related equipment or services meet the applicable requirements of 10 CFR 50, Appendix B. Senior management will be regularly apprised of the adequacy of implementation of the QAP through the audit functions described in Part II, Section 18.

The objective of the QAP is to assure that APCo's nuclear generating plant(s) is(are) designed in accordance with governing regulations and license requirements. The program is based on the requirements of ASME NQA-1-2015, "Quality Assurance Requirements for Nuclear Facility Applications," as further described in this document. The QAP applies to those quality-related activities that involve the functions of safety-related SSCs associated with the design. Examples of ESP program safety-related activities include, but are not limited to, site-specific engineering related to safety-related SSCs, site geotechnical investigations, site engineering analysis, seismic analysis, and meteorological analysis. Cost and scheduling challenges must be addressed; however, they do not prevent proper implementation of the QAP.

Delegated responsibilities may be performed under a supplier's or principal contractor's QAP, provided that the supplier or principal contractor has been approved as a supplier in accordance with the Nuclear QA Program. Periodic audits and assessments of supplier QA programs are performed to assure compliance with the supplier's or principal contractor's QAPD and implementing procedures. In addition, routine interfaces with the supplier's personnel provide added assurance that quality expectations are met.

For the ESP applications, the QAPD applies to those Nuclear QA Program activities that can affect either directly or indirectly the safety-related site characteristics or analysis of those characteristics. In addition, the QAPD applies to engineering activities that are used to characterize the site or analyze that characterization.

In general, the program requirements specified herein are detailed in implementing procedures that are either APCo implementing procedures, or supplier implementing procedures governed by a supplier quality assurance program.

A grace period of 90 days may be applied to provisions that are required to be performed on a periodic basis, unless otherwise noted. For activities deferred in accordance with the 90-day grace period, the next performance due date will be based on the originally scheduled date. Audit schedules are based on the month in which the audit starts.

2.1 Responsibilities

Personnel who work directly or indirectly for APCo are responsible for achieving acceptable quality in the work covered by the QAPD. This includes the activities delineated in Part I, Section 1.1. APCo personnel performing verification activities are responsible for verifying the achievement of acceptable quality. Activities governed by the QAPD are performed as directed by documented instructions, procedures, and drawings that are of a detail appropriate for the activity's complexity and effect on safety. Instructions, procedures, and drawings specify quantitative or qualitative acceptance criteria as applicable or appropriate for the activity, and verification is against these criteria. Provisions are established to designate or identify the proper documents to be used in an activity, and to ascertain that such documents are being used. The QAM is responsible for verifying that processes and procedures comply with the QAPD and other applicable requirements, that such processes or procedures are implemented, and that management appropriately ensures compliance.

2.2 Delegation of Work

Appalachian Power retains and exercises the responsibility for the scope and implementation of an effective QAP. Positions identified in Part II, Section 1, may delegate all or part of the activities of planning, establishing, and implementing the program for which they are responsible to others, but retain the responsibility for the program's effectiveness. Decisions affecting safety are made at the level appropriate based upon their nature and effect, with technical advice or review as appropriate.

ESP vendor organizations for quality-related work shall meet the requirements of 10 CFR 50, Appendix B. The work activities contracted to be performed under vendor QA programs are described in APCo procurement documents.

2.3 Site-specific Safety-Related Design Basis Activities

Site-specific safety-related design basis activities are defined as those activities, including sampling, testing, data collection, and supporting engineering calculations and reports, which will be used to determine the bounding physical parameters of the site. Appropriate quality assurance measures are applied.

2.4 Periodic Review of the Quality Assurance Program

Management of those organizations implementing the QA program, or portions thereof, shall assess the adequacy of that part of the program for which they are responsible to assure its effective implementation at least once each year or at least once during the life of the activity, whichever is shorter.

2.5 Issuance and Revision to Quality Assurance Program

Administrative control of the QAPD will be in accordance with 10 CFR 50.55(f). Changes to the QAPD are evaluated by the QAM to ensure that such changes do not reduce the commitments in the program description for previously approved quality assurance controls specified in the QAPD. This document shall be revised as appropriate to incorporate additional QA commitments that may be established during the ESP application development process. New revisions to the document will be reviewed, at a minimum, by the QAM and approved by the VP New Nuclear.

2.6 Personnel Training and Qualifications

Personnel assigned to implement elements of the QAPD shall be capable of performing their assigned tasks. To this end, APCo establishes and maintains formal indoctrination, training, and qualification as necessary for personnel performing, verifying, or managing activities within the scope of the QAPD to achieve initial proficiency, maintain proficiency, and adapt to technology changes, method, or job responsibilities. The indoctrination, training, and qualification programs are commensurate with scope, complexity, and importance of the activities; and include or address the following, as appropriate:

- Education, experience, and proficiency of the personnel receiving training
- General criteria, technical objectives, requirements of applicable codes and standards, regulatory commitments, company procedures, and quality assurance program requirements
- On-the-job training, if direct hands-on applications or experience is needed to achieve and maintain proficiency

The minimum qualifications of the QAM are that they hold an engineering or related science degree and a minimum of four years of related experience including two years of nuclear power plant experience, one

year of supervisory or management experience, and one year of the experience is in performing quality verification activities. Special requirements shall include management and supervisory skills and experience or training in leadership, interpersonal communication, management responsibilities, motivation of personnel, problem analysis and decision making, and administrative policies and procedures. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

The minimum qualifications for the individuals responsible for supervising QA or quality control personnel is that each has a high school diploma or equivalent and has a minimum of one year of experience performing quality verification activities. Individuals who do not possess these formal education and experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

The minimum qualifications of individuals that are part of QA activities and are responsible for planning, implementing, and maintaining the programs for the QAPD are that each has a high school diploma or equivalent and has a minimum of one year of related experience. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

2.7 NQA-1 Commitment / Exceptions

In establishing qualification and training programs, APCo commits to compliance with NQA-1-2015, Part I, Requirement 2 and the regulatory position stated in Regulatory Guide 1.28, Revision 5, with the following clarifications and exceptions:

- NQA-1-2015, Part I, Requirement 2, Section 302, Inspection and Test
 - NQA-1-2015, Requirement 2 includes use of Part III, Subpart 3.1-2.3, guidance as if it were part of the Requirement.
 - (1) In lieu of being certified as Level I, II, or III in accordance with NQA-1-2015, personnel that perform independent quality verification inspections, examinations, measurements, or tests of material, products, or activities will be required to possess qualifications equal to or better than those required for performing the task being verified; and the verification is within the skills of these personnel and/or is addressed by procedures. These individuals will not be responsible for the planning of quality verification inspections and tests (i.e., establishing hold points and acceptance criteria in procedures, and determining who will be responsible for performing the inspections), evaluating inspection training programs, nor certifying inspection personnel.
 - (2) A qualified engineer may be used to plan inspections, evaluate the capabilities of an inspector, or evaluate the training program for inspectors. For the purpose of these functions, a qualified engineer is one who has a baccalaureate in engineering in a discipline related to the inspection activity (such as electrical, mechanical, civil) and has a minimum of five years engineering work experience with at least two years of this experience related to nuclear facilities.
- APCo conforms to NQA-1-2015, Part I, Requirement 2, Section 301, Nondestructive Examination, for qualification of nondestructive examination personnel, except that APCo will follow the applicable standard cited in the version(s) of Section III and Section XI of the ASME Boiler and

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Pressure Vessel Code approved by the NRC for use at APCo sites for the scope of activities governed by these cited standards.

- As an alternative to NQA-1-2015, Part I, Requirement 2, Section 303.3, Audit Participation, that prospective Lead Auditors have participated in a minimum of five (5) audits in the previous three (3) years, the guidance in Regulatory Guide 1.28, Revision 5, Section C.1.a, "Prospective lead auditors, with comparable industry experience, may satisfy the lead auditor qualification requirement of participating in a minimum of five QA audits within a period of 3 years prior to the date of qualification by alternatively demonstrating the ability to properly implement the audit process, effectively organize and report results, and participate in at least one nuclear audit within the year preceding the date of qualification, subject to review and acceptance by the responsible QA organization."
- NQA-1-2015, Part I, Requirement 2, Section 401 (g) requires the date of certification expiration be included on the qualification record. APCo considers the certification expiration date to be the date from the certification or recertification date plus the certification interval time and its inclusion on the qualification record is optional.

SECTION 3 DESIGN CONTROL

Prior to initiating design control activities defined in this section, APCo shall establish and implement a process to control the design, design changes, and temporary modifications (e.g., temporary bypass lines, electrical jumpers and lifted wires, and temporary setpoints) of items that are subject to the provisions of the QAPD. The design process shall include provisions to control design inputs, outputs, changes, interfaces, records, and organizational interfaces within APCo and with suppliers. These provisions shall assure that design inputs (such as design bases and the performance, regulatory, quality, and quality verification requirements) are correctly translated into design outputs (such as analyses, specifications, drawings, procedures, and instructions) so that the final design output contains or references appropriate acceptance criteria that can be related to the design input in sufficient detail to permit verification by inspection and test, as required.

Design change processes and the division of responsibilities for design-related activities are detailed in APCo procedures and supplier procedures. Changes to design inputs, final designs, and field changes are justified and subject to design control measures commensurate with those applied to the original design. The design control program includes interface controls necessary to control the development, verification, approval, release, status, distribution, and revision of design inputs and outputs. Design changes and disposition of nonconforming items as "use as is" or "repair" are reviewed and approved by the APCo design organization or by other organizations authorized by APCo.

3.1 Design Verification

The APCo design processes shall provide for design verification to ensure that items, computer programs, and activities subject to the provisions of the QAPD are suitable for their intended application, consistent with their effect on safety. Design changes are subjected to these controls.

Design verifications are performed by competent individuals or groups other than those who performed the original design but who may be from the same organization. The verifier shall not have taken part in the selection of design inputs, the selection of design considerations, or the selection of a singular design approach, as applicable. This verification may be performed by the originator's supervisor provided the supervisor did not specify a singular design approach, rule out certain design considerations, and did not establish the design inputs used in the design, or if the supervisor is the only individual in the organization competent to perform the verification. If the verification is performed by the originator's supervisor, the justification of the need is documented and approved in advance by management.

The extent of the design verification required is a function of the importance to safety of the item or computer program under consideration, the complexity of the design, the degree of standardization, the state-of-the-art, and the similarity with previously proven designs. This includes design inputs, design outputs, and design changes. Design verification procedures are established and implemented to assure that an appropriate verification method is used, the appropriate design parameters to be verified are chosen, the acceptance criteria are identified, and the verification is satisfactorily accomplished and documented. Verification methods may include, but are not limited to, design reviews, alternative calculations, and qualification testing. Testing used to verify the acceptability of a specific design feature demonstrates acceptable performance under conditions that simulate the most adverse design conditions expected for the item's intended use.

APCo normally completes design verification activities before the design outputs are used by other organizations for design work, and before they are used to support other activities such as procurement, manufacturing, or construction. When such timing cannot be achieved, the design verification shall be completed before relying on the item to perform its intended design or safety function.

3.2 Design Records

Appalachian Power shall maintain records sufficient to provide evidence that the design was properly accomplished. These records include the final design output and any revisions thereto, as well as a record of the important design steps (e.g., calculations, analyses, and computer programs) and the sources of input that support the final output. Plant design drawings reflect the properly reviewed and approved configuration of the plant(s).

Section 16 of this QAPD addresses requirements for when errors are detected in approved design documents that could adversely affect SSCs.

3.3 Computer Applications

The QAPD governs the development, procurement, testing, maintenance, control, and use of computer applications when used in safety-related applications and designated non-safety-related applications. Computer program acceptability is pre-verified, or the results verified with the design analysis for each application. Pre-verified computer programs are controlled using a software configuration management process. APCo and suppliers are responsible for developing, approving, and issuing procedures, as necessary, to control the use of such computer applications. The procedures require that the application software be assigned a proper quality classification and that the associated quality requirements be consistent with this classification. Each application software and revision thereto are documented and approved by authorized personnel. The QAPD is also applicable to the administrative functions associated with the maintenance and security of computer hardware where such functions are considered essential in order to comply with other QAPD requirements, such as QA records.

3.4 NQA-1 Commitment

In establishing its program for design control and verification, APCo commits to compliance with NQA-1-2015, Part I, Requirement 3, and requirements from Part II, Subpart 2.7, "Quality Assurance Requirements for Computer Software for Nuclear Facility Applications", Subpart 2.14, "Quality Assurance Requirements for Commercial Grade Items and Services", and Subpart 2.20, "Quality Assurance Requirements for Subsurface Investigations for Nuclear Facilities".

SECTION 4 PROCUREMENT DOCUMENT CONTROL

Prior to initiating procurement-related activities defined in this section, APCo shall establish the necessary measures and governing procedures to assure that purchased items, computer programs, and services are subject to appropriate quality and technical requirements. Procurement document changes shall be subject to the same degree of control as utilized in the preparation of the original documents. These controls include provisions such that:

- Where original technical or quality assurance requirements cannot be determined, an engineering evaluation is conducted and documented by qualified staff to establish appropriate requirements and controls to assure that interfaces, interchangeability, safety, fit, and function, as applicable, are not adversely affected or contrary to applicable regulatory requirements.
- Applicable technical, regulatory, administrative, quality, and reporting requirements (such as specifications, codes, standards, tests, inspections, special processes, and 10 CFR 21) are invoked for procurement of items and services. 10 CFR 21 requirements for posting, evaluating, and reporting will be followed and imposed on suppliers when applicable. Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services. To the extent necessary, procurement documents shall require suppliers to have a documented QA program that is determined to meet the applicable requirements of 10 CFR 50, Appendix B, as appropriate to the circumstances of procurements (or the supplier may work under the approved Nuclear QA Program).

Reviews of procurement documents shall be performed by personnel who have access to pertinent information and who have an adequate understanding of the requirements and intent of the procurement documents.

4.1 NQA-1 Commitment / Exceptions

In establishing controls for procurement, APCo commits to compliance with NQA-1-2015, Part I, Requirement 4, with the following clarifications and exceptions:

- NQA-1-2015, Part I, Requirement 4, Section 203, Quality Assurance Program Requirements, requires the purchaser to specify the quality assurance requirements in the procurement documents. To meet this requirement, APCo may require suppliers to have a documented QAP that meets the applicable requirements of 10 CFR 50, Appendix B, as appropriate to the circumstances of the procurement.
- With regard to service performed by a supplier, APCo procurement documents may allow the supplier to work under the Nuclear QA Program, including implementing procedures, in lieu of the supplier having its own QAP.
- Section 300 and 400 of NQA-1-2015, Part I, Requirement 4 require the review of technical and Quality Assurance Program requirements of procurement documents prior to award of a contract and for procurement document changes. APCo may satisfy this requirement through the review of the procurement specification when the specification contains the technical and quality assurance requirements of the procurement.
- Procurement documents for Commercial Grade Items that will be procured by APCo for use as safety-related items shall contain technical and quality requirements such that the procured item can be appropriately dedicated in accordance with this QAPD, Section 7, "Control of Purchased Material, Equipment, and Services."

SECTION 5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Prior to initiating instructions, procedures, and drawings defined in this section, APCo shall establish the necessary measures and governing procedures to ensure that activities affecting quality are prescribed by and performed in accordance with instructions, procedures, or drawings of a type appropriate to the circumstances and which, where applicable, include quantitative or qualitative acceptance criteria to implement the QAP as described in the QAPD. Such documents shall be prepared and controlled according to Part II, Section 6. In addition, means shall be provided to disseminate to the staff instructions of both general and continuing applicability, as well as those of short-term applicability. Provisions shall be included for reviewing, updating, and canceling such procedures.

5.1 Procedure Adherence

Appalachian Power's policy is that procedures are followed, and the requirements for use of procedures have been established in administrative procedures. Where procedures cannot be followed as written, provisions are established for making changes in accordance with Part II, Section 6. Requirements are established to identify the manner in which procedures are to be implemented, including identification of those tasks that require: (1) the written procedure to be present and followed step-by-step while the task is being performed, (2) the user to have committed the procedure steps to memory, (3) verification of completion of significant steps, by initials or signatures or use of check-off lists. Procedures that are required to be present and referred to directly are those developed for extensive or complex jobs where reliance on memory cannot be trusted, tasks that are infrequently performed, and tasks where steps must be performed in a specified sequence.

In cases of emergency, personnel are authorized to depart from approved procedures when necessary to prevent injury to personnel or damage to the plant. Such departures are recorded describing the prevailing conditions and reasons for the action taken.

5.2 Procedure Content

The established measures shall address the applicable content of procedures as described in the Introduction to Part II of NQA-1-2015. In addition, procedures governing tests, inspections, operational activities, and maintenance will include as applicable, initial conditions and prerequisites for the performance of the activity.

5.3 NQA-1 Commitment

In establishing procedural controls, APCo commits to compliance with NQA-1-2015, Part I, Requirement 5.

SECTION 6 DOCUMENT CONTROL

Prior to initiating document control activities defined in this section, APCo shall establish the necessary measures and governing procedures to control the preparation, issuance, and revision of documents that specify quality requirements or prescribe how activities affecting quality, including organizational interfaces, to ensure that correct documents are employed. The following controls, including electronic systems used to make documents available, are applied to documents and changes thereto:

- Identification of controlled documents
- Specified distribution of controlled documents for use at the appropriate location
- A method to identify the correct document (including revision) to be used and control of superseded documents
- Identification of individuals responsible for controlled document preparation, review, approval, and distribution
- Review of controlled documents for adequacy, completeness, and approval prior to distribution
- A method to ensure the correct documents are being used
- A method to provide feedback from users to improve procedures and work instructions
- Coordinating and controlling interface documents and procedures

The types of documents to be controlled include:

- Drawings such as design, construction, installation, and as-built drawings
- Engineering calculations
- Design specifications
- Purchase orders and related documents
- Vendor-supplied documents
- Audit, surveillance, and quality verification/inspection procedures
- Inspection and test reports
- Instructions and procedures for activities covered by the QAPD, including design
- Technical specifications
- Nonconformance reports and corrective action reports

6.1 Review and Approval of Documents

Documents are reviewed for adequacy by qualified persons other than the preparer. During the ESP, procedures for design, construction, and installation are also reviewed by the organization responsible for quality verification to ensure quality assurance measures have been appropriately applied. The documented review signifies concurrence.

Prior to issuance or use, documents including revisions thereto, are approved by the designated authority. A listing of all controlled documents identifying the current approved revision, or date, is maintained so personnel can readily determine the appropriate document for use.

6.2 Changes to Documents

Changes to documents, other than those defined in implementing procedures as minor changes, are reviewed and approved by the same organizations that performed the original review and approval unless other organizations are specifically designated. The reviewing organization has access to pertinent background data or information upon which to base their approval. Minor changes to documents, such as inconsequential editorial corrections, do not require that the revised documents receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type of minor changes that do not require such a review and approval and the persons who can authorize such a classification shall be clearly delineated in implementing procedures.

6.3 NQA-1 Commitment

In establishing provisions for document control, APCo commits to compliance with NQA-1- 2015, Part I, Requirement 6.

SECTION 7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

Prior to initiating procurement activities defined in this section, APCo shall establish the necessary measures and governing procedures to control purchased items and services to assure conformance with specified requirements. Such control provides for the following as appropriate: source evaluation and selection, evaluation of objective evidence of quality furnished by the supplier, source inspection, audit, and examination of items or services.

7.1 Acceptance of Item or Service

Appalachian Power shall establish and implement 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 or service importance to safety, complexity, quantity, and the frequency of procurement. Verification actions include testing, as appropriate, during design activities. Verifications occur at the appropriate phases of the procurement process, including, as necessary, verification of activities of sub-suppliers.

Measures to assure the quality of purchased items and services include the following, as applicable:

- Items are inspected, identified, and stored to protect against damage, deterioration, or misuse.
- Prospective safety-related items and service suppliers are evaluated to assure only qualified suppliers are used. Qualified suppliers are audited on a triennial basis. In addition, if a subsequent contract or a contract modification significantly changes the scope, methods, or controls performed by a supplier, an audit of the changes is performed, thus starting a new triennial period. A grace period of 90 days is allowed. Where such grace period is used, the date for the following audit or survey shall be based on the original expiration date. A grace period not to exceed 25% of the audit or survey interval may be allowed under exigent conditions with the following requirements:
 - Completion of audits or surveys of affected suppliers shall be prioritized based on their relative importance and any issues with the supplier. Audits are initiated early enough to ensure effective QA during engineering, design, procurement, manufacturing, construction and installation, inspection, and testing. However, the audit or survey shall be completed within the 25% grace period.
 - There is verification that the supplier is still implementing a quality assurance program that meets Appendix B to 10 CFR Part 50. It shall be verified that suppliers with delinquent surveys shall continue to maintain adequate documented programmatic controls in place for the activities affecting quality.
 - Receipt inspection and industry operating experience are reviewed on an ongoing basis as the information becomes available and is documented. The results of the review are promptly considered for the effects on a supplier's continued qualification and adjustments are made as necessary, including corrective actions.
 - If there is no ongoing receipt inspection or operating experience with which to analyze the supplier since the last audit or survey, an annual documented evaluation shall be performed and include, as appropriate, the following: i) Review of supplier-furnished documents and records such as certificates of conformance, nonconformance notices, and corrective actions. ii) Results of previous source verifications, audits, survey, and receiving inspection activities. iii) Operating experience of identical or similar products furnished by the same supplier. iv) Results of audits from other sources. When remote assessments are necessitated by exigent conditions, the guidance provided in EPRI TR 3002020796, "Remote Assessment Techniques, Planning and Conducting Audits and Surveys Using Remote Techniques During

Exigent Conditions,” shall be implemented.

- If the contract or a contract modification significantly enlarges the scope or changes the methods or controls for activities performed by the same supplier, the supplier will provide documented justification the change(s) are adequately addressed by its quality assurance program controls.
- Provisions are made for accepting purchased items and services, such as source verification, receipt inspection, pre- and post-installation tests, certificates of conformance, and document reviews (including Certified Material Test Report/Certificate). Acceptance actions/documents should be established by the Purchaser with appropriate input from the Supplier and be completed to ensure that procurement, inspection, and test requirements, as applicable, have been satisfied before relying on the item to perform its intended safety function.
- Controls are imposed for the selection, determination of suitability for intended use (critical characteristics), evaluation, receipt, and acceptance of commercial-grade services or items to assure they will perform satisfactorily in service in safety-related applications.

7.2 NQA-1 Commitment / Exceptions

In establishing controls for purchased items and services, APCo commits to compliance with NQA-1-2015, Part I, Requirement 7, with the following clarifications and exceptions:

- APCo considers that other 10 CFR Parts 50 and 52 licensees, Authorized Nuclear Inspection Agencies, National Institute of Standards and Technology, or other State and Federal agencies which may provide items or services to APCo plant(s) are not required to be evaluated or audited.
- When purchasing commercial grade calibration services from a calibration laboratory, procurement source evaluation and selection measures need not be performed provided each of the following conditions are met:
 - The purchase documents impose any additional technical and administrative requirements, as necessary, to comply with the Nuclear QA Program and technical provisions. At a minimum, the purchase document shall require that the calibration certificate/report include identification of the laboratory equipment/standard used.
 - The purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.
 - A documented review of the supplier's accreditation will be performed and will include a verification of the following:
 - The calibration laboratory holds a domestic (United States) accreditation by any one of the following accrediting bodies, which are recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA):
 - (1) National Voluntary Laboratory Accreditation Program (NVLAP)
 - (2) American Association for Laboratory Accreditation (A2LA)
 - (3) ACLASS Accreditation Services (ACLASS)
 - (4) International Accreditation Service (IAS)
 - (5) Laboratory Accreditation Bureau (L-A-B)

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- The accreditation encompasses ANSI/ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories."
 - The published scope of accreditation for the calibration laboratory covers the necessary measurement parameters, range, and uncertainties.
- For NQA-1-2015, Part I, Requirement 7, Section 501, Acceptance of Item or Service- General, APCo considers documents that may be stored in approved electronic media under the Nuclear QA Program or vendor control, not physically located on the plant site, but accessible from the respective nuclear facility site, as meeting the NQA-1 requirement for documents to be available at the site.
- In establishing commercial grade item requirements, APCo commits to compliance with NQA-1-2015, Part I, Requirement 7, Section 700 and Part II, Subpart 2.14, with the following clarification:
 - For commercial grade items, quality verification requirements are established and described in APCo documents to provide the necessary assurance an item will perform satisfactorily in service. APCo documents address determining the critical characteristics that ensure an item is suitable for its intended use, technical evaluation of the item, receipt requirements, and quality evaluation of the item.
 - APCo will assume 10 CFR 21 reporting responsibility for all items that APCo dedicated as safety-related.

SECTION 8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Prior to initiating the activities defined in this section, APCo shall establish the necessary measures and governing procedures to identify and control items to prevent the use of incorrect or defective items. This includes controls for consumable materials and items with limited shelf life. The identification of items is maintained throughout fabrication, erection, installation, and use so that the item can be traced to its documentation, consistent with the item's effect on safety. Identification locations and methods are selected so as not to affect the function or quality of the item.

8.1 NQA-1 Commitment

In establishing provisions for identification and control of items, APCo commits to compliance with NQA-1-2015, Part I, Requirement 8.

SECTION 9 CONTROL OF SPECIAL PROCESSES

Prior to initiating special processes defined in this section, APCo shall establish the necessary measures and governing procedures to assure that special processes that require interim process controls to assure quality, such as welding, heat treating, and nondestructive examination, are controlled. These provisions shall include assuring that special processes are accomplished by qualified personnel using qualified procedures and equipment. Personnel are qualified and special processes are performed in accordance with applicable codes, standards, specifications, criteria, or other specially established requirements. Special processes are those where the results are highly dependent on the control of the process or the skill of the operator, or both, and for which the specified quality cannot be fully and readily determined by inspection or test of the final product. Records are maintained as appropriate for the currently qualified personnel, processes, and equipment for each special process.

9.1 NQA-1 Commitment

In establishing measures for the control of special processes, APCo commits to compliance with NQA-1-2015, Part I, Requirement 9.

SECTION 10 INSPECTION

Prior to initiating inspection activities defined in this section, APCo shall establish the necessary measures and governing procedures to implement inspections that assure items, services, and activities affecting safety meet established requirements and conform to applicable documented specifications, instructions, procedures, and design documents. Inspection may also be applied to items, services, and activities affecting plant reliability and integrity. Types of inspections may include those verifications related to procurement. Inspections are carried out by properly qualified persons independent of those who performed or directly supervised the work. Inspection results are documented.

10.1 Inspection Program

The inspection program shall establish inspections (including surveillance of processes), as necessary to verify quality: (1) at the source of supplied items or services, (2) in-process during fabrication at a supplier's facility or at an APCo facility, (3) for final acceptance of fabricated and/or installed items during construction, and (4) upon receipt of items for a facility.

The inspection program shall establish requirements for planning inspections, such as the group or discipline responsible for performing the inspection, where inspection hold points are to be applied, determining applicable acceptance criteria, and the frequency of inspection to be applied. Inspection plans are based on, as appropriate, the relative importance of the item, the complexity of the item, technical requirements to be met, and design specification requirements. Inspections are performed in accordance with written procedures, instructions, travelers, drawings, and specifications as applicable. Replaced, reworked, modified, or repaired items are inspected in accordance with and by methods that are equivalent to the original inspection requirements.

Inspection records identify the item inspected, date of inspection, the inspector's identity, type of observation, inspection results and acceptability, and reference to information on action taken in connection with nonconformances. Inspection results are documented by the inspector, reviewed by authorized personnel qualified to evaluate the technical adequacy of the inspection results, and controlled by instructions, procedures, and drawings.

10.2 Inspector Qualification

Appalachian Power shall establish qualification programs for personnel performing quality inspections. The qualification program requirements are described in Part II, Section 2. These qualification programs are applied to individuals performing quality inspections regardless of the functional group to which they are assigned.

10.3 NQA-1 Commitment/Exceptions

In establishing inspection requirements, APCo commits to compliance with NQA-1-2015, Part I, Requirement 10, and Part II, Subparts 2.5.

SECTION 11 TEST CONTROL

Prior to initiating test control activities defined in this section, APCo shall establish the necessary measures and governing procedures to demonstrate that items subject to the provisions of the QAPD will perform satisfactorily in service, that the plant can be operated safely and as designed, and that the coordinated operation of the plant as a whole is satisfactory. These programs shall include criteria for determining when testing is required to demonstrate that performance of plant systems is in accordance with design. Programs also include provisions to establish and adjust test schedules, and to maintain status for periodic or recurring tests. Tests are performed according to applicable procedures that include, consistent with the effect on safety: (1) instructions and prerequisites to perform the tests, (2) use of proper test equipment, (3) acceptance criteria, and (4) mandatory verification points as necessary to confirm satisfactory test completion. Test results are documented and evaluated by the organization performing the test and reviewed by a responsible authority to assure that the test requirements have been satisfied. If acceptance criteria are not met, re-testing is performed as needed to confirm acceptability following correction of the system or equipment deficiencies that caused the failure.

Except for computer program testing, which is addressed in Section 11.1, tests are performed, and results documented in accordance with applicable technical and regulatory requirements, including those described in Technical Specifications and Safety Analysis Reports. Test programs ensure appropriate retention of test data in accordance with the records requirements of the QAPD. Personnel that perform or evaluate tests are qualified in accordance with the requirements established in Part II, Section 2.

Test records, at a minimum and as applicable, shall identify the item tested, date of test, tester or data recorder, type of observation, results and acceptability, action taken in connection with any deviations noted, and the person evaluating the test results.

11.1 NQA-1 Commitment for Computer Program Testing

Appalachian Power shall establish and implement provisions to assure that computer software used in applications affecting safety is prepared, documented, verified, and tested, and used such that the expected output is obtained, and configuration control maintained. To this end APCo commits to compliance with the requirements of NQA-1-2015, Part I, Requirement 11 and Part II, Subpart 2.7 to establish the appropriate provisions in addition to the commitment to NQA-1-2015, Requirement 3.

11.2 NQA-1 Commitment

In establishing provisions for testing, APCo commits to compliance with NQA-1-2015, Part I, Requirement 11.

SECTION 12 CONTROL OF MEASURING AND TEST EQUIPMENT

Prior to initiating control of measuring and test equipment (M&TE) activities defined in this section, APCo shall establish the necessary measures and governing procedures to control the calibration, maintenance, and use of M&TE that provides data to verify acceptance criteria are met or information important to safe plant operation. The provisions of such procedures shall cover equipment such as indicating and actuating instruments and gages, tools, reference and transfer standards, and nondestructive examination equipment. The suppliers of commercial-grade calibration services are controlled as described in Part II, Section 7.

12.1 NQA-1 Commitment/Exceptions

In establishing provisions for control of M&TE, APCo commits to compliance with NQA-1-2015, Part I, Requirement 12 with the following clarification and exception:

- The out of calibration conditions described in NQA-1-2015, Part I, Requirement 12, Section 303.2, Corrective Action, refers to when the M&TE is found out of the required accuracy limits (i.e., out of tolerance) during calibration and not overdue for calibration.
- M&TE are not required to be marked with the calibration status, as described in NQA-1-2015, Part I, Requirement 12, Section 303.6, Status Indication, where it is impossible or impractical due to equipment size or configuration (such as the label will interfere with operation of the device) provided the required information is maintained in suitable documentation traceable to the device.

SECTION 13 HANDLING, STORAGE, AND SHIPPING

Prior to initiating handling, storage, and shipping activities defined in this section, APCo shall 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. These provisions shall include specific procedures, when required, to maintain acceptable quality of the items important to the safe operations of the plant(s). Items are appropriately marked and labeled during packaging, shipping, handling, and storage to identify, maintain, and preserve the item's integrity and indicate the need for special controls. Special controls (such as containers, shock absorbers, accelerometers, inert gas atmospheres, specific moisture content levels, and temperature levels) are provided when required to maintain acceptable quality.

Special or additional handling, storage, shipping, cleaning, and preservation requirements are identified and implemented as specified in procurement documents and applicable procedures. Where special requirements are specified, the items and containers (where used) are suitably marked.

Special handling tools and equipment are used and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment are inspected and tested in accordance with procedures at specified time intervals or prior to use.

Operators of special handling and lifting equipment are experienced or trained in the use of the equipment. Where required, APCo complies with applicable hoisting, rigging and transportation regulations and codes.

13.1 NQA-1 Commitment

In establishing provisions for handling, storage, and shipping, APCo commits to compliance with NQA-1-2015, Part I, Requirement 13.

SECTION 14 INSPECTION, TEST, AND OPERATING STATUS

Prior to initiating inspection, test, and operating status activities defined in this section, APCo shall 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 in order to maintain personnel and reactor safety and avoid inadvertent operation of equipment. Where necessary to preclude inadvertent bypassing of inspections or tests, or to preclude inadvertent operation, these measures shall require the inspection, test, or operating status be verified before release, fabrication, receipt, installation, test, or use. These measures shall also establish the necessary authorities and controls for the application and removal of status indicators or labels.

14.1 NQA-1 Commitment

In establishing measures for control of inspection, test and operating status, APCo commits to compliance with NQA-1-2015, Part I, Requirement 14.

SECTION 15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

Prior to initiating the activities defined in this section, APCo shall 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. Instructions shall require that the individual discovering a nonconformance identify, describe, and document the nonconformance in accordance with the requirements of Part II, Section 16. Controls shall provide for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations. Controls shall be provided to address conditional release of nonconforming items for use on an at-risk basis prior to resolution and disposition of the nonconformance, including maintaining identification of the item and documenting the basis for such release. Conditional release of nonconforming items for installation requires the approval of the designated management. Nonconformances are corrected or resolved prior to the item performing its intended safety function. Nonconformances are evaluated for impact on operability of quality structures, systems, and components to assure that the final condition does not adversely affect safety, operation, or maintenance of the item or service. Nonconformances to design requirements dispositioned repair or use-as-is are subject to design control measures commensurate with those applied to the original design. Nonconformance dispositions are reviewed for adequacy, analysis of quality trends, and reports provided to the designated management. Significant trends are reported to management in accordance with APCo procedures, regulatory requirements, and industry standards.

15.1 Interface with the Reporting Program

Appalachian Power will have appropriate interfaces between the QAP for identification and control of nonconforming materials, parts, or components and the non-QA Reporting Program to satisfy the requirements of 10 CFR 52, 10 CFR 50.55 and/or 10 CFR 21 during the ESP.

15.2 NQA-1 Commitment

In establishing measures for nonconforming materials, parts, or components, APCo commits to compliance with NQA-1-2015, Part I, Requirement 15.

SECTION 16 CORRECTIVE ACTION

Prior to initiating activities defined in this section, APCo shall establish the necessary measures and governing procedures to promptly identify, control, document, classify, and correct conditions adverse to quality. APCo shall assure that corrective actions are documented and initiated following the determination of conditions adverse to quality in accordance with regulatory requirements and applicable quality standards. APCo procedures shall require personnel to identify known conditions adverse to quality. When complex issues arise where it cannot be readily determined if a condition adverse to quality exists, APCo documents shall establish the requirements for documentation and timely evaluation of the issue. 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 working on safety-related activities, or other similar situations, APCo may delegate specific responsibilities for corrective actions, but APCo maintains responsibility for the effectiveness of corrective action measures.

16.1 Interface with the Reporting Program

Appalachian Power will have appropriate interfaces between the QAP for corrective actions and the non-QA Reporting Program to satisfy the requirements of 10 CFR 52, 10 CFR 50.55 and/or 10 CFR 21 during the ESP.

16.2 NQA-1 Commitment

In establishing provisions for corrective action, APCo commits to compliance with NQA-1-2015, Part I, Requirement 16.

SECTION 17 QUALITY ASSURANCE RECORDS

Prior to initiating activities defined in this section, APCo shall have the necessary measures and governing procedures 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 shall establish the scope of the records retention program for APCo and include requirements for records administration, including receipt, preservation, retention, storage, safekeeping, retrieval, access controls, user privileges, and final disposition. All records must be retrievable, maintained in a readable format, and safeguarded against equipment malfunction or human error. Document access controls, user privileges, and other appropriate security controls must be established.

17.1 Record Retention

Measures shall be established that ensure that sufficient records of completed items and activities affecting quality are appropriately stored. Records of activities for design, engineering, procurement, inspection and test, and audits and their retention times are defined in appropriate procedures. The records shall include at least the following: Operating logs and the results of reviews, inspections, tests, audits, monitoring of work performance, and materials analyses. The records shall also include closely related data such as qualifications of personnel, procedures, and equipment. Records shall be identifiable and retrievable. The records and retention times are based on Regulatory Position C.3.a.(1) for "Lifetime Records" and C.3.a.(2) for "Nonpermanent Records" of Regulatory Guide 1.28, Revision 5. In all cases where state, local, or other agencies have more restrictive requirements for record retention, those requirements will be met.

17.2 Electronic Records

When using optical disks for electronic records storage and retrieval systems, APCo complies with the NRC guidance in Generic Letter 88-18, "Plant Record Storage on Optical Disks." APCo will manage the storage of QA Records in electronic media consistent with the intent of Regulatory Information Summary (RIS) 2000-18 and implementation guidance for enterprise content management systems, web-based technologies, and higher capacity local area network (LAN)/wide area network (WAN) in associated Nuclear Information Records Management Association, Inc. (NIRMA) Technical Guidelines (TG) 11-2011, TG 15-2011, TG 16-2011, and TG 21-2011.

17.3 NQA-1 Commitment/Exceptions

In establishing provisions for records, APCo commits to compliance with NQA-1-2015, Part I, Requirement 17, and regulatory positions stated in Regulatory Guide 1.28, Revision 5.

SECTION 18 AUDITS

Prior to initiating audit activities defined in this section, APCo shall establish the necessary measures and governing procedures to implement audits to verify that activities covered by the QAPD are performed in conformance with the established requirements and performance criteria are met. The audit programs are themselves reviewed for effectiveness as a part of the overall audit process.

18.1 Performance of Audits

Internal audits of selected aspects of licensing and design activities are performed with a frequency commensurate with safety significance and in a manner which assures that audits of safety-related activities are completed. During the initial portions of APCo activities, audits will focus on areas including, but not limited to, site investigation, procurement, and corrective action. Functional areas of an organization's QA program for auditing include, at a minimum, verification of compliance and effectiveness of implementation of internal rules, procedures (e.g., design, procurement, surveillance, and test), technical specifications, regulations and license conditions, programs for training, retraining, qualification, corrective actions, and record keeping.

The audits are scheduled on a formal preplanned audit schedule and in a manner to provide coverage and coordination with ongoing activities, based on the status and importance of the activity. Additional audits may be performed as deemed necessary by management. The scope of the audit is determined by the quality status and safety importance of the activities being performed. These audits are conducted by trained personnel not having direct responsibilities 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 QAM.

APCo is responsible for conducting periodic internal and external audits. Internal audits are conducted to determine the adequacy of programs and procedures (by representative sampling), and to determine if they are meaningful and comply with the overall QAPD. External audits determine the adequacy of a supplier or contractor quality assurance program and are issued to the management of the audited organization and applicable APCo management.

The results of each audit are reported in writing to the VP New Nuclear, or designee, as appropriate. Additional internal distribution is made to other concerned management levels and to management of the internal audited organizations or activities in accordance with approved procedures.

Management responds to all audit findings and initiates corrective action where indicated. Where corrective action measures are indicated, documented follow-up of applicable areas through inspections, review, re-audits, or other appropriate means is conducted to verify implementation of assigned corrective action.

Audits of suppliers of safety-related components and/or services are conducted as described in Part II, Section 7.1.

18.2 Internal Audits

Internal audits of organization and facility activities, conducted prior to placing the facility in operation, shall be performed in such a manner as to assure that an audit of applicable QA program elements is completed at least once each year or at least once during the life of the activity, whichever is shorter.

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Nuclear Quality Assurance Program
Quality Assurance Program Description

Internal audits include verification of compliance and effectiveness of the administrative controls established for implementing the requirements of the QAPD; regulations and license provisions; provisions for training, retraining, qualification, and performance of personnel performing activities covered by the QAPD; corrective actions taken following abnormal occurrences; and activities including associated record keeping.

18.3 NQA-1 Commitment/Exceptions

In establishing the independent audit program, APCo commits to compliance with NQA-1-2015, Part I, Requirement 18, and the regulatory positions stated in Regulatory Guide 1.28, Revision 5, with the following clarification:

- APCo annual evaluation of the supplier in Regulatory Guide 1.28, Revision 5, C.4.b. (4). (a), (b), and (c) shall only be required to consider activities related to APCo procurement activities.

PART III NONSAFETY-RELATED SSC QUALITY CONTROL

Not Applicable for ESP only QAPD.

PART IV REGULATORY COMMITMENTS

Nuclear Regulatory Commission Regulatory Guides and Quality Assurance Standards

This section identifies the NRC RGs and the other quality assurance standards which have been selected to supplement and support the Nuclear QA Program. APCo complies with these standards to the extent described or referenced. Commitment to a particular RG or standard does not constitute a commitment to other RGs or standards that may be referenced therein.

Regulatory Guides:

Regulatory Guide 1.8, Rev. 4, June 2019, Qualification and Training of Personnel for Nuclear Power Plants

Regulatory Guide 1.8 provides guidance that is acceptable to the NRC staff regarding qualifications and training for nuclear power plant personnel. APCo identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in applicable license applications (e.g., safety analysis reports).

Regulatory Guide 1.26, Rev. 6, December 2021, Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants

Regulatory Guide 1.26 defines classification of systems and components containing water, steam, or radioactive material in light-water-cooled nuclear power plants. APCo identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in applicable license applications (e.g., safety analysis reports).

Regulatory Guide 1.28, Rev. 5, October 2017, Quality Assurance Program Criteria (Design and Construction)

Regulatory Guide 1.28 describes a method acceptable to the NRC staff for complying with the provisions of Appendix B with regard to establishing and implementing the requisite quality assurance program for the design and construction of nuclear power plants. APCo identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in applicable license applications (e.g., safety analysis reports).

Regulatory Guide 1.29, Rev. 6, July 2021, Seismic Design Classification for Nuclear Power Plants

Regulatory Guide 1.29 defines systems required to withstand a safe shutdown earthquake (SSE). APCo identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in applicable license applications (e.g., safety analysis reports).

Regulatory Guide 1.164, Rev. 0, June 2017, Dedication of Commercial-Grade Items for Use in Nuclear Power Plants

Regulatory Guide 1.164 provides guidance for dedication of commercial-grade items and services used in nuclear power plants. This RG endorses, in part, the Electric Power Research Institute (EPRI) 3002002982, Revision 1 to EPRI NP-5652 and TR-102260, "Plant Engineering: Guideline for the Acceptance of Commercial-Grade Items in Nuclear Safety-Related Applications". APCo identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in applicable license applications (e.g., safety analysis reports).

Regulatory Guide 1.231, Rev. 0, January 2017, Acceptance of Commercial-Grade Design and Analysis Computer Programs Used in Safety-Related Applications for Nuclear Power Plants

APCo ESP QAPD, Revision 0
Nuclear Quality Assurance Program
Quality Assurance Program Description

Regulatory Guide 1.231 describes methods acceptable to the NRC staff for complying with the Commission's regulations with regard to acceptance and dedication of commercial-grade design and analysis computer programs used in safety-related applications for nuclear power plants. APCo identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in applicable license applications (e.g., safety analysis reports).

Regulatory Guide 1.234, Rev. 0, April 2018, Evaluating Deviations and Reporting Defects and Noncompliance Under 10 CFR Part 21

Regulatory Guide 1.234 describes methods acceptable to the NRC staff for complying with the Commission's regulations with regard to 10 CFR Part 21, "Reporting of Defects and Noncompliance". APCo identifies conformance and exceptions for the applicable regulatory position guidance provided in this regulatory guide in applicable license applications (e.g., safety analysis reports).

Standards:

ASME NQA-1-2015 Edition - Quality Assurance Requirements for Nuclear Facility Applications

APCo commits to NQA-1-2015, Parts I and II, as described in Parts I and II of this document with specific identification of exceptions or clarifications. APCo commits to NQA-1-2015, Part III, only as specifically noted in Parts I and II of this document.

NIRMA Technical Guidelines

APCo commits to NIRMA TGs as described in Part II, Section 17.

Nuclear Energy Institute (NEI) 14-05A, Guidelines for the Use of Accreditation In Lieu of Commercial Grade Surveys for Procurement of Laboratory Calibration and Test Services, Revision 1

In establishing controls for purchased items and services, APCo commits to compliance with NQA-1-2015, Part I, Requirement 7, as described in Part II, Section 7.2.

PART V ADDITIONAL QUALITY ASSURANCE AND ADMINISTRATIVE CONTROLS FOR THE PLANT OPERATIONAL PHASE

Not Applicable for ESP only QAPD.

Certificate Of Completion

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 Subject: Complete with DocuSign: AEP-SMR-NRC-2025-001 APCo SMR QAPD.pdf
 Source Envelope:
 Document Pages: 42
 Certificate Pages: 2
 AutoNav: Enabled
 Envelopeld Stamping: Disabled
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Status: Completed

 Envelope Originator:
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 Gahanna, OH 43230
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 Using IP Address: 167.239.221.104

Timestamp

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 Viewed: 1/28/2025 10:34:28 AM
 Signed: 1/28/2025 10:34:39 AM

Electronic Record and Signature Disclosure:
 Accepted: 1/28/2025 10:34:28 AM
 ID: bd4d8521-f9d5-4b04-b8f2-c97ce87e6a56

In Person Signer Events

Signature

Timestamp

Editor Delivery Events

Status

Timestamp

Agent Delivery Events

Status

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Intermediary Delivery Events

Status

Timestamp

Certified Delivery Events

Status

Timestamp

Carbon Copy Events

Status

Timestamp

Witness Events

Signature

Timestamp

Notary Events

Signature

Timestamp

Envelope Summary Events

Status

Timestamps

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Certified Delivered	Security Checked	1/28/2025 10:34:28 AM
Signing Complete	Security Checked	1/28/2025 10:34:39 AM
Completed	Security Checked	1/28/2025 10:34:39 AM

Payment Events

Status

Timestamps

Electronic Record and Signature Disclosure

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

Each party agrees that the electronic signatures, whether digital or encrypted, of the parties included in this Agreement are intended to authenticate this writing and to have the same force and effect as manual signatures. Electronic signature means any electronic sound, symbol or process attached to or logically associated with a record and executed and adopted by a party with the intent to sign such record.

Please confirm your agreement by clicking the 'I agree' button at the bottom of this document.