17.2 QUALITY ASSURANCE DURING THE OPERATIONS PHASE

17.2.0 INTRODUCTION

Susquehanna Nuclear, LLC (Susquehanna) is fully responsible for testing, operating, maintaining, refueling and modifying the Susquehanna Steam Electric Station (SSES) in compliance with Federal, State, and local laws and the plant operating license requirements. These activities are also performed in response to required codes and specified QA-related NRC regulatory guides. These QA-related regulatory guides and associated ANSI standards are listed in Table 17.2-1.

To assure compliance with 10CFR50, Appendix B and other regulatory requirements, Susquehanna has established and implemented a management control plan for assuring the quality of safety-related activities during the operations phase. The plan consists of the

A. Quality Assurance Program Description (QAPD) consisting of FSAR Sections 13.4 and 17.2 that contain Susquehanna's Quality Assurance commitments to the Nuclear Regulatory Commission and

B. Operational Quality Assurance (OQA) Program consisting of the Susquehanna documents that respond to the QAPD commitments. These OQA Program documents include:

    1. Operational Quality Assurance Manual OQAM containing Operational Policy Statements (OPS) that define the policies Susquehanna has established to meet the provisions of the QAPD

    2. Quality-related upper tier procedures

    3. Quality-related lower tier procedures that contain the detailed information necessary for each organization to comply with the OQA Program requirements

The relationships between these documents are shown in Figure 17.2-1.

In implementing the OQA Program, Susquehanna assures that its activities comply with Federal Regulations that are designed to protect the health and safety of the public.

The OQA Program policies, goals and objectives of Susquehanna are stated in the following Nuclear Quality Philosophy and Intent statement:

> For the Susquehanna Steam Electric Station, Susquehanna will comply with the requirements of 10CFR50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants and other applicable federal regulations with respect to all safety-related activities which include engineering, design, procurement, construction, preoperational testing, power testing, operation, maintenance, refueling, repairing, modification and in-service inspection. Susquehanna is also committed to be responsive to the applicable Regulatory Guides, Industry Codes and Standards, or parts thereof, as specifically noted in controlling documents. The applicability of these Guides, Codes, and Standards, or parts thereof, shall be determined by the responsible managers. If Guides, Codes, or Standards are nonexistent or inadequate, Susquehanna shall develop the required practices and procedures with the controls necessary for their implementation.

17.2.1 ORGANIZATION

Susquehanna has been established to provide a cohesive management team with the primary objective of providing long-term technical and management support for SSES. The responsibilities of the key management positions are described in the following subsections. The authority to accomplish these activities is delegated as necessary to fulfill these responsibilities.

Figures 17.2-3, and 17.2-4 show the organizational structure and lines of responsibility for the groups that provide technical and management support for SSES. Specific titles for the management positions described in Technical Specification 5.2 are identified in conjunction with the description of their responsibilities below. The specific titles for all other management positions are identified in procedures.

In addition to the key management positions , these committees are established:

- The Plant Operations Review Committee (PORC) is established as a review group whose function is to advise the plant manager on matters related to nuclear and environmental safety; and

- The Nuclear Safety Review Board (NSRB) is established as a review, audit and advisory group whose function is to verify, independently, that the SSES is being tested, operated and maintained in accordance with all safety-related, ALARA and environmental requirements. The NSRB will perform the independent review mandated by ANSI N18.7.

FSAR Section 13.4, Review and Audit, provides discussions regarding the make-up and responsibilities of these committees. Implementation of Improved Technical Specifications (ITS) has added FSAR Section 13.4 within the scope of the OQA Program and therefore the criterion of 10CFR50.54(a) must be applied to any changes to FSAR Section 13.4.

17.2.1.1 Chief Nuclear Officer Responsibilities

The Chief Nuclear Officer (CNO)[1] has overall authority and responsibility for the SSES OQA Program and, as a result, he/she:

a. Requires the performance of an annual, preplanned and documented assessment of the OQA Program in which corrective action is identified and tracked.

b. Sets OQA Policies, goals and objectives for safe operation of SSES.

c. Commits Susquehanna to an OQA Program designed to assure compliance with regulatory requirements, which includes reviewing and approving the QAPD and OQAM.

d. Requires compliance with the provisions of the OQA Program and causes periodic audits of Susquehanna commitments and established practices for safe plant operation.

In order to maintain a continuing involvement in QA matters, the CNO receives periodic reports on the status and adequacy of the OQA Program from the Manager-NOS and reviews and approves the Operational Policy Statements contained in the OQA Manual prior to their issuance.

[1] This is the specific title for the individual responsible for the “Corporate Officer” position described in Technical Specification 5.2.1.

The CNO delegates the responsibilities for attaining specified quality levels to the executive managers and other managers. The CNO delegates the responsibility for verifying that those quality levels have been met to the Manager-NOS.

The CNO has corporate responsibility for overall plant nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the plant to ensure nuclear safety.

The CNO is responsible for performance of those oversight functions that verify compliance with OQA Program requirements and for management of the interfaces between Susquehanna and the principle federal and state regulators. The CNO is also responsible for the development and implementation of the Susquehanna employee concerns program. The subordinate managers and representatives responsible for these functions are assured direct access to the Talen Energy Corporation President & CEO to preclude any potential independence conflicts they may experience as a function of their reporting relationship to the CNO.

These positions report directly to the Chief Nuclear Officer:

- The senior executive manager
- Manager-Nuclear Oversight
- Employee Concerns Program Representative(s)

17.2.1.2 Executive Management Position Responsibilities

a. The senior executive manager is responsible for providing managerial leadership and strategic direction for the operation of Susquehanna Nuclear, LLC and for developing and implementing the Susquehanna nuclear training programs.

b. The Plant Manager[2] reports directly to the senior executive manager and is responsible for overall safe operation of the plant and shall have control over those on-site activities necessary for safe operation and maintenance of the plant. The Plant Manager shall delegate in writing the succession to this responsibility during his/her absence. This responsibility is implemented in such a fashion as to ensure safe, efficient, and reliable operation of SSES.

   Responsibilities include:

   - Ensuring protection of plant personnel and the public from radiation exposure and/or consequences of an accident at the plant.

   - Operating and maintaining SSES in compliance with the applicable requirements of the Nuclear Regulatory Commission and other regulatory agencies, and in full compliance with the facility Operating License, the Technical Specifications, the FSAR, and the OQA Program including its implementing documents.

   - Approving, prior to implementation, each proposed test, experiment, or modification to systems or equipment that affect nuclear safety.

[2] This is the specific title for the individual responsible for the “plant manager” position described in Technical Specification 5.2.1.

- Developing and implementing administrative procedures to limit the working hours of unit staff who perform safety-related functions (e.g., licensed Senior Reactor Operators, licensed Reactor Operators, health physicists, auxiliary operators, and key maintenance personnel), in accordance with 10CFR26, Subpart I.

c. The engineering executive manager reports directly to the senior executive manager and is responsible for providing leadership and strategic direction for engineering activities and their quality management. These activities include:

– Design and design verification related to plant modifications,

– Establishment of the technical requirements for the procurement of systems, components, and spare parts,

– Engineering support for outage activities,

– Design and procurement of nuclear fuel

– Engineering safety analysis, and

– Special projects.

In addition to the above responsibilities, the engineering executive manager is specifically responsible for:

- On-going planning, development, maintenance, and upgrade of information services within Susquehanna Nuclear, LLC, including hardware and software.

- Providing procedural guidance on the implementation of the Non-Process Software Quality Assurance Program.

- Serving as the principal Susquehanna Nuclear, LLC contact with the Talen Energy information services support personnel.

- Providing for the procurement of materials and services in support of the safe, efficient, and reliable operation and maintenance of SSES.

- Serving as principal Susquehanna Nuclear, LLC contact with the Talen Energy supply chain support personnel relative to the procurement, procurement engineering and warehousing functions.

17.2.1.3 Manager-Nuclear Oversight Responsibilities

The Manager-Nuclear Oversight (NOS)[3] and the NOS staff are independent of organizations responsible for performing safety-related activities. NOS has sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions through designated channels; and to verify implementation of solutions. The individuals who

[3] This is the specific title for the individual responsible for “performing quality assurance functions” as described in Technical Specification 5.2.1.

perform NOS functions shall have sufficient organizational freedom to ensure their independence from operating pressures.

Susquehanna Nuclear, LLC requires the Manager-NOS to have qualifications commensurate with the responsibilities of that position. The minimum qualification requirements for the Manager-NOS are stated in FSAR Section 13.1.1.1.3.

The Manager-NOS receives day-to-day direction from the CNO, but is assured direct access to the Talen Energy Corporation President & CEO on matters related to the implementation of the OQA Program.

To fulfill its organizational responsibilities, NOS is structured as functional groups as shown in Figure 17.2-4.

The Manager-NOS has these responsibilities:

a. Audit

(1) Auditing Susquehanna activities and reporting the results of these audits and assessments to responsible management. These audits are performed to determine the degree of compliance with the requirements of the OQA Program and to help Susquehanna realize continuous process and productivity improvements.

(2) Informing the Plant Manager when it is determined that safety-related components or activities performed on those components fail to comply with approved specifications, plans, or procedures. The Plant Manager is responsible for the evaluation of conditions adverse to quality with regard to plant operations and is responsible for determining when an operating unit(s) is to be shut down.

(3) Taking action (including work stoppage) as necessary to correct conditions adverse to quality.

b. Quality Assurance

(1) Directing and coordinating the development and updating of Susquehanna Quality Assurance Program Description (QAPD, i.e., FSAR Sections 13.4 and 17.2) and Operational Quality Assurance (OQA) Manual (OQAM i.e., Operational Policy Statements).

(2) Interpreting the QAPD, subject to the approval of the CNO.

(3) Providing training assistance in OQA Program requirements.

(4) Providing for the NOS review of Susquehanna documents to ensure compliance with the OQA Program.

(5) Interfacing with third party auditors (e.g., NIEP, INPO) for resolution of items that are identified in audit findings or issues involving NOS activities for which he/she is responsible.

(6) Providing the Susquehanna interface to industry groups with regard to quality-related matters.

(7) Taking action (including work stoppage) as necessary to correct conditions adverse to quality.

c. Vendor Quality

(1) Evaluating the QA programs of potential vendors of material, equipment, and/or services to determine the programs' adequacy for providing quality-related products or commercial grade items (CGI).

(2) Auditing vendor activities that fall within the scope of the OQA Program to determine the degree of compliance with the requirements of the OQA Program and/or procurement documents, and reporting the results of these activities to responsible management.

(3) Developing and implementing source verification plans for in-process inspections at vendor facilities.

d. Independent Technical Review (ITR)

The Manager NOS is responsible for independent oversight activities performed to accomplish independent technical review. Independent oversight activities shall be performed in accordance with implementing procedures to ensure the completion of independent technical review.

(1) Independent technical review shall be used to observe and verify that activities are performed correctly and that human errors are reduced as much as practical.

(2) Independent technical review shall include, but not limited to, these activities:

- Unit operating characteristics
- Nuclear Regulatory Commission generic communications
- Industry advisories
- License Event Reports
- Other sources of unit design and operating experience information, including units of similar design, which may indicate areas for improving unit safety
- Plant operations
- Maintenance activities
- Equipment modifications

(3) As determined by NOS management, several personnel performing independent technical review will be required to have a degree in engineering or related science and at least 3 years of professional level experience in the nuclear field.

(4) Personnel performing independent technical review should be independent of performance function, signoff function, and the plant management chain while performing this oversight activity.

(5) The results of independent technical review will be periodically transmitted to appropriate senior and line management, the NSRB, and the CNO for review and/or action and to advise management on the overall quality and safety of operations.

(6) Conditions adverse to quality and recommendations identified during the performance of independent technical review shall meet the requirements of 17.2.16.

(7) Procedures related to ITR shall identify the records that are required to implement and document those activities (Ref. FSAR 17.2.17).

e. Quality Control

(1) Perform inspection planning.

(2) Perform inspections utilizing trained personnel in the Electrical, I&C, Mechanical and Civil disciplines.

(3) Evaluate inspection results and recommend changes to inspection levels.

(4) Review Condition Reports to determine the need for tagging nonconforming material.

(5) Perform receipt inspection of materials.

(6) Maintain the nondestructive examination (NDE) program and the functions of the corporate NDE-Level III.

f. General

(1) Developing and maintaining NOS procedures.

(2) Assuring the indoctrination, training/retraining, and qualification of personnel performing activities under his/her control.

17.2.1.4 Other Management Position Responsibilities

The management positions fulfilling the responsibilities described below report to the executives identified in Section 17.2.1.2 or 17.2.1.1 above. The managers fulfilling these responsibilities may report through an additional layer of management but shall maintain sufficient authority and organizational freedom to implement the assigned responsibilities. These managers may fulfill more than one function described below.

a. Design Engineering

– Design and modification of the plant in accordance with applicable codes, standards, and regulations.

– Provide engineering support to identify technological solutions to address plant problems, and to establish and implement procedures that control material and component specifications, system designs, and modification activities.

- Configuration management, which includes oversight of the procurement engineering functions performed by the Talen Energy supply chain support personnel.

b. Nuclear Fuels

- Nuclear fuel procurement
- Off-site material accountability
- Fuel bundle design
- Reactor core design
- Reactor safety analysis
- Guidelines and analysis in support of core operation
- Offsite spent fuel disposition
- Fuel engineering safety analysis
- Risk assessment

c. Maintenance

- Maintenance of the plant systems, components and structures. Sub-functions include:
  - Electrical Maintenance
  - I&C Maintenance
  - Mechanical Maintenance
  - Maintenance Planning
  - Modification Installation/Planning
  - Fix-It-Now (FIN) Team (includes predictive maintenance)
  - Management of Refuel Floor Activities
  - Project management of the Dry Fuel Storage Program
  - Component Maintenance Optimization (includes predictive and component maintenance engineering functions)

d. Operations[4]

- All plant operations during both normal and off-normal conditions.
- On-site core management.
- Control of special nuclear material.
- Coordination of reactor refueling and core testing activities.
- Administration of the reactivity management program.

e. Regulatory Affairs

- Managing the interfaces between Susquehanna and the principle state and federal nuclear regulatory agencies.
- Directing the licensing aspects of SSES including updating the FSAR.
- Coordinating the preparation and issuance of correspondence to the NRC.
- Administration of the Susquehanna corrective action, self-assessment and operating experience programs, which includes development and maintenance of trending, tracking, and reporting activities associated with these programs.

f. Security

- Providing physical security for SSES, which includes preventing radiological sabotage or other acts that would endanger public health or safety, and protecting against the commission of acts contrary to law and/or company policy.
- Security coverage is provided around the clock; specific staffing is described in the SSES Security Plan.

g. Emergency Planning

- Ensure Emergency Plan changes and required documentation and communications are sent to NRC as required.
- Identifies personnel to fill Functional Lead positions.
- Manages Drill and Exercise program

[4] This is the description for the individual that fulfills the responsibilities of the “operations manager” position described in Technical Specification 5.2.2. Subordinate to this management position is an individual that fulfills the responsibilities of the “assistant operations manager” position described in Technical Specification 5.2.2.

- Emergency plan coverage is provided around the clock; specific staffing is described in the SSES Security Plan.

h. Training[5]

- Providing training to meet the needs of Susquehanna managers in their task of ensuring that subordinates are knowledgeable of the policies, programs, procedures, principles, skills, tools, equipment handling capabilities, and other information necessary to competently, safely, and efficiently accomplish their assigned tasks.

- Most of the formal nuclear instruction conducted for personnel involved with SSES.

- Ensuring all programs are current and, where appropriate, accredited.

- Assessing the long-term training needs regarding SSES and developing training programs commensurate with those needs.

- The individuals who train the operating staff shall have sufficient organizational freedom to ensure their independence from operating pressures.

i. Radiation Protection[6]

- Implementing the SSES Radiological Protection Program, including developing radiological protection standards, monitoring the implementation of these standards, and ensuring compliance with governing regulations.

- Dosimetry, the storage of radioactive material, radwaste shipment (which includes processing and inspection), radwaste management, radiological operations, decontamination, ALARA functions and support services. Radiation Protection Technicians assist with the implementation of these functions.

- The individuals who carry out radiation protection activities shall have sufficient organizational freedom to ensure their independence from operating pressures. As described in the SSES Emergency Plan, radiation protection coverage is provided around the clock.

j. Station Engineering

- Providing the engineering necessary to support operations and maintenance at SSES.

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[5] This is the description for the individual that fulfills the responsibilities for “training the operating staff” as described in Technical Specification 5.2.1.

[6] This is the description for the individual that fulfills the responsibilities for “carrying out health physics” as described in Technical Specification 5.2.1 and for the “Supervisor-Health Physics” position described in Technical Specification 5.3.1.

- Optimize plant systems performance throughout the life of the units (the mission of Station Engineering) by monitoring system performance; anticipating, defining and preventing problems; identifying and implementing improvements; and resolving unexpected problems.

- Providing procedural guidance on the implementation of the Process Software Quality Assurance Program.

- The above activities are accomplished through these sub-functions:

  - Computer Systems
  - Power and Generation
  - Safety and Support
  - Equipment Reliability
  - Fire Protection
  - Programs and Testing
  - Maintain the welding program
  - ASME Section XI code repair

k. Work Management (Online)

- Coordination of the process by which physical work activities are scoped, planned, scheduled, coordinated, released, and completed.

- The interface between SSES organizations to ensure coordination of all activities associated with work at the station including corrective and preventive maintenance, surveillances, modifications support, and testing.

l. Work Management (Outage)

- Providing long-term outage strategy, direction, and leadership for Susquehanna to ensure that outage activities are planned, scheduled, and completed in an effective manner and in accordance with the provisions of the OQA Program, without compromising the safety of the public, plant personnel, or plant equipment.

m. Plant Chemistry/Environmental

- Maintaining an effective plant chemistry program that preserves and protects plant components and equipment.

- Providing an accurate and thorough analytical laboratory

- Complying with the governing radiological and non-radiological environmental regulations to minimize corrosion and ensure plant, personnel, and public safety.

- As described in the SSES Emergency Plan, chemistry coverage is provided around the clock.

n. Records Management/Document Control

- Developing and implementing a records management/document control system for SSES that meets the requirements of the OQA Program.

- Administrative functions necessary to facilitate Susquehanna operations.

17.2.1.5 PPL Electric Utilities Responsibilities

PPL Electric Utilities provides resources in support of switchyard and transmission activities via a Nuclear Plant Interface Agreement.

17.2.1.6 Talen Energy Responsibilities

Talen Energy is responsible for the purchase of parts, materials and services under the direction of the engineering executive manager. Talen Energy is responsible for procuring materials and services that conform to applicable technical and quality requirements established by Susquehanna and, where required, from suppliers approved by Susquehanna.

In addition, Talen Energy is responsible for conducting warehouse operations in accordance with applicable QA program requirements under the direction of the engineering executive manager.

Furthermore, Talen Energy is responsible for performing procurement engineering functions in accordance with applicable QA program requirements under the direction of the engineering executive manager and the oversight of the manager fulfilling the Design Engineering responsibilities.

Talen Energy also provides resources in support of health services, human resources, and information technology and some maintenance/labor support.

17.2.2 QUALITY ASSURANCE PROGRAM

The Operational Quality Assurance (OQA) Program is applied to all safety-related SSES structures, systems, components, and activities.

Safety-Related is a generic term applied to:

1. Those systems, structures, and components that meet one or more of the following requirements:

   a. Maintain the integrity of the Reactor Coolant System pressure boundary.

b. Assure their capability to prevent or mitigate the consequences of accidents that could cause the release of radioactivity in excess of 10CFR50.67 limits.

c. Preclude failures that could cause or increase the severity of postulated accidents or could cause undue risk to the health and safety of the public due to the release of radioactive material.

d. Provide for safe reactor shutdown and immediate or long-term post-accident control.

2. Those activities that affect the systems, structures and components discussed in Item 1 above such as their design, procurement, construction, operation, refueling, maintenance, modification and testing.

The engineering executive manager is responsible for maintaining a list designating those structures, systems, and components that are safety-related based upon the applicable portions of FSAR Table 3.2-1. The CNO has assigned to the Manager-NOS the responsibility for regularly assessing the scope, status, implementation, and effectiveness of the OQA Program. This will assure that the OQA Program is adequate and complies with 10CFR50, Appendix B and regulatory requirements.

The OQA Program requires that safety-related activities be performed by properly qualified personnel under suitably controlled conditions. Controlled conditions include the use of appropriate tools and equipment, processes and procedures, suitable environmental conditions; and assurance that prerequisites have been satisfied. The OQA Program also addresses the need for verification of quality by inspection, examination, and test.

The Manager-NOS is responsible for establishing and maintaining the OQA Program and for ensuring that it provides adequate control of all activities. The Manager-NOS is responsible for assuring that functions delegated to principal contractors are being properly accomplished. Supplier QA programs are evaluated to determine that the requirements of 10CFR50, Appendix B will be implemented and this evaluation is documented.

The corporate OQA policies, goals, and objectives are transmitted to the persons performing activities that are required by the OQA Program and supporting documents. The commitments of the QAPD are described in FSAR Sections 13.4 and 17.2, which also assign responsibilities for implementing OQA Program commitments. The OQA Manual contains Operational Policy Statements (OPS) that stipulate Susquehanna QA policies, goals and objectives for implementing the QAPD commitments. These policies give generic direction for the performance of activities. A synopsis of the OPS and a matrix that cross-references them to each criterion of 10CFR50, Appendix B is contained in Table 17.2-2.

The QAPD is patterned after and fully complies with ANSI N18.7-1976 as modified by NRC Regulatory Guide 1.33, Revision 2, except for the review frequency of procedures, frequency of QA program audits, and other exceptions listed in FSAR Table 17.2-1. Review frequency of procedures is as follows:

a. Susquehanna procedures will be assessed for adequacy either periodically or continuously in accordance with administrative controls. For those procedures that periodic review is used as the assessment method, these controls will establish a schedule for review.

b. Routine procedures provide the fundamental written guidance for routinely managing, operating, maintaining, and supporting the plant. Routine procedures will be assessed by users before and during use to determine whether changes are necessary or desirable. Routine procedures will receive an appropriate degree of scrutiny by individuals knowledgeable in the procedure during activities such as normal procedure usage, development of plant modifications, industry experience reviews, licensing actions, training activities, corrective actions for nonconforming conditions, and NOS audits and independent assessments, and will be updated as necessary to ensure adequacy.

   At least every two years, the NOS (or other independent) organization will audit/assess a representative sample of routine procedures that are used more frequently than every two years. The assessment will ensure the acceptability of the procedures and the effectiveness of the program for review and revision of procedures.

c. Non-routine procedures are those procedures whose use is event-driven, such as Emergency Operating Procedures, Emergency Plan Position-Specific Procedures, and Off-Normal Procedures. Non-routine procedures will be reviewed every two years.

d. All applicable procedures will be reviewed following an unusual incident, unexpected transient, operator error, or equipment failure (malfunction), and following a modification to a system.

The degree of compliance with other regulatory guides and associated ANSI Standards is listed in Table 17.2-1. Where guides, codes or standards are nonexistent or inadequate, Susquehanna will develop methods to provide the necessary control. The QAPD requirements are mandatory for all safety-related activities. Each manager is responsible for assuring that safety-related activities performed by his/her organization meet the requirements of the QAPD. The Manager-NOS is responsible for the audit, review, inspection and verification of activities both on-site and off-site to assure that they are accomplished according to the OQA Program requirements. QC activities shall be performed in compliance with the OQA Program requirements.

Disagreements between NOS and other Susquehanna personnel (such as those in the engineering, operations or maintenance organizations) concerning the OQA Program and related activities will be resolved between the Manager-NOS and the affected group's supervisor or manager. Disagreements not resolved at these levels will be referred to the CNO for resolution.

The content of the OQA Manual is controlled by the NOS organization and controlled distribution is provided by Nuclear Records. All managers responsible for the performance of safety-related activities have access to the OQA Manual.

The Manager-NOS is responsible for obtaining appropriate review and approval of the content and changes to the QAPD and OQA Manual. Any group performing activities governed by the QAPD and OQA Manual may propose changes to these documents. All QAPD (FSAR Sections 13.4 and 17.2) changes shall be reviewed and approved by the Manager-NOS and the CNO. All OQA Manual changes shall be reviewed by the managers affected by the change, and reviewed and approved by the Manager-NOS and the CNO. Upper tier procedures that implement the OQA Program shall be reviewed to ensure that appropriate QA provisions have been incorporated and approved by the appropriate senior manager. Responsible managers shall ensure the proper review and approval, in accordance with Section 17.2.6, of the lower tier procedures under their jurisdiction. Control of supplier QA programs is addressed in Subsection 17.2.7.

Individuals performing inspection, examination and testing functions associated with normal operations of the plant, such as surveillance testing, routine maintenance and certain technical reviews normally assigned to the on-site operating organization shall meet or exceed the qualifications of ANSI/ANS 3.1-1978 if not otherwise required to meet the qualification provisions of Technical Specification 5.3. Personnel whose qualifications are not required to meet those specified in ANSI/ANS 3.1-1978 or Technical Specification 5.3 and who are performing inspection, examination and testing activities during the operational phase of the plant shall be qualified to ANSI N45.2.6-1978, except that the QA experience cited for Levels I, II and III shall be interpreted to mean actual experience in carrying out the types of inspection, examination and testing activity being performed.

Managers are responsible for assuring that their personnel receive the indoctrination and training necessary to properly perform their activities. The indoctrination and training program shall be such that personnel performing activities are knowledgeable in procedures and requirements and proficient in implementing those procedures. The program assures that:

a. Personnel responsible for performing activities are instructed as to the purpose, scope, and implementation of the safety-related manuals, instructions, and procedures that control their activities.

b. Personnel performing activities are trained and qualified in the principles and techniques of the activity being performed.

c. The scope, the objective, and the method of implementing the indoctrination and training program are documented.

d. Proficiency of personnel performing activities is maintained by retraining. Re-examination and/or recertification will be utilized as applicable.

e. Methods are provided for documenting training sessions, including a description of the content and results and a record of attendance.

In addition, certain provisions of the OQA Program are applied to fire protection. These provisions apply to those items within the scope of the Fire Protection Program (e.g., fire protection systems; emergency lighting, communication, and breathing apparatus) that are designed to protect safety-related areas and equipment. Specifically, the OQA Program shall be applied to implement the 10 quality assurance criteria listed in Branch Technical Position APCSB 9.5-1.

The OQA Program is also structured and implemented such that the requirements of Subpart H, “Quality Assurance,” of 10CFR71, "Packaging and Transportation of Radioactive Material," and Subpart G, “Quality Assurance,” of 10CFR72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste,” are fulfilled.

17.2.3 DESIGN CONTROL

The OQA Program documents identify those managers responsible for performing design activities and describe their responsibilities and methods for meeting the OQA Program requirements.

Organizations that perform design activities shall have procedures detailing the steps necessary to ensure compliance with the OQA Program requirements applicable to their design activities. These procedures assure that design activities, including changes in the design, are carried out in a planned, controlled, and orderly manner.

Applicable design inputs such as regulatory requirements, codes and standards, and design bases shall be reflected in design output documents such as specifications, drawings, written procedures, and instructions. These design output documents shall specify the appropriate quality standards. Any deviations from these quality standards will be accomplished in accordance with OQA Program requirements.

The design control process shall include, but not be limited to, the following, where applicable:

a. Reactor physics

b. Seismic, stress, thermal, hydraulic, radiation, and accident analyses

c. Material compatibility

d. Accessibility of items for in-service inspection, maintenance, and repair

e. Verification that the design characteristics can be controlled, inspected and tested

f. Identification of inspection and test criteria.

The design engineer shall evaluate and select suitable materials, parts, equipment, and processes for safety-related structures, systems, and components. This evaluation and selection shall include the use of appropriate industry standards and specifications. Materials, parts, and equipment that are standard, commercial (off the shelf), or that have been previously approved for a different application, shall be reviewed for suitability in the intended application prior to use.

Internal and external interfaces between organizations performing work affecting quality of design shall be identified. Procedures shall be established to control the flow of design information between organizations. These procedures shall include the review, approval, release, distribution, and revision of documents involving design interfaces with other organizations.

Designs shall be reviewed to assure that design characteristics can be verified and acceptance criteria are identified.

Designs shall be verified by reviewing, alternate calculations, or qualification testing. Design verification shall be performed by a qualified person or group other than the original designer or the designer's immediate supervisor. However, supervisors may perform design verification subject to the restrictions of Paragraph C.2 of Regulatory Guide 1.64, Revision 2 as modified by Table 17.2-1. Procedures for design verification shall identify the responsibility and authority of persons or groups performing design verifications. When a test program is used to verify the adequacy of a design, the test will be performed on a prototype unit or initial production unit and shall demonstrate adequacy of performance under the most adverse design conditions.

Changes to design output documents, including field changes, shall be subjected to design control measures the same as, or equivalent to, the original measures.

Responsible plant personnel are made aware of design changes/modifications that may affect the performance of their duties by:

a. Plant Operations Review Committee (PORC) review of modifications prior to implementation, provides an opportunity for plant management to become aware of impacts of design changes.

b. Installations of modifications are controlled by the plant work authorization system.

c. Nuclear Engineering (or the originating group for Engineering Change Orders [ECOs]) notifies plant supervisors of design changes to allow updating of plant procedures.

d. Effects of modifications are incorporated into the plant training program.

Errors and deficiencies in the design or the design process that could adversely affect safety-related structures, systems, and components will be documented and corrective action will be taken in accordance with Subsection 17.2.16. Design documents, including changes, are filed as described in Subsection 17.2.17.

17.2.4 PROCUREMENT DOCUMENT CONTROL

OQA Program documents identify those managers responsible for activities related to the control of procurement documents and describe their responsibilities and methods for meeting the OQA Program requirements. Procedures detail the steps to be accomplished in the preparation, review, approval and control of procurement documents. Managers are responsible for establishing, maintaining and implementing procedures as required for their organizations to comply with OQA Program requirements.

Procurement documents shall contain or reference as applicable:

a. Design basis technical requirements including the applicable regulatory requirements.

b. Component and material identification requirements.

c. Drawings.

d. Specifications.

e. Codes and industry standards.

f. Manufacturers' test and inspection requirements.

g. Special process instructions.

Procurement documents shall identify: a) the applicable quality requirements that must be met and described in the supplier's QA program, b) the documentation (such as drawings, specifications, procedures, inspection and fabrication plans, inspection and test records, personnel and procedure qualifications, and material, chemical and physical test results) to be prepared, maintained and submitted to Susquehanna for review and approval, and c) those records that shall be retained, controlled, maintained or delivered to Susquehanna prior to use or installation of the purchased

items. Procurement documents shall also contain provisions for Susquehanna or its agent, as applicable, to have the right of access to suppliers' and sub tier suppliers' facilities and records for source verification and audits.

Procurement documents shall also require that the supplier submit, when required, its QA Program or portions thereof to Susquehanna for review and approval by qualified NOS personnel prior to initiation of activities controlled by the Program.

When purchasing commercial-grade (as defined in 10CFR21) calibration services from NVLAP and A2LA accredited calibration laboratories, procurement documents do not need to require a quality assurance program consistent with ANSI N45.2-1971. The following alternative requirements may be implemented in lieu of imposing a quality assurance program consistent with ANSI N45.2:

a. The accreditation is to ANSI/ISO/IEC 17025.

b. The accrediting body is either NVLAP or A2LA.

c. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

d. The calibration/report shall include identification of the laboratory equipment/standards used.

e. Reporting of as-found calibration data when calibrated items are found to be out-of-tolerance.

When purchasing calibration services from the National Institute of Standards and Technology (NIST), procurement documents do not need to require a quality assurance program consistent with 10CFR50, Appendix B and ANSI N45.2-1971 since NIST is a nationally recognized laboratory with proven abilities and disciplines.

Procurement documents shall be reviewed by qualified personnel for adequacy of quality requirements (such as acceptance and rejection criteria). Quality requirements shall be correctly stated, inspectable and controllable. Prior to their release, procurement documents shall have been prepared, reviewed and approved in accordance with OQA Program requirements. The procurement document review and approval is documented and filed as described in Subsection 17.2.17.

When procurement documents are revised, they are subject to the same or equivalent review and approval as the original document. Procurement documents for safety-related spare or replacement parts for structures, systems and components are subject to controls the same as or equivalent to those used for the original equipment. All activities described in this subsection are to be performed by personnel qualified to perform the activity.

17.2.5 INSTRUCTIONS, PROCEDURES AND DRAWINGS

Activities shall be accomplished in accordance with documented instructions, procedures or drawings. This subsection applies to internal Susquehanna instructions, procedures and drawings. Such requirements for contractors and vendors are included in procurement documents as discussed in Subsection 17.2.4.

There are three general levels of OQA Program documents that are used to implement the QAPD. The first document level is comprised of Operational Policy Statements (OPS) that describe Susquehanna's policies for complying with 10CFR50, Appendix B and QAPD requirements. These OPS delineate the requirements for preparing, reviewing, approving, and controlling instructions, procedures, and drawings.

The second level of documents used to implement the QAPD consists of upper tier procedures. These documents describe inter- and intra-department interfaces and may provide detailed instructions for implementing the OQA Program requirements. The third level of documents consists of lower tier procedures, which detail the specific instructions necessary to implement the OQA Program requirements. These documents require that instructions, procedures or drawings specify the methods utilized in complying with OPS requirements. Instructions, procedures and drawings within the scope of the OQA Program shall include quantitative (such as dimensions, tolerances, and operating limits) and qualitative (such as workmanship samples) acceptance criteria for use in determining that important activities have been satisfactorily accomplished.

The responsible manager shall ensure that the procedures that control the activities of that group are prepared, the appropriate review obtained in accordance with FSAR Subsection 13.4.1.3, as applicable, approved, issued, and revised. These procedures are reviewed for accuracy and workability as well as for compliance with OQA Program requirements. Inspection plans; test, calibration, special process, maintenance, modification and repair procedures; drawings and specifications; and changes thereto are subject to audit for their compliance with OQA Program requirements.

17.2.6 DOCUMENT CONTROL

The document control system described in OQA Program documents requires that, prior to their release, documents and changes thereto are reviewed for their adequacy and approved and released by authorized personnel and distributed for use at the location where the prescribed activity is to be performed. The documents controlled under this subsection as a minimum include:

a. Design Specifications

b. Procurement Documents

c. Test Procedures

d. Design, Manufacturing, Construction and Installation Drawings

e. Manufacturing, Inspection, and Testing Instructions

f. Final Safety Analysis Report

g. OQA Program Documents

h. Maintenance and Modification Procedures

i. Non-conformance Reports

The NOS organization or other qualified individuals delegated by NOS, but other than the person who generated the document, shall review and concur with the document and changes thereto, with regard to QA-related aspects prior to implementation.

Each manager who is responsible for issuing a document is also responsible for obtaining the proper review and approval of that document. In addition to the above QA document review, FSAR Subsection 13.4.5 defines minimum reviews of procedures affecting nuclear safety. Changes to documents are reviewed and approved by the same organizations that performed the original review and approval unless specifically delegated to other qualified organizations. This review will be completed prior to issuing the document.

Each manager is responsible for ensuring that, where necessary, distribution lists and/or revision status lists are periodically issued for the control of his/her organization's quality documents. These lists identify the additions and changes made to documents since the previous report period and assist recipients in maintaining up-to-date files. Each recipient is responsible for reviewing the latest list(s) to confirm that the current revision of each document is available. Prior to implementation, approved changes are included in instructions, procedures, drawings, or other documents by procedurally controlled change mechanisms.

It is the responsibility of each supervisor/manager to assure that the proper documents such as instructions, procedures, and drawings are available at the location where the prescribed activities are performed.

The issuing department is responsible for describing and implementing measures that provide controls to prevent the inadvertent use of obsolete or superseded documents.

Individuals or groups responsible for preparation, review, approval, issue and distribution of quality documents and their revisions are identified in the OQA Program documents.

17.2.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

Susquehanna OQA Program documents list those managers responsible for performing activities related to the control of purchased material, equipment and services; describe their responsibilities; and specify their methods for meeting the OQA Program requirements. Procedures detail the steps necessary for complying with these requirements.

Susquehanna's system for control is comprised of supplier evaluation, audits, source surveillance of the supplier during production, receipt inspection, and evaluation of supplier records. The extent and methods of control used assure compliance with applicable technical, manufacturing, and quality requirements.
Prior to the award of a purchase order or contract, Susquehanna evaluates the prospective supplier's ability to provide material, equipment, and services that comply with the technical, design, manufacturing and quality requirements.

The suppliers judged capable of meeting the requirements are considered approved suppliers for the specific article. The results of supplier evaluations are documented and the records maintained in accordance with Subsection 17.2.17.

The evaluation includes, as necessary, reviews of the records and performance of suppliers who have previously supplied similar articles, audits, and evaluations of their QA programs and facilities to determine their ability to meet the design, manufacturing and quality requirements of the procurement document. These quality requirements include the applicable elements of 10CFR50, Appendix B.

Suppliers' activities during the design, fabrication, inspection, testing, and preparation for shipment of material, equipment and components are subject to audits and source surveillances to assure their compliance with the procurement document requirements.

Audits and source surveillances of suppliers are planned and performed in accordance with written procedures. These procedures provide for specifying the characteristics or processes to be witnessed, inspected or verified, and accepted; the extent of documentation required; and those responsible for implementing these procedures. Audits and source surveillances are performed to assure that the supplier complies with the quality requirements of the procurement documents. Audits and source surveillances take into account the extent to which compliance can be determined by receipt inspection.

For commercial "off-the-shelf" items where specific QA controls appropriate for nuclear applications cannot be imposed in a practicable manner, special quality verification requirements that provide the necessary assurance of an item's acceptability shall be established.

For suppliers of commercial-grade (as defined in 10CFR21) calibration services with accreditation by NVLAP or A2LA, a documented review of the supplier’s accreditation by the purchaser may be used in lieu of performing an audit, accepting an audit by another licensee, performing a commercial-grade survey, inspecting or testing following delivery, or performing in-process surveillances during performance of the service. This review shall include, at a minimum, all of the following:

a. The accreditation is to ANSI/ISO/IEC 17025.

b. The accrediting body is either NVLAP or A2LA.

c. The published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.

The applicable requirements of 10CFR50, Appendix B will be imposed on approved and accredited commercial-grade calibration services suppliers, but the methods and criteria for evaluating and selecting suppliers would be based on ANSI/ISO/IEC 17025, as implemented by NVLAP AND A2LA accreditation.

A pre-award evaluation and post-award audits are not required for work performed at the National Institute of Standards and Technology.
As applicable, qualified personnel perform receipt inspection of material, equipment and services to assure that:

a. The material, component or equipment is properly identified and corresponds with the receiving documentation.

b. The material, component or equipment and its acceptance records are judged acceptable in accordance with pre-determined inspection instructions prior to installation or use.

c. Inspection records or certificates of conformance attesting to the acceptability of material, components, and equipment are available at SSES prior to its installation or use.

Upon completion of the receipt inspection, items accepted and released are identified as to their inspection status prior to forwarding them to a controlled storage area or releasing them for installation or further work.

Supplier-furnished records shall be reviewed and accepted by a qualified individual knowledgeable in QA. These records shall, as a minimum, contain:

a. Documentation that specifically identifies by purchase order number the purchased material or equipment and the specific procurement requirements, such as codes, standards, and specifications met by the items.

b. Documentation that identifies any procurement requirements that have not been met together with a description of those nonconformances dispositioned "accept as is" or "repair."

The requirements of this subsection shall also be applied to the purchase of spare and replacement parts and shall assure that these parts have a level of quality consistent with their importance, complexity, and quantity.

Supplier certificates of conformance are periodically evaluated to verify their validity.

The effectiveness of the control of quality by suppliers is assessed by Susquehanna at intervals consistent with the importance, complexity, and quantity of an item.

17.2.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

OQA Program documents list those managers responsible for performing activities related to the identification and control of materials, parts and components, including partially fabricated subassemblies, describe their responsibilities, and specify the methods for meeting the OQA program requirements. Detailed steps necessary to comply with these requirements are specified in procedures.

Procurement documents specify the requirements that Susquehanna suppliers must comply with for the identification of material, parts, and components (including partially fabricated subassemblies).

Item identification is maintained either on the item or on records traceable to the item to prevent the use of incorrect or defective items throughout fabrication, erection, installation and use. The location, type, and application method of the identification shall not affect the fit, function, or quality of the item being identified.

Materials and parts, as required by their importance to plant safety and applicable codes, standards and regulatory requirements, shall be traceable to appropriate documentation such as drawings, specifications, purchase orders, manufacturing and inspection documents, deviation reports and physical and chemical mill test reports.

The correct identification of materials, parts, and components is verified and documented prior to release for fabrication, assembly, installation or shipping.

17.2.9 CONTROL OF SPECIAL PROCESSES

Special processes are those that require interim in-process controls in addition to final inspection to assure quality. OQA Program documents identify those managers responsible for the writing, qualifying, approving and issuing of procedures for special processes. Procedures for special processes are prepared in accordance with applicable codes, standards, specifications, criteria, and other special requirements to control processes such as welding, heat treating, nondestructive examination (NDE), and chemical cleaning. Personnel performing special processes and the procedures and equipment used for this activity are qualified in accordance with applicable codes, standards and specifications. The procedures for special processes specify the requirements for their control, the parameters to be considered, the methods of documentation, and applicable codes, standards, specifications or supplementary requirements that govern their qualification. The special processes are accomplished in accordance with written process sheets, or equivalent, with recorded evidence of verification. When special processes are not covered by existing codes and standards, or when item quality requirements exceed the requirements of established codes or standards, the necessary qualifications for personnel, procedures or equipment are defined.

Records verifying the qualification of personnel to perform special processes are maintained in a current status.

Procurement documents specify contractor responsibility for controlling special processes and for maintaining records to verify that special processes are performed in accordance with established requirements.

17.2.10 INSPECTION

OQA Program documents identify those managers responsible for the preparation, approval, and issuance of inspection procedures. The documents also identify those managers responsible for the performance of inspections. On-site and off-site activities affecting quality are inspected in accordance with written controlled procedures to verify conformance with applicable procedures, design documents, codes and specifications for accomplishing the activity. Activities affecting quality are subject to inspections in areas such as:

a. Special Processes as identified in Subsection 17.2.9.

b. Modifications to the Plant.

c. Receipt of Materials, Parts or Components.

d. Plant Operations.

e. Repairs or Replacement of Equipment.

f. In-Service Inspection.

Inspection activities conform to the following requirements:

a. Inspection personnel are qualified individuals other than those who performed or directly supervised the activity being inspected.

b. Mandatory inspection hold points are identified in procedures and/or applicable work documents.

c. Modifications, repairs and replacements are inspected in accordance with the original design and inspection requirements or approved alternatives.

d. Maintenance and modification procedures are reviewed by qualified personnel knowledgeable in QA requirements to determine the need for (a) inspection, (b) identification of inspection personnel, and (c) documenting inspection results. The criteria for performing inspections are based upon an activity's complexity, uniqueness and impact on safety.

e. If direct inspection of processed material or products is impossible or disadvantageous, indirect control by monitoring processing methods, equipment, and personnel is provided.

f. Inspectors are trained and qualified in accordance with appropriate codes, standards, and company training programs and their qualifications and certifications are kept current.

g. Inspection instrumentation is calibrated and has an uncertainty (error) equal to or less than the tolerance stated in the acceptance criteria.

h. Inspection of activities is accomplished according to approved procedures, instructions, and checklists. These inspection documents contain the following:

    1. Identification of the items or activities to be inspected.

    2. Identification of the characteristics of the items or activities inspected.

    3. Identification of the individuals or groups responsible for performing the inspection.

    4. Identification of acceptance and rejection criteria.

    5. A description of the method of inspection, including necessary measuring and test equipment.

    6. Evidence of completion and verification of a manufacturing inspection, or test.

    7. A record of the inspector, or data recorder, the date and results of the inspection.

i. Inspection procedures or instructions contain or reference necessary procedures, drawings and specifications to be used when performing inspection operations.

j. Inspection results are documented, evaluated and their acceptability is determined by a responsible individual or group.

17.2.11 TEST CONTROL

The OQA Program documents identify those managers responsible for testing structures, systems and components during the operation of SSES. The test program described herein and further detailed in Operational Policy Statements is designed to assure that structures, systems and

components will perform satisfactorily in service. Modifications, repairs and replacements are tested in accordance with the original design and testing requirements or by approved alternates.

Testing is established, documented and accomplished in accordance with written controlled procedures. These procedures contain or reference:

a. The requirements and acceptance limits specified in the applicable design and procurement documents.

b. The instructions for performing the test.

c. The test prerequisites such as:

    1. That test instrumentation is calibrated and has an uncertainty (error) equal to or less than the tolerance stated in the acceptance criteria.

    2. That testing equipment is adequate and appropriate for the test.

    3. That personnel performing the test are properly trained, qualified and licensed or certified as required.

    4. That the item is sufficiently complete to be tested.

    5. That environmental conditions are suitable and controlled.

    6. That provisions are made for data collection and storage.

d. The mandatory inspection hold points for witness by Susquehanna, their contractor or agent.

e. The test acceptance and rejection criteria.

f. The methods of documenting or recording the test data and test results.

Tests are required to be performed:

a. Periodically to provide assurance that failures or substandard performance do not remain undetected and that the required reliability of safety-related systems is maintained.

b. Following maintenance, modification or procedural changes to demonstrate satisfactory performance.

The test results are documented and evaluated to determine the acceptability of the test. The test records shall, as a minimum, identify the data recorder, the type of observation, the results, the acceptability, and the action taken in connection with any deficiencies noted. The individuals or groups responsible for evaluating the test results shall be qualified to perform this evaluation.

When by evaluation of the test results, the structure, system or component is determined to be nonconforming, it shall be controlled in accordance with Subsection 17.2.15.

17.2.12 CONTROL OF MEASURING AND TEST EQUIPMENT

Susquehanna's OQA Program documents provide measures to assure that tools, gauges, instruments and other measuring and testing devices are controlled. Calibrations are scheduled with sufficient frequency to maintain required accuracy. The measuring and test equipment controls assure that:

a. Procedures are used to control measuring and test equipment. These procedures describe the calibration technique and frequency, maintenance and method of control of measuring and test equipment (such as instruments, tools, gauges, fixtures, reference and transfer standards, and nondestructive examination equipment) that are used in the measurement, inspection, and monitoring of components, systems and structures.

b. Measuring and test equipment is identified and traceable to the calibration test data.

c. Measuring and test instruments are calibrated at specific intervals based on the required accuracy, purpose, degree of usage, stability characteristics and other conditions affecting the measurement.

d. Measuring and test equipment is labeled or tagged to indicate the date of the calibration and the due date of the next calibration.

e. When measuring or test equipment is found to be out of calibration, measures are taken and documented to determine the validity of previous inspections performed since the last valid calibration.

f. Calibration standards have an uncertainty (error) of no more than 1/4 of the tolerance of the equipment being calibrated, unless limited by the "state-of-the-art."

g. A complete status of all items under the calibration system is recorded and maintained.

h. Reference and transfer standards are traceable to nationally recognized standards; or, where national standards do not exist, provisions are established to document the basis for calibration.

17.2.13 HANDLING, STORAGE, AND SHIPPING

OQA Program documents list those managers responsible for the handling, preserving, storing, cleaning, packaging and shipping of materials, parts and components; and, describe their authorities and methods for meeting the quality requirements.

Procedures control each organization's activities and assure compliance with the quality requirements contained in drawings, specifications and procurement documents. These requirements include those necessitated by the design, as outlined in the design output documents, and those submitted by the supplier. These procedures provide control to prevent damage and loss or deterioration by environmental conditions, such as temperature or humidity, and specify the personnel qualifications required to accomplish the activity satisfactorily.

Consumables such as chemicals, reagents, weld rod, lubricants, etc. shall be stored in accordance with manufacturer's instructions or other approved methods to prevent harmful deterioration of the

item. Materials with an identified shelf life shall be controlled such that they are used or discarded prior to expiration date.

17.2.14 INSPECTION, TEST, AND OPERATING STATUS

OQA Program documents list those managers responsible for the development and implementation of procedures to assure that the inspection, test, and operating status of structures, systems, and components is properly identified and controlled.

These procedures incorporate the following provisions:

a. The inspection, test, and operating status of structures, systems, and components is identified to the affected parties.

b. Application and removal of inspection and welding stamps and status indicators, such as tags, markings, labels, and stamps are procedurally controlled.

c. Methods for altering the sequence of required inspections, tests, and other critical operations are controlled through documented procedures.

d. The status of nonconforming, inoperative, or malfunctioning structures, systems or components is identified to prevent their inadvertent use.

17.2.15 NONCONFORMING MATERIALS, PARTS OR COMPONENTS

OQA Program documents list those managers responsible and their methods for handling nonconforming materials, parts, components, or services. Procedures control the identification, documentation, segregation, review, disposition, and notification to affected organizations of nonconforming materials, parts, components, or services.

Materials, parts, components or services that do not meet established drawing, specification, or workmanship requirements, are identified as nonconforming and documented. Nonconforming items are identified as discrepant and segregated from acceptable items until they are properly dispositioned.

The manager of each organization is responsible for the review and disposition of nonconforming items that fall under the scope of responsibility of that manager. The manager is also responsible for notifying or obtaining input from other organizations that may have a specific interest in the nonconforming item.

Documentation related to the identification, disposition and correction of nonconformances is maintained in accordance with Subsection 17.2.17.

Documentation pertaining to nonconforming items or services shall include the details of the nonconformance, the disposition, and the approval signature(s).

Acceptability of rework or repair of materials, parts, components, systems, and structures is verified by re-inspecting and re-testing the item by a method that is the same as or comparable to the original inspection and test and in accordance with written procedures.

Inspection, testing, rework, and repair procedures are documented. Vendor non-conformance reports written against Susquehanna procurement requirements and dispositioned "accept as is" or "repair" are made part of the inspection records and forwarded with the hardware to Susquehanna for review and assessment.

Nonconformances are periodically analyzed for quality trends, and the results are reported to management for review and assessment.

17.2.16 CORRECTIVE ACTION

Susquehanna's OQA Program establishes the requirements for controlling conditions adverse to quality (such as nonconformances, failures, malfunctions, deficiencies, deviations, and defective material and equipment).

Conditions adverse to quality are promptly identified, reported, evaluated, corrected and documented. OQA Program documents identify the methods used and personnel responsible for these activities.

Conditions adverse to quality are identified and reported to the appropriate levels of management of the affected organizations. The responsible organization, as defined in Operational Policy Statements or Susquehanna procedures, evaluates the conditions to determine if they are significant conditions adverse to quality and to determine the corrective action required.

If a significant condition adverse to quality is detected, the cause of the condition and the corrective action taken are reported to the appropriate management levels of affected organizations, to the Nuclear Safety Review Board (NSRB), and to NOS for review and assessment.

The corrective action for conditions adverse to quality shall correct the specific conditions. For conditions determined to be significant, the corrective action provides measures to correct specific conditions and preclude recurrence.

The responsible organization shall implement the corrective action and document the details of the conditions including the actions taken.

Follow-up action is conducted to determine that the required corrective action has been completed and that the corrective action documentation has been closed out.

17.2.17 QUALITY ASSURANCE RECORDS

A QA record system consistent with ANSI N45.2.9-1974, as detailed in OQA Program documents, has been established by Susquehanna that assures that records are identifiable, retrievable and that sufficient records are maintained to provide documentary evidence of the quality of items and services. The system assures that requirements and responsibilities for record transmittal, retention (such as duration, location, fire protection and assigned responsibilities) and maintenance, subsequent to completion of work, are consistent with applicable codes, standards and procurement documents.

QA records are stored primarily in electronic media. Electronic storage of QA records is implemented in accordance with the guidance in NRC Regulatory Issue Summary (RIS) 2000-18,

"Guidance on Managing QA Records in Electronic Media". Specifically, the Susquehanna program for the use of electronic media to store QA records satisfies the intent of the following Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guides (TG):

- NIRMA TG 11-1998, "Authentication of Records and Media"
- NIRMA TG 15-1998, "Management of Electronic Records"
- NIRMA TG 16-1998, "Software Configuration Management and Quality Assurance"
- NIRMA TG 21-1998, "Electronic Records Protection and Restoration."

The following requirements apply to all Quality Assurance records that are stored on electronic storage media. Quality Assurance records shall only be stored on appropriate electronic storage media meeting the requirements of the above listed NIRMA guidelines. Susquehanna's Document Management Services shall make determination of appropriate electronic media based upon data format and level of access required. QA records originally created in hard-copy form shall be retained in hard copy until electronic versions of these QA records are created, copied, and verified as legible on two (2) independent copies of an appropriate electronic storage media. File legibility verifications shall be on all QA records stored on electronic media by either visually verifying the file legibility or by electronically verifying exact binary file transfer. Periodic media inspections to monitor image degradation shall be conducted in accordance with the media manufacturer's recommendations. These periodic inspections shall be documented. QA records stored on electronic media shall be refreshed or copied on to new media and subsequently verified if the projected lifetime of that media does not exceed the retention period of the records stored on that media. QA records originally created in electronic form may be retained in electronic form. Backup copies of associated electronic QA records shall be maintained in multiple physically independent electronic locations until such time as images of these QA records are created, copied, and verified on two (2) copies of appropriate electronic storage media. The two copies of electronic storage media shall then be stored in separate locations.

QA records include:

a. Plant Historical Records

b. Operating Logs

c. Principle Maintenance and Modification Activities

d. Reportable Occurrences

e. Results of Independent Reviews, (e.g., Plant Operations Review Committee or Susquehanna Review Committee), Inspections, Tests, Audits and Materials Analysis

f. Monitoring of Work Performance

g. Qualification of Personnel, Procedures and Equipment

These records also include other documentation such as drawings, specifications, procurement documents, calibration procedures and reports, nonconformance reports, and corrective action reports.

In addition to the applicable record retention requirements of 10CFR, the following records shall be retained for at least the minimum period indicated.

The following records shall be retained for at least 5 years:

a. Records and logs of unit operation covering time intervals at each power level.

b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.

c. All reportable events.

d. Records of surveillance activities, inspections, and calibrations required by Technical Specifications.

e. Records of changes to procedures required by Technical Specification 5.4.1.

f. Records of radioactive shipments.

g. Records of sealed source and fission detector leak tests and results.

h. Records of annual physical inventory of all sealed source material of record.

The following records shall be retained for the duration of the Unit Operating License:

a. Records and drawing changes reflecting unit design modifications made to systems and equipment described in the Final Safety Analysis Report.

b. Records of new and irradiated fuel inventory, fuel transfers and assembly burnup histories.

c. Records of radiation exposure for all individuals entering radiation control areas.

d. Records of gaseous and liquid radioactive material released to the environs.

e. Records of transient or operational cycles for those unit components identified in FSAR Table 3.9-1 and Technical Specification 5.5.5.

f. Records of reactor tests and experiments.

g. Records of training and qualification for current members of the unit staff.

h. Records of inservice inspections and tests performed pursuant to Technical Specifications 5.5.6 and Inservice Inspection (ISI) Program.

i. Records of QA activities required by the Operational Quality Assurance Manual.

j. Records of reviews performed for changes made to procedures or equipment or reviews of tests and experiments pursuant to 10CFR50.59.

k. Records of meetings of the PORC and the NSRB and records of reviews conducted in accordance with FSAR Subsection 13.4.1 and FSAR Subsection 13.4.2.

l. Records of service lives of all snubbers required by Inservice Inspection (ISI) Program including the date that the service life commences and associated installation and maintenance records.

m. Records of analyses required by the Radiological Environmental Monitoring Program.

Non-duplicated records shall be stored in facilities that meet one of the following requirements:

The first option is an NFPA Class A, 4-hour minimum rated facility. In addition, this facility shall consider the nine features described in ANSI N45.2.9-1974 Section 5.6 in its construction.

The second option is a 2-hour rated facility designed to meet the requirements of NFPA-232 "Standard for the Protection of Records." These requirements shall be met by any one of the following three ways: (1) a 2-hour vault meeting NFPA 232: (2) 2-hour rated file containers meeting NFPA 232 (Class B); or (3) a 2-hour rated fire resistant file room meeting NFPA 232. A fire-resistant file room must meet the following additional provisions:

a. Early warning fire detection and automatic fire suppression shall be provided, with electronic supervision at a constantly attended central station.

b. Records shall be stored in fully enclosed metal cabinets. Records shall not be permitted on open steel shelving. No storage of records shall be permitted on the floor of the facility. Adequate access and aisle ways shall be maintained at all times throughout the facility.

c. Work not directly associated with records storage or retrieval should be prohibited within the records storage facility. Examples of such prohibited activities include but are not limited to records reproduction, film developing, and fabrication of microfiche cards.

d. Smoking and eating/drinking shall be prohibited throughout the records storage facility.

e. Ventilation, temperature, and humidity control equipment shall be protected inside with standard fire-door dampers where they penetrate fire barriers bounding the storage facility.

The third option is used when temporary storage of records (such as for processing, review, or use) is required. In this case, records shall be stored in a 1-hour fire rated container. The container shall bear a UL label (or equivalent) certifying 1-hour protection. Additionally, sprinkler protection shall be provided in the area in which the containers are stored. The maximum allowable time limit for temporary storage is described in procedures.

Each manager is responsible for developing procedures that control the origination and transmittal of QA records within his/her organization. Each manager is responsible for transmitting QA records to Nuclear Records for retention in approved storage facilities.

Susquehanna record storage facilities are constructed, located, and secured to prevent destruction of the records by fire, flooding, theft, and deterioration by environmental conditions such as temperature or humidity.

17.2.18 AUDITS

The Susquehanna audit program requires the planning, performing, documenting, and evaluating of audits. It assures compliance with license commitments, OQA Program requirements, FSAR Subsection 13.4.2.9, and other applicable requirements. It also assures that corrective measures are taken in response to audit findings to resolve the original problem and minimize the probability of its recurrence. The audit program is conducted under the direction of the Manager-NOS.

Audits of selected operational phase activities are performed by NOS. These audits include the performance of activities required by the Operational Quality Assurance Program to meet the criteria of 10CFR50, Appendix B.

Audits of selected aspects of operational phase activities are performed with a frequency commensurate with their strength of performance and safety significance. The audit assures proper coverage of applicable activities and allows scheduling of audits to respond to specific quality issues. All are assessed in such a manner to assure that an audit of all safety-related functions is conducted at least once every two years unless another frequency is required or allowed by Susquehanna's commitments to the NRC. Unless controlled by specific requirements for programs identified in 10CFR, internal and external audits may be deferred as follows:

a. Audits shall be performed at designated intervals. Schedules shall be based on the month in which the audit starts.

b. A maximum extension not to exceed 25 percent of the audit interval shall be allowed.

c. When an audit interval extension greater than one month is used, the next audit for that particular audit area will be scheduled from the original anniversary month rather than from the month of the extended audit.

d. Item b shall also apply to supplier audits and evaluations except that a total combined interval for any three consecutive inspection or audit intervals should not exceed 3.25 times the specified inspection or audit interval.

Audits are structured with a sufficiently defined scope to permit objective evaluation of the activity observed. Quality-related practices, procedures, and instructions are assessed to measure both the effectiveness of their implementation and their conformance to OQA Program requirements.

The audit process is conducted according to procedures that require the preparation of a written audit plan. The audit plan ensures the proper scope, team preparation, and depth of coverage. The audit process includes, as applicable, an evaluation of work areas, activities, processes, and items. Audits include a review of associated documents and records.

Audits are performed by trained personnel who are not directly responsible for the areas being audited.

The audit qualification program ensures that auditors are qualified to perform their assigned tasks.

Audit results are documented in a formal audit report that is transmitted to the responsible levels of management. For audits performed in accordance with the provisions of FSAR Subsection 13.4.2.9, the assessment report is issued within 30 days of audit completion; and the Chief Nuclear Officer and management of the assessed areas receive copies.

Audit leaders through their program leads and NOS management ensure that responsible management takes necessary action to correct identified audit findings and provide a basis for preventing their recurrence. Audit leaders verify, either through review of documentation resulting from corrective action, or if necessary, re-audit, that deficiencies have been properly corrected.

Formal audit reports are reviewed by NOS management to determine the effectiveness of the OQA program, and indications of quality trends. If additional management action is required, the results of these reviews are formally reported to the appropriate manager of the responsible organization.

TABLE 17.2-1
QUALITY ASSURANCE PROGRAM DESCRIPTION
COMPLIANCE MATRIX

NRC Reg. Guide	ANSI Standard	Subject	Clarifications & Exceptions
1.8, Rev. 4 (June 2019)	ANS/ANS 3.1-2014	Personnel Selection & Training	Commitment to the following section of ANSI/ANS 3.1-2014, as modified by RG 1.8, Rev. 4: 4.2.4, "[Senior Manager] Engineering"
1.8, Rev. 3 (May 2000)	ANSI/ANS 3.1-1993	Personnel Selection & Training	Commitment to the following section of ANSI/ANS 3.1-1993, as modified by RG 1.8, Rev. 3: 4.3.7, "Quality Assurance (Manager)" The allowance contained in Regulatory Position 2.1.1 of RG 1.8, Rev. 3, has been expanded to include approval and documentation by the "responsible executive" in addition to the "plant manager". The term "Quality Verification" is defined as "The act of reviewing, inspecting, testing, checking, auditing, or otherwise determining and documenting whether items, processes, services, or documents conform to specified requirements integral to the QA Program." (LDCN 4894)
1.8, Rev. 2 (April 1987)	ANSI/ANS 3.1-1981	Personnel Selection & Training	Commitment to the following sections of ANSI/ANS 3.1-1981, as modified by RG 1.8, Rev. 2: 4.3.1.1, "Shift Supervisor"; 4.3.1.2, "Senior Operator"; 4.4.8, "Shift Technical Advisor"; 4.5.1.2, "Licensed Operators" 4.7.1, Supervisor of Organization Unit Responsible for Independent Review "; 4.7.2, [Independent Review] "Staff Specialist".
1.8, Rev. 1-R (Sept. 1975)	ANSI N18.1-1971	Personnel Selection & Training	Commitment to the following section of ANSI N18.1-1971, as modified by RG 1.8, Rev. 1-R: 4.4.4, "Radiation Protection (Manager)".
None	ANSI/ANS 3.1–1978	Personnel Selection & Training	1. Commitment to ANSI/ANS 3.1-1978 for all positions addressed therein, except those listed above. 2. SSES TS 5.2.2.f states that the operations manager *or the assistant operations manager* shall hold an SRO license.
1.28, Rev. 1	N45.2–1977	QA Program Requirements For Nuclear Facilities	Full compliance.
1.30, 8/72	N45.2.4–1972	Electrical Installation, Inspection & Testing	Commitment to the extent required by ANSI N18.7-1976. Calibration status of installed plant instrumentation is maintained via a computer information system.
1.33, Rev. 2	N18.7–1976	Administrative Controls & Operational QA	Full compliance except for: 1) Review frequency of procedures that comply with NRC Safety Evaluation dated July 27, 2001, performed for Vermont Yankee and frequency of program audits. See Section 17.2.2 for details. (LDCNs 3353 and 3466) 2) Allowance of up to 25% 'Grace' for audits except for audits controlled by 10CFR requirements. See Section 17.2.18 for details. (LDCN 5552) 3) Alternative requirements may be implemented in lieu of imposing a quality assurance program consistent with ANSI N45.2 for NVLAP & A2LA accredited commercial-grade calibration services. See Section 17.2.4 and 17.2.7 for details (LDCN 3957) 4) Procurement documents do not need to require a quality assurance program consistent with 10CFR50, Appendix B and ANSI N45.2-1971 and a pre-award evaluation and post-award audits are not required for work performed at the National Institute of Standards and Technology. See Section 17.2.4 & 17.2.7 for details. (LDCN 3957)
1.37, 3/73	N45.2.1–1973	Cleaning Fluid Systems & Components	Commitment to the extent required by ANSI N18.7–1976.

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TABLE 17.2-1
QUALITY ASSURANCE PROGRAM DESCRIPTION
COMPLIANCE MATRIX

NRC Reg. Guide	ANSI Standard	Subject	Clarifications & Exceptions
1.38, Rev. 2	N45.2.2–1972	Packaging, Shipping, Receiving, Storage & Handling	Commitment to the extent required by ANSI N18.7–1976.
1.39, Rev. 2	N45.2.3–1973	Housekeeping	Commitment to the extent required by ANSI N18.7–1976.
1.54, 6/73	N101.4–1972	QA for Protective Coatings	Full compliance.
1.58, Rev. 1	N45.2.6–1978	Qualifications of Inspection, Examination, & Testing Personnel	Commitment to the extent required by ANSI N18.7–1976; except that the QA experience cited for Levels I, II and III shall be interpreted to mean actual experience in carrying out the types of inspection, examination and testing activity being performed. Also personnel who only handle test results or perform document control activities will not be certified. Also, allowance of up to 90 days 'Grace' for annual evaluations of inspection, Examination, and Testing personnel. (LDCN 3957)
1.64, Rev. 2	N45.2.11–1974	QA for Design	Full compliance, but with an alternative which allows for the Supervisor to perform design verification subject to certain restriction and justifications as explained below. If in an exceptional circumstance, the design originator's immediate supervisor is the only technically qualified individual available, this review can be conducted by the supervisor providing that: a) The other provisions of Regulatory Guide 1.64, Revision 2 are satisfied. b) The justification is individually documented and approved in advance by the supervisor's management. c) Nuclear Oversight audits cover frequency and effectiveness of use of supervisors as design verifiers to guard against abuse.
1.74, 2/74	N45.2.10–1973	QA Terms & Definitions	Full compliance.
1.88, Rev. 2	N45.2.9–1974	Collection, Storage & Maintenance of Records	Full compliance. Note that NFPA No. 232-1975 may be used in lieu of ANSI N45.2.9-1974 as allowed by Position C.2 of Reg. Guide 1.88. In addition, NRC guidance dated 7/1/1980 allows the use of 2-hour fire rated (i.e., Class B) records storage facilities, as defined in NFPA No. 232-1975. Also, 1-hr fire rated cabinets may be used to store records that are waiting processing for permanent storage (i.e., duplication or transfer to a single facility) Note 2: Electronic storage of QA records is implemented in accordance with the guidance in NRC RIS 2000-18.
1.94, Rev. 1	N45.2.5–1974	Concrete & Structural Steel Installation, Inspection & Testing	Full compliance.
1.116, Rev. 0-R	N45.2.8–1975	Mechanical Installation, Inspection & Testing	Commitment to the extent required by ANSI N18.7–1976.
1.123, Rev. 1	N45.2.13–1976	QA for Procurement of Items & Services	Full compliance, except for 1) Approval of commercial-grade[1] calibration services in lieu of a supplier audit, commercial-grade survey, or in-process surveillance based on certification by NVLAP or A2LA. See Section 17.2.4 and 17.2.7 for details (LDCN 3957). 2) Procurement documents do not need to require a quality assurance program consistent with 10CFR50, Appendix B and ANSI N45.2-1971 and a pre-award evaluation and post-award audits are not required for work performed at the National Institute of Standards and Technology. See Section 17.2.4 & 17.2.7 for details. (LDCN 3957)

[1] As defined in 10CFR21

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TABLE 17.2-1
QUALITY ASSURANCE PROGRAM DESCRIPTION
COMPLIANCE MATRIX

NRC Reg. Guide	ANSI Standard	Subject	Clarifications & Exceptions
1.144, 1/79	N45.2.12–1977	Auditing of QA Programs	Full compliance except for 1) Follow-up and tracking of deficiencies identified during an internal audit or assessment. Deficiencies that are not program deficiencies will be entered into the corrective action program and only processed in accordance with that program. 2) Allowance of up to 25% audit interval 'Grace' for internal audits not controlled by 10CFR requirements, supplier triennial audits, and annual supplier evaluations. See Section 17.2.18 for details. (LDCN 5552) 3) Approval of commercial-grade[2] calibration services in lieu of a supplier audit, commercial-grade survey, or accepting an audit by another licensee based on certification by NVLAP or A2LA. See Section 17.2.4 and 17.2.7 for details. (LDCN 3957) 4) Procurement documents do not need to require a quality assurance program consistent with 10CFR50, Appendix B and ANSI N45.2-1971 and a pre-award evaluation and post-award audits are not required for work performed at the National Institute of Standards and Technology. See Section 17.2.4 & 17.2.7 for details. (LDCN 3957)
1.146 8/80	N45.2.23–1978	Qualification of QA Program Audit Personnel	Full compliance, except for: 1) Allowance of up to 90 days 'Grace' for Lead Auditor re-certification. (LDCN 3957). 2) Prospective lead auditors shall demonstrate their ability to effectively implement the audit process and lead an audit team. They shall have participated in at least one audit within the year preceding the individual's effective date of qualification. Upon successful demonstration of the ability to effectively lead audits, licensee management may designate a prospective lead auditor as a lead auditor. This complies with NRC Safety Evaluation dated November 6, 1998 performed for Entergy consolidation of Quality Assurance (QA) Programs into One QA Program Manual for All Entergy Sites (Section 4.9.12) (LDCN 5360)
4.15, Rev. 1	None	Quality Assurance for Radiological Monitoring Programs (Normal Operations) – Effluent Streams and the Environment	Full compliance.

[2] As defined in 10CFR21

TABLE 17.2-2

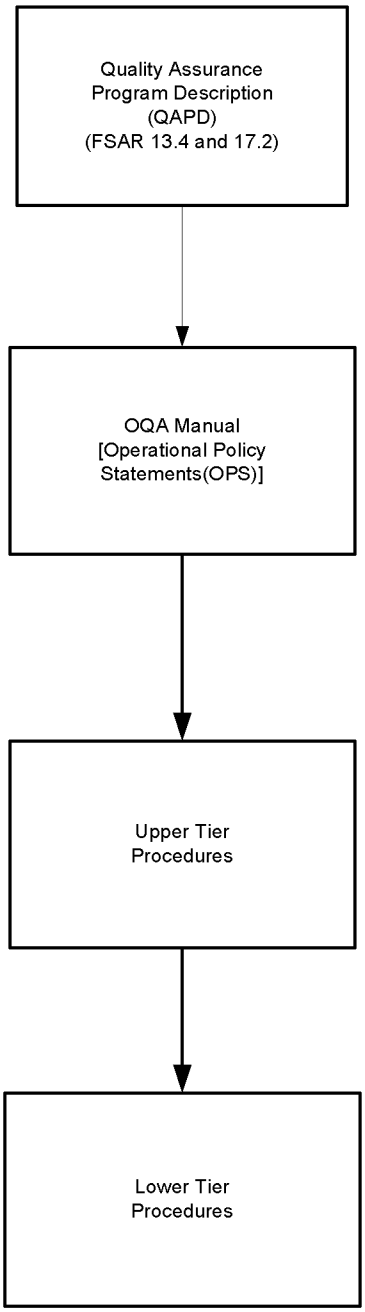
OPERATIONAL POLICY STATEMENT CROSS REFERENCE MATRIX
WITH 10CFR50 APPENDIX B CRITERIA

OPS	TITLE	SYNOPSIS	CRITERIA (1, 2)
1	Operational Quality Assurance Program	Defines the scope and applicability of the OQA Program. Establishes requirements for the OQA Manual and defines the tiers of documents comprising the OQA Program.	II, V, VI
2	Terms and Definitions	Defines those terms having particular meaning within the context of the OQA Program.	II
3	Control and Issuance of Documents	Establishes controls for the issuance and use of documents. Defines those documents controlled by the OQA Program and requires review, approval, and use of documents at required locations.	V, VI
4	Document Review	Establishes the requirements for performing and documenting document reviews.	III, IV, VI
5	Deficiency Control System	Delineates those activities associated with the control and correction of nonconforming material, parts or components; other conditions adverse to quality; and significant conditions adverse to quality.	VIII, XV, XVI
6	Qualification, Training and Certification of Personnel	Establishes the requirements for the training, qualification and certification of personnel performing activities affecting quality to assure that they achieve and maintain suitable proficiency.	II, IX, XVIII
7	Audit Activities	Establishes the requirements for the development of programs for auditing, assessing, and monitoring quality related activities and includes performance, qualifications, reporting, and follow-up action.	II, XVIII
8	The Collection, Storage, and Maintenance of Quality Assurance Records	Establishes the requirements for the collection, storage, and maintenance of quality assurance records.	XVII
9	Control of Modifications and Design Activities	Establishes the requirements for ensuring that the quality of modified structures, systems or components is at least equivalent to that specified in the original design bases, material specifications, and inspection requirements.	III
10	Procurement Control	Establishes the requirements for the procurement of material, parts, components, services and spare parts.	IV, VII
11	Nuclear Fuel Management	Establishes the requirements for the management of nuclear fuel activities.	IV, VII
12	Administrative Control of Plant Operations	Establishes the requirements for the administrative and procedural controls that ensure the plant is operated in a safe and efficient manner.	V
13	Maintenance, Installation of Modifications and Related Activities	Establishes the requirements for ensuring that structures, systems, and components are maintained in a condition to perform their intended function. The field activities associated with modifications are also included.	IX, XIV
14	Control of Inspection and Testing	Establishes the requirements for testing and inspection activities.	X, XI, XIV
15	Inservice Inspection and Testing	Establishes the requirements for the quality-related Inservice Inspection activities.	X, XI
16	Instrument and Calibration Control	Establishes the requirements for the calibration and control of calibration standards, installed plant instrumentation, and measuring and test equipment.	XII
17	Control of Plant Material	Establishes the requirements for the control of plant material and includes receipt inspection, handling, storage, and shipping.	VII, VIII, XIII
18	Repair/Replacement Activities under Section XI of the ASME Boiler and Pressure Vessel Code	Establishes the requirements for PP&L to perform engineering, fabrication and repair activities in accordance with Section XI of the ASME Code.	N/A
20	Control of Computer Software Products, Firmware, and Data Values	Establish the requirements for assuring that software products, firmware, and data values used to design, operate, and maintain SSES conform to a defined set of standards, requirements and procedures (collectively known as Software Quality Assurance or SQA).	II, III, IV, VI, VII, VIII, X, XI, XIII, XV, XVI

Footnotes:

(1) Criterion 1, Organization, is covered extensively in Section 17.2.1 and is not repeated in a separate OPS. However, the "Responsibility" section in each OPS identifies the managers responsible for implementation and verification of the OPS' requirements.

(2) Criteria such as V, Instructions, Procedures, and Drawings, and XVII, Records, could be cross referenced with the majority of OPS identified. A deliberate effort was made to cross reference the Criteria only to those OPS which have a direct relationship.



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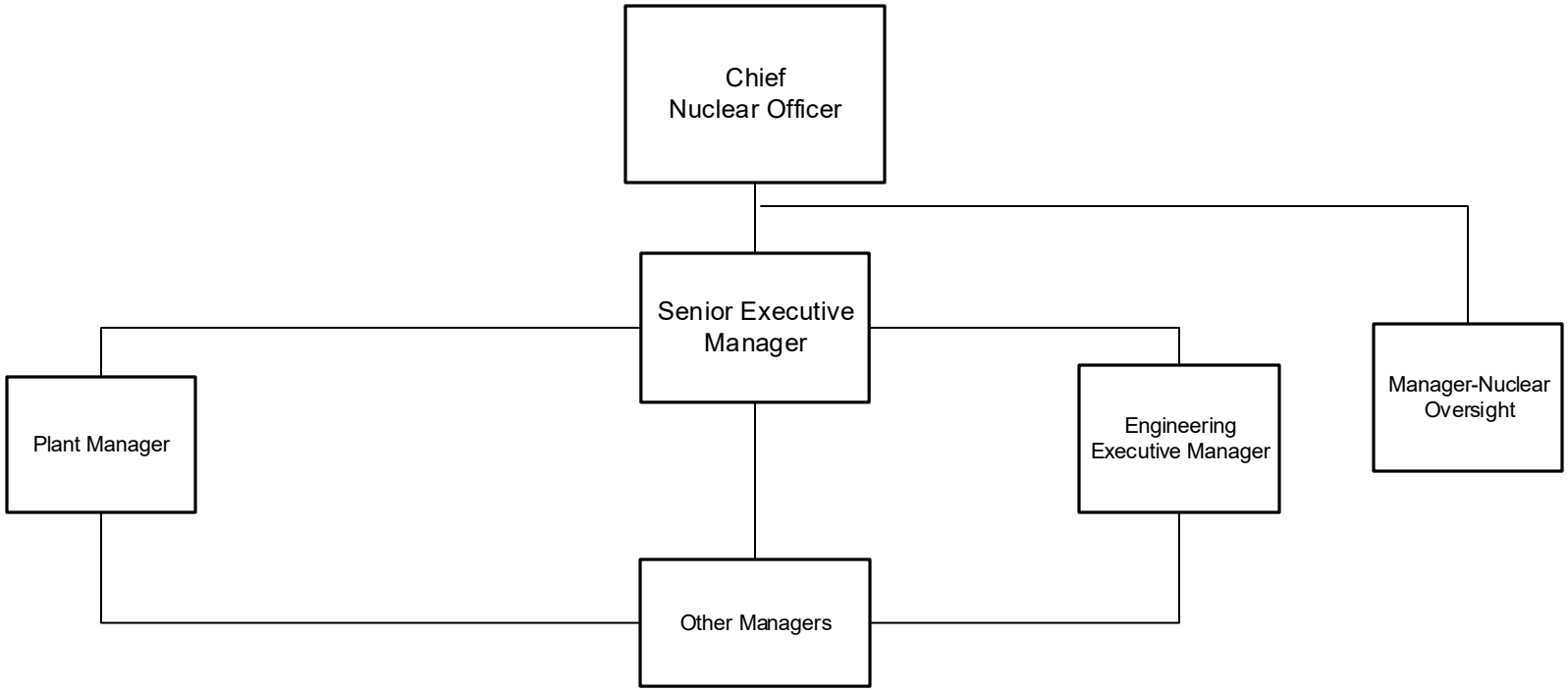
SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

HIERARCHY OF OPERATIONAL QUALITY ASSURANCE DOCUMENTS

FIGURE 17.2-1

PC F17.2-1.vsd



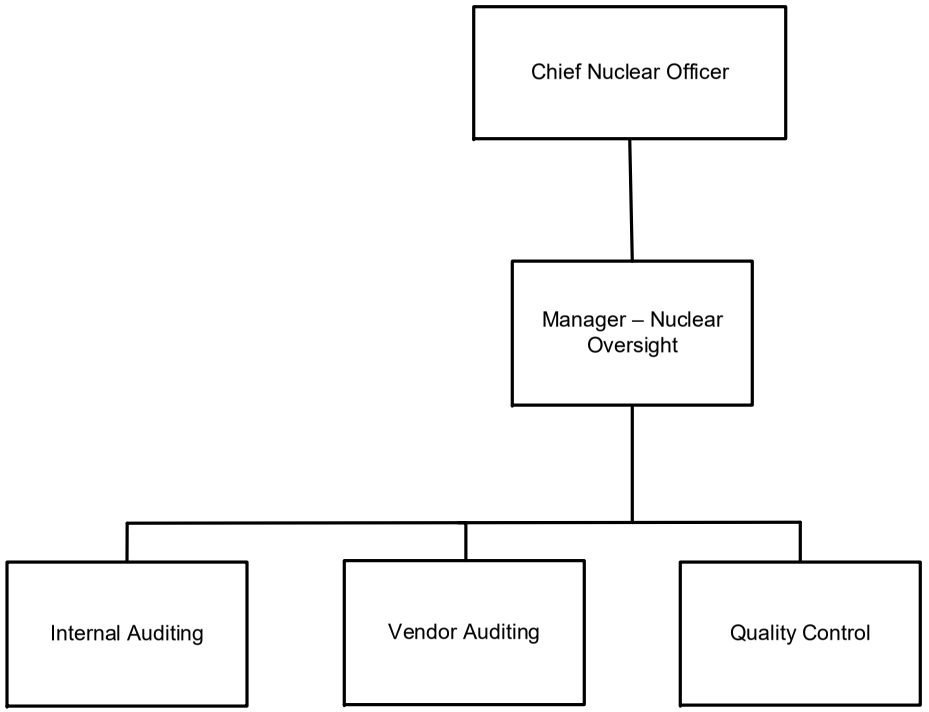
FSAR Rev. 69 Figure Rev. 77

SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

SUSQUEHANNA NUCLEAR, LLC
MANAGEMENT ORGANIZATION

FIGURE 17.2-3

PC F17-2-3.vsd



NOTE: The Manager-NOS receives day-to-day direction from the CNO, but is assured direct access to the Talen Energy Corporation President & CEO on matters related to the implementation of the OQA Program.

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SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

NUCLEAR
OVERSIGHT
ORGANIZATION

FIGURE 17.2-4

PC F17-2-4.vsd