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CHAPTER 17

QUALITY ASSURANCE PROGRAM

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17.2 QUALITY ASSURANCE PROGRAM* - OPERATIONS

17.2.0 INTRODUCTION

The New York Power Authority, hereinafter called the Authority, has the ultimate responsibility to assure safe and efficient production of electrical energy at the James A. FitzPatrick Nuclear Power Plant. To meet this responsibility the Authority has established a comprehensive Quality Assurance Program which applies to those structures, systems, and components of the Nuclear Power Plant that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. The Program has been developed to provide adequate confidence that the plant and its components will perform satisfactorily in service. The Program requires that activities such as operations, testing, design changes, modifications, maintenance, repairs and refueling are accomplished in accordance with applicable codes, specifications and regulatory requirements.

This Program has been developed into 18 sections to comply with the respective NRC management principles delineated in Appendix B to 10 CFR 50 and Section 17.2 of the NRC Standard Review Plan NUREG-75/087 (11-24-75). It also complies with the guidance set forth in WASH 1283 (Guidance on Quality Assurance Requirements During the Design and Procurement Phases of Nuclear Power Plants), dated May 24, 1974, WASH 1309 (Guidance on Quality Assurance Requirements During the Construction Phase of Nuclear Power Plants), dated May 10, 1974, and WASH 1284 (Guidance on Quality Assurance Requirements During the Operations Phase of Nuclear Power Plants), dated October 26, 1973.

The Quality Assurance Program requires that personnel of the Authority act in accordance with applicable requirements of this program and the procedures which support its implementation. Authority management shall give support to maintaining and implementing an effective Quality Assurance Program. Outside organizations that are delegated activities which fall within the scope of the Quality Assurance Program are required to establish and implement a Quality Assurance Program that is in compliance with applicable portions of 10 CFR 50, Appendix B, and requirements of the Authority.

* The Quality Assurance Program has been changed by an organizational modification which requires a Technical Specification Amendment submittal to be approved by the NRC. The proposed amendment to the Technical Specifications was submitted in our letter dated February 8, 1983, JPN-83-15. So that the organizational description will be as up to date as possible, the organization changes have been included in this 1983 update.

17.2.1 ORGANIZATION

17.2.1.1 General Description

The Authority has established the organizational structure shown in Figure 17.2-1 for the Quality Assurance (QA) aspects of nuclear power plant operation. This figure shows the lines of administrative authority and communication as it relates to the Authority's organization.

The President and Chief Operating Officer, hereinafter referred to as the President, has the ultimate responsibility for the Authority's QA Program and has final approval of Program requirements. The Vice President-Quality Assurance and Reliability (VP-QA&R) has overall responsibility for the implementation and maintenance of the Authority's Quality Assurance Program for the nuclear power plant. The VP-QA&R has delegated the day to day responsibility and authority for development, implementation, and maintenance of this Quality Assurance Program to the Director-Quality Assurance who shall report conditions adverse to quality or in conflict with program requirements to the VP-QA&R and affected department heads, as necessary and appropriate, to ensure corrective action..

Figure 17.2-1 shows the managerial and Quality Assurance lines of direction, responsibility and communications between the Authority's QA and operating organization. Figure 17.2-2 shows the Authority QA organization interfaces at headquarters and the plants. Figure 17.2-3 shows the Quality Assurance lines of responsibility and communication between the Authority and the Architect Engineer (A-E) or Consultant. Figure 17.2-4 depicts the independence of the Authority's VP-QA&R and his staff from all other Authority departments.

The Authority's Quality Assurance Program is described in Section 17.2.2.

The lines of authority and communication from the Authority's VP-QA&R as depicted on Figure 17.2-1, are normally used to resolve impasses which may arise at the plant between Authority Quality Assurance personnel and personnel of the operating organization. Impasses which may arise at the plant between the Authority QA personnel and operating organization personnel are normally resolved between the Quality Assurance Superintendent and Resident Manager.

Impasses which may arise between Authority Quality Assurance personnel and other Authority project personnel are normally resolved on the project level whose organizational relationships are shown in Figure 17.2-4.

Impasses which may arise between Authority Quality Assurance personnel and A-E/Consultant personnel will normally be resolved between Authority's Director-QA and a designated member of A-E/Consultant QA staff as shown in Figure 17.2-3. As depicted in Figure 17.2-3, the Director-QA has direct access to high levels of A-E/Consultant management, as may be required, to resolve impasses.

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The Director-QA will bring to the attention of the VP-QA&R impasses which are not resolved at this management level. The President is the final authority when impasses cannot be resolved through normal channels.

The Authority may delegate portions of their Quality Assurance Program to an A-E/Consultant during plant operations. For information relating to the A-E/Consultant QA program, see Appendix 17.2A. The Authority may elect to delegate other portions of their Quality Assurance Program to other organizations during plant operations, and in either instance, the A-E/Consultant and other delegated organizations' Quality Assurance Programs will be considered extensions of the Authority's Quality Assurance Program. The A-E/consultant and other delegated organizations' Quality Assurance Programs will be reviewed and approved by the Authority prior to the delegation of work. The Authority may waive a QA program review for those organizations which have a Nuclear Regulatory Commission approved Quality Assurance Program.

Portions of the Quality Assurance Program which may be delegated to an A-E/Consultant and/or other organizations shall consist of quality related activities such as, design changes, modifications, repairs, inspections, refueling, procurement, etc. Conformance to approved requirements and programs will be assured through liaison between the Quality Assurance organizations of the Authority and the A-E/Consultant, as applicable.

The Authority's and delegated organizations' Quality Assurance Programs are described by written procedures contained in the appropriate company QA/QC manuals. Assurance by the Authority that these programs are properly implemented is gained by (1) audits conducted by the Authority of other delegated organizations, (2) Authority audits of other delegated organizations which may include A-E/Consultant participation, (3) surveillance and audits of the plant operating organization, (4) Authority participation in vendor audits and surveillance performed by the other delegated organizations.

Managerial and administrative controls to ensure safe operations are described in Chapter 13, Conduct of Operations.

17.2.1.2 QA Responsibility Descriptions

The President, VP-QA&R, and Director-QA as described in Section 17.2.1.1 has the responsibility for the Quality Assurance Program during the operation phase including administrative control such as salary review, hire/fire and position assignment. The President has overall responsibility for the operation of the nuclear power plant meeting quality, operation, and budget requirements.

Detailed day-to-day quality related activities performed by affected Authority organizations are described in to Chapter 13 and applicable departmental procedures.

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Detailed nuclear power plant operations responsibilities are described in Chapter 13.

17.2.1.3 Authority Operating Organization and Special Committees

Details related to Nuclear Generation, operating organizations, Safety Review Committee (SRC) and Plant Operations Review Committee (PORC) are delineated in Chapter 13 and in the Technical Specifications.

17.2.1.4 QA Program Management

The Authority's Vice President-QA&R reports to the President and is responsible for establishing, administering and coordinating the Authority's Quality Assurance Program. The Director-QA has the responsibility, authority, and organizational freedom to identify quality problems; initiate, recommend, or provide solutions through designated channels; and to verify implementation of solutions. He has the authority to initiate stop work action when such work is considered unsatisfactory and also control further processing, delivery or installation of nonconforming material.

As depicted in Figure 17.2-2, at the Authority headquarters, the Authority Quality Assurance management maintains a staff of support and specialist QA engineers to provide the direction and control for establishing, implementing and monitoring a uniform and effective QA Program for the Authority, and to support the nuclear power plants.

Also, as depicted in Figure 17.2-2, the Authority Quality Assurance and Quality Control supervision at the plant maintains a staff of QA engineers and QC inspectors to provide for inspection, audit and surveillance of plant operations, including the following:

- 1) Providing surveillance or inspection, as appropriate, of operations, refueling, maintenance, modification, repair and testing of the plant.
- 2) Providing for evaluation of results of nondestructive examinations performed on materials, equipment and components.
- 3) Providing for indoctrination of plant personnel in the duties and functions of Quality Assurance/Quality Control operations.
- 4) Monitoring the in-service inspection program.
- 5) In situations requiring special expertise in nondestructive examination, coordinating the work of outside consultants and/or technical personnel.

To remain cognizant of plant activities, the QA Superintendent, or his designated representative, attends and participates in plant staff meetings.

The plant Quality Assurance and Quality Control Supervisors have the authority to initiate stop work orders through both the Quality Assurance Superintendent and the Resident Manager or other appropriate authorized personnel when such work is not being performed in accordance with approved drawings, specifications, procedures or regulatory requirements.

Various departments of the Authority assist the Vice President-QA&R staff in the Authority Quality Assurance Program. Assistance from other Authority departments is available to Quality Assurance staff, whenever necessary.

17.2.1.5 Delegation of QA Activities

The Authority may delegate to an A-E/Consultant, and to other organizations, the administration and execution of portions of the Quality Assurance Program.

The interface between the Authority and A-E/Consultant is depicted in Figure 17.2-3. The communication between the Authority Quality Assurance and the A-E/Consultant for day-to-day operations is as shown in Figure 17.2-3. As depicted, the Director-QA has direct access to high levels of A-E/Consultant management, as may be required.

17.2.1.6 Authority Controls

The Authority maintains control of the overall Quality Assurance Program whether or not quality related activities are delegated or performed by the Authority.

The Authority departments involved in the implementation of quality related activities are required to perform such activities in accordance with written approved procedures which are in conformance with the Authority's Quality Assurance Program.

Activities performed by the QA organization are to ensure that quality requirements have been included/accomplished, as appropriate, in all quality related activities. These activities include, but are not limited to:

- 1) Establishing and maintaining a Quality Assurance Program including objectives and scope.
- 2) Establishing and maintaining a Quality Assurance organization with clearly defined duties, responsibilities, authority, reporting level and relationship to other internal organizations that have been delegated QA activities.
- 3) Reporting to Authority management the status and adequacy of the QA Program.

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- 4) Establishing interface relationship and maintaining controls between Quality Assurance organizations of the Authority and major contractors.
- 5) Control of materials on a conditional release and establishing a system by which the Authority may initiate stop work action at the plant, when necessary, for safety-related structures, systems and components.
- 6) Requirements for examination and certification of the Authority's nondestructive examination (NDE) personnel.
- 7) Qualification requirements, duties and training of the Authority's Quality Assurance personnel as auditors.
- 8) Indoctrination and training of QA personnel as well as personnel from other departments assigned to perform quality related activities.
- 9) Assessing the Authority's Quality Assurance Program to assure its implementation and effectiveness.
- 10) Review of procurement documents and changes thereto, in order to assure that Quality Assurance provisions have been adequately incorporated for material, equipment and services that are safety-related or to an extent consistent with their importance to safety.
- 11) Preparation, processing and control of Quality Assurance Procedures and Program documents and revisions thereto.
- 12) Processing and control of QA documents either generated or received by the QA organization.
- 13) Participating in vendor selection and evaluation.
- 14) Receiving inspection.
- 15) Contractor/vendor surveillance inspection.
- 16) Inspection of plant quality related activities.
- 17) Monitoring the activities of external A-E/Consultant and consulting organizations.
- 18) Monitoring control of special process (e.g., welding, cadwelding, heat treating, surface finishing).
- 19) Monitoring test control to assure that testing is being satisfactorily performed.

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- 20) Monitoring control of nonconforming material parts or components.
- 21) Corrective action control at the plant and the Authority's headquarters for nonconformances identified by the Authority QA staff.
- 22) Establishing and maintaining a record retention system for QA documents generated by the Authority QA personnel.
- 23) Establishing and maintaining an audit program at the plant.
- 24) Establishing Quality Assurance requirements and providing for onsite Authority audits and QA program reviews of contractors performing work at the plant.
- 25) Measures necessary to perform audits of major contractors delegated QA activities being performed "offsite".
- 26) Internal audits at the Authority's Headquarters of quality related activities that are performed by Authority personnel at Headquarters.

17.2.2 QUALITY ASSURANCE PROGRAM

17.2.2.1 General Description

The Authority's Quality Assurance policy is to control those activities needed to provide assurance that quality objectives are satisfied during the operation phase of the nuclear power plant. To achieve this end, the Authority has established a Quality Assurance Program. This Program has been developed to comply with the NRC requirements delineated in Appendix B to 10 CFR 50 and Standard Review Plan NUREG 75/087, and is organized in 18 sections which correspond to the management principles outlined therein.

The Program complies with the guidance set forth in WASH 1283 (Guidance on Quality Assurance Requirements During the Design and Procurement Phases of nuclear power plants, Rev.1) dated May 24, 1974, WASH 1309 (Guidance on Quality Assurance Requirements During the Construction Phase of Nuclear Power Plants), dated May 10, 1974, WASH 1284 (Guidance on Quality Assurance During the Operation Phase of Nuclear Power Plants) dated October 26, 1973. The Quality Assurance Program also complies with the Quality Assurance related NRC Regulatory Guides referenced in the WASH documents or with an acceptable alternative. The Authority's position on these regulatory guides is delineated in Appendix 17.2B.

The Authority's Quality Assurance Program is supplemented by Quality Assurance Procedures. All Quality Assurance policies, manuals and procedures are mandatory requirements, including their control and distribution.

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Responsibility for implementation, execution and approval of the Quality Assurance Program during operations is described in Section 17.2.1.1. The Director-QA is responsible for identifying and incorporating necessary changes to the QA Program.

Section 17.2.1 describes the Authority's Quality Assurance organization which administers the total Quality Assurance Program. Managerial and administrative controls to be used to ensure safe operations are described in Chapter 13.

The Director-QA, through a comprehensive system of audits and surveillance of internal, plant and delegated organizations, quality activities, assesses the scope, implementation and effectiveness of the overall QA Program and reports results to the VP-QA&R and the Safety Review Committee (SRC).

The Director-QA is responsible for the training and indoctrination of Authority Quality Assurance personnel. This includes, as applicable, training as to purpose, scope and implementation of quality related documents, and both training and qualification in the principles and techniques of activities being performed. Proficiency of QA personnel is maintained by retraining, reexamining, and/or recertifying, as required. Training sessions are documented to reflect the results of the training, attendees, date, etc.

The operating organization will perform quality related activities at the plant which conform to the requirements of the Authority's Quality Assurance Program.

The Authority's Quality Assurance Program imposes on delegated organizations the requirement to establish adequate programs for their internal operations and, in turn, to impose applicable QA Program requirements on suppliers of safety-related materials, components, equipment or services. The Quality Assurance Programs of delegated organizations (e.g., A-E/Consultant, NSSS, Contractor) are considered extensions, to the extent necessary, of the Authority's Program and, as such, are subject to review and audit by the Authority for the activities being performed. For organizations which have a Nuclear Regulatory Commission (NRC)-approved Quality Assurance Program (i.e. Topical Report) review and approval by the Authority will not be mandatory.

An A-E/Consultant may be delegated the work of performing quality affecting activities related to plant operation not normally performed by Authority personnel or other Authority contractors, or to supplement Authority personnel activities. Any work so delegated shall be accomplished in accordance with the information delineated in Appendix 17.2A.

The Program in effect has been reviewed and approved by the Authority, and audits will be performed to ascertain A-E/Consultant compliance in applicable areas. The work assigned to an A-E/Consultant shall be through Authority direction on a case by case basis. The following is a summary of major quality affecting areas that an A-E/Consultant may

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undertake when authorized by the Authority; this does not preclude the possibility that these delegated activities will be expanded or diminished in scope:

- 1) Design modification and reviews
- 2) Procurement document preparation
- 3) Vendor qualification
- 4) Vendor surveys and audits
- 5) Source inspection
- 6) Shipment release
- 7) Document Control
- 8) Nonconformance and corrective action
- 9) Control of special processes
- 10) Shipping
- 11) Installation
- 12) Fabrication and/or construction
- 13) Record Retention

17.2.2.2 QA Program Applicability

The Quality Assurance Program is applied to those structures, systems, equipment and components that are necessary to assure the integrity of the reactor coolant pressure boundary and primary containment, the capability to shut down the reactor and maintain it in a safe shut down condition, and the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures exceeding the limits of 10 CFR 100. The safety-related structures, systems and components controlled by the Quality Assurance Program are identified in the FSAR.

17.2.2.3 Establishment and Management of the Authority's QA Program

The Authority's Quality Assurance Program has been established prior to the Authority assuming operation activities. The requirements are reviewed, as required, to improve implementation of the Quality Assurance Program as activities warrant.

17.2.2.4 Quality Assurance Program Documentation

The Quality Assurance Programs of the Authority and other delegated organizations establish written policies, procedures, instructions, for compliance

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with 10 CFR 50, Appendix B, applicable codes and specifications, regulatory requirements, regulatory guides and standards.

The Authority's Quality Assurance Program and implementing Quality Assurance Procedures and their relationship to applicable criteria of Appendix B to 10 CFR 50 are referenced in Figure 17.2-5. The operating organization has prepared administrative procedures which will be utilized to implement portions of the QA Program at the plant. A general list of types of plant administrative procedures are shown in Appendix 17.2C.

17.2.2.5 Indoctrination and Training

The Authority's Quality Assurance Program requires that personnel performing activities affecting quality are appropriately trained in the principles and techniques of the activity being performed. Personnel performing activities affecting quality are instructed as to purpose, scope and implementation of governing manuals, policies, and procedures. Appropriate training and indoctrination procedures are established and included in Quality Assurance Procedures.

The Director-QA is responsible for the training and indoctrination of Authority Quality Assurance personnel.

17.2.2.6 Qualification Requirements of QA Management

QA qualification requirements of Authority personnel are indicated in Appendix 17.2D.

17.2.2.7 Control of Activities Affecting Quality

The Authority's Quality Assurance Program specifies that design and purchase specifications, drawings, procedures and instructions shall be prepared with the necessary test and inspection requirements and criteria. The Program requires that only qualified personnel and appropriate and properly calibrated equipment be used and that results be adequately documented. The Program requires that special processes and qualification testing be performed under controlled conditions.

17.2.2.8 Management Review of QA Program

The VP-QA&R is responsible for assigning the responsibility to an organization within the Authority or to an outside agency for independently assessing the Authority's QA Program on a regular basis. If an internal group performs this activity, they shall be independent of any quality related activities which they must assess.

The Director-QA is responsible for reviewing the status and adequacy of the QA Program on a continuing basis including activities delegated to others and for notifying the VP-QA&R of any noted program deficiencies.

17.2.2.9 Authority Controls

The Authority reviews and concurs with Quality Assurance Programs of delegated organizations for the quality affecting activities which they may implement, as applicable.

The Authority performs planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.3 DESIGN CONTROL

17.2.3.1 General Description

The Authority's Quality Assurance Program requires that there be written procedures to perform design activities in a planned, controlled and orderly manner, and that applicable regulatory requirements and design bases be correctly translated into specifications, drawings, written procedures and instructions.

The Authority's Quality Assurance Program also requires that Authority staff responsible for design reviews and other design verification activities have their authority and responsibility identified and controlled by written procedures.

The Authority's Quality Assurance Program requires that design documents specify appropriate quality standards and provide methods for controlling deviations and changes from the standards.

The Authority's internal design review system is devised to control procurement documents, design changes and modifications, and selected drawings.

The Authority's Engineering and Nuclear Generation staff reviews comments and concurs with specifications and selected drawings, and revisions thereto.

The Authority, through planned and periodic audits of its internal design review activities, assures conformance with the Authority's Quality Assurance Program.

17.2.3.2 Design Policy

The Authority's Quality Assurance Program requires that adequate review and selection for suitability of application be conducted for materials, parts, equipment and processes that are essential to safety-related functions of the structures, systems and components.

The Authority's Quality Assurance Program does not differentiate between safety-related materials, parts and equipment that must be specifically designed to meet functional requirements, and "off the shelf" safety-related

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material, parts and equipment that meet established functional requirements. In either case, the Authority's design control requirements are applied in accordance with the measures established in the Quality Assurance Program.

17.2.3.3 Design Control Measures

The Authority's Quality Assurance Program requires that design control measures, as applicable, be applied to such items as: stress, thermal, hydraulic, radiation and accident analyses; intended performance; reactor physics; compatibility of materials and systems; accessibility of materials and systems; and accessibility for in-service inspection, monitoring of operation, maintenance and repair. Computer programs used in the design process shall be reviewed and approved prior to initial use in accordance with Engineering Department procedures.

Design documents are reviewed by technical and quality personnel to assure that design characteristics can be controlled, inspected and tested. Inspection and test criteria are also identified. The review also assures that documents have been prepared reviewed, and approved in accordance with approved procedures. Review results are appropriately documented.

17.2.3.4 Design Review

The Authority's Quality Assurance Program requires that design verification or checking such as design reviews, alternate calculations and qualification testing be properly selected and performed.

NOTE: The qualification test of a prototype unit under adverse design conditions would not be practical or realistic when verifying the adequacy of a design change or modification to an existing system of an operating plant. Design changes will constitute the majority of engineering work when an operating plant is involved. In such cases the Authority will depend on an independent review to assure the necessary adequacy verification.

However, if analysis determines that testing is the only acceptable method of verification, the testing shall be performed under conditions that simulate the most adverse operational conditions. This testing, to the maximum extent possible, shall be performed prior to installation.

The individuals or groups who perform design verification or checking are other than those who perform the original design. Design verification activities are performed in accordance with approved procedures that define the responsibilities of the verifier, the scope, areas, and features to be verified including pertinent conditions and reporting documentation requirements.

Errors and deficiencies in the design and the design process, including the use of computer codes that could adversely affect safety-related structures, systems and components identified during design review in accordance with approved procedures, are documented, and corrective action is taken to correct the deficiency and preclude repetition.

17.2.3.5 Design Interface Control

The Authority may delegate to an A-E/Consultant design control measures for any delegated design activities. The A-E/Consultant method of design interface control is delineated in the document referenced in Section 17.2.2, Paragraph 17.2.2.1.

Design documents and revisions thereto, related to the design interface, are distributed to the responsible organizations in a timely and orderly manner, and controlled to prevent inadvertent use of superceded documents. Design documents are collected, stored and maintained in a systematic and controlled manner.

17.2.3.6 Design Change Control

Procedures are established to assure that design changes, including as-built information generated during plant modification activities, are appropriately documented, and submitted to the appropriate organizations for review and approval by design organization prior to incorporation in the plant record documents.

17.2.3.7 Authority Controls

The Authority monitors interfaces between organizations performing design activities, review specifications, and revisions thereto.

The Authority performs planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.4 PROCUREMENT DOCUMENT CONTROL

17.2.4.1 General Description

The Authority's Quality Assurance Program provides for procurement documents of safety-related equipment to be controlled within the requirements established by 10 CFR 50, Appendix B, in accordance with the guidelines of applicable codes, standards, regulatory requirements, and regulatory guides.

The Authority's Quality Assurance Program requires that purchase specifications contain or reference, as applicable: design information and technical requirements including component and material identification requirements including drawings, specifications, codes and industrial standards, regulatory guides and regulatory requirements; tests and inspection requirements; and special process instructions for such activities as fabrication, cleaning, erecting, packaging, handling, shipping, storing, and inspecting. The specification contains, as appropriate, requirements which identify the documents to be prepared, maintained, submitted, and made available to the purchasing agent for review and/or approval. These documents include drawings, specifications, procedures, inspection and test records, inspection and fabrication plans, personnel and procedure qualifications, materials, chemical and physical test results. The specifications contain applicable requirements for the retention, control and maintenance

of records, and the purchasing agents rights of access to the vendor's facilities and records for source inspection and audit.

Procurement documents for spare or replacement parts shall be subject to requirements at least equivalent to those used for the original procurement. The original procurement documents may be used as a basis for purchase of spare or replacement parts.

The specifications contain provisions for extending applicable requirements of the document to subcontractors and suppliers including purchaser's right of access to such subvendor's facilities and records.

17.2.4.2 Preparation, Review, Approval and Issue of Procurement Documents and Changes

The Authority's Quality Assurance Program requires that procedures be established that clearly delineate the sequence of actions to be taken in the preparation, review, approval, and control of procurement documents.

The Authority's Quality Assurance requirements for procurement document control requires that document review procedures be established. The reviews of procurement documents in accordance with these procedures are performed by knowledgeable Quality Assurance personnel who can determine if quality requirements are complete, correctly defined, and incorporated, so that the procured items can be properly inspected and controlled, and that acceptance criteria are adequately specified.

The review and approval of procurement documents are documented prior to release and are available for verification.

The Authority's purchase specifications, and changes thereto, are reviewed by the Authority's Engineering/Procurement and Contract Administration/Nuclear Generation/Plant Technical Services, as applicable, in accordance with requirements contained in the Authority's Quality Assurance Program. The Authority's Quality Assurance reviews purchase specifications and changes thereto, for quality requirements in accordance with the Quality Assurance Program. Purchase orders are processed following approval of the specification by the Authority's Engineering/Procurement and Contract Administration/Nuclear Generation/Plant Technical Services/Purchasing Coordinator, as applicable, and Quality Assurance. Changes and/or revisions to procurement documents shall be subject to the same degree of control as utilized in the preparation of the original document.

17.2.4.3 Vendor QA Program Requirements

The Authority requires that delegated organizations have documented Quality Assurance Programs and that subcontractors have and implement documented Quality Assurance Programs for materials, equipment and services to an extent consistent with their importance to safety and scope of activities.

The operating organization will perform Procurement Document Control activities at the plant in accordance with approved written procedures which conform to the requirements of the Authority's Quality Assurance Program.

17.2.4.4 Authority Controls

The Authority reviews, comments and concurs with preliminary procurement documents, final bid documents and any changes thereto, to assure that the applicable requirements of Appendix B to 10 CFR 50 are included.

The Authority will review recommendations for contract award and will assure that any exceptions to the contract will not affect quality requirements.

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.5 INSTRUCTIONS, PROCEDURES AND DRAWINGS

17.2.5.1 General Description

The Authority's Quality Assurance Program requires that documents such as instructions, procedures and/or drawings which prescribe quality affecting activities be controlled and that quality affecting activities be performed in accordance with these instructions, procedures and/or drawings, as applicable.

The operating organization will control instructions, procedures and drawings at the plant in accordance with approved written procedures which conform to the requirements in the Authority's Quality Assurance Program. Quality affecting activities performed by the operating organization shall be accomplished in accordance with these instructions, procedures and/or drawings, as applicable.

The Authority and/or delegated organizations shall have established measures for the control and implementation of instructions, procedures, and drawings for quality-related activities applicable to the scope of their responsibilities. The described measures by a designated A-E/Consultant, if applicable, are delineated in the document referenced in Section 17.2.2, Paragraph 17.2.2.1.

17.2.5.2 Acceptance Criteria

The Authority through planned and periodic surveillance and audits of delegated organizations as well as selected audits of their vendors and subcontractors assures that the instructions, procedures, drawings and checklists used on safety-related equipment are controlled and implemented to meet the requirements of applicable codes, standards, regulatory guides, and the QA Program.

Activities affecting quality are defined in specifications, drawings, procedures and instructions and include criteria for the acceptance of specific activities. These instructions, procedures or drawings shall delineate the

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applicable requirements of codes, standards, regulatory requirements and regulatory guides, and shall specify acceptance criteria. Accomplishment of tasks shall be documented, and shall include appropriate information that acceptance criteria have been met when required.

17.2.5.3 Authority Controls

The Authority will control and implement instructions, procedures and drawings for quality related activities as follows:

- 1) Review, comment and concur with engineering specifications, selected drawings, procedures and instructions prepared for the performance of a quality related activity.
- 2) Prepare procedures related to the activities of this section which identify individuals or groups responsible for these activities.
- 3) Review procedures for design changes, maintenance, modifications, procurement, refueling, fabrication, installation, inspection, in-service inspection and cleaning.
- 4) Establish format and procedure for the preparation, review and approval of the Authority's Quality Assurance Procedures.

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with QA Program requirements.

17.2.6 DOCUMENT CONTROL

17.2.6.1 General Description

The Authority's Quality Assurance Program requires that documents affecting the quality of safety-related structures, systems and equipment during the operation phase of the plant be controlled.

The program establishes controls such that: obsolete or superseded documents shall not be inadvertently used; changes shall be approved by the same group or individuals having authority and responsibility for the initial issue, or by other qualified responsible organizations delegated by the Authority; a method of revision level verification shall be provided; approved changes shall be promptly distributed; and applicable documents shall be available prior to the start of the work for which they are required.

The operating organization will control documents affecting the quality of safety-related structures, systems and equipment at the plant in accordance with approved written procedure which conform to the requirements of the Authority's Quality Assurance Program.

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17.2.6.2 Review and Approval of Documents

The Authority's Quality Assurance Program requires that procedures and instructions be prepared to control the preparation, review, concurrence or approval, change or revision, issuance, and distribution of documents such as the following:

- 1) Quality Assurance manuals, operating procedures and instructions
- 2) Design specifications and drawings
- 3) Manufacturing, design, construction and installation drawings
- 4) Manufacturing and inspection, test, and special process procedures and instructions
- 5) Procurement documents
- 6) Administrative Procedures
- 7) Maintenance Procedures
- 8) FSAR and related design criteria documents
- 9) Design change requests
- 10) Nonconformance reports

Figure 17.2-5 itemizes the Authority's Quality Assurance Program and QA Procedures and their relationship to the 18 criteria of 10 CFR 50 Appendix B.

17.2.6.3 Authority Controls

The Authority will control the preparation, review, approval and distribution of Authority documents including changes thereto which prescribe activities affecting quality performed by Authority personnel and assure that the latest issue of such documents are used. The Authority will provide for distribution of correspondence, which address quality affecting activities, to affected Authority personnel. The Authority will maintain a master list or equivalent of issued Authority documents affecting quality related activities such as, procedures, instructions and drawings.

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

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17.2.7.1 General Description

The Authority's Quality Assurance Program establishes controls to assure that purchased safety-related material, equipment and services, whether purchased directly or through contractors and subcontractors, conform to the procurement document requirements. These measures include, as appropriate, provisions for source evaluation and selection of equipment vendors, objective evidence of quality furnished by contractors or subcontractors, inspection and audit at the source, and examination of products upon delivery.

Vendor selection and evaluation is based on qualifying data, such as the seller's QA Program and past performance data of similar items and vendor surveys, to determine the adequacy of the facilities and the effectiveness of the QA Program.

Objective evidence of quality furnished by the contractors or subcontractors shall identify the purchased material (e.g., codes, standards, specifications met by the materials or equipment). The contractors or subcontractors are also required to identify any procurement requirements which have not been met together with a description of those nonconformances dispositioned "accept as is" or "repair" as part of this objective evidence of quality.

Source inspection shall be required when the conformance of materials, parts and components to procurement documents cannot be verified upon receipt or the service contracted is of a nature requiring a witnessing or verification function.

Receipt inspection includes verification that the required documentation has been received and that the items conform to the procurement documents. Receipt inspection shall be performed in accordance with written procedures and instructions, and receiving activities shall be documented to assure that the: material, component, or equipment is properly identified, including the receiving documentation; acceptance records are inspected with predetermined inspection instructions; inspection records or certificates of conformance are available at the plant; items accepted and released are identified as to their inspection status.

The operating organization will perform activities related to control of purchased material, equipment and services at the plant, in accordance with approved written procedures which conform to the requirements of the Authority's Operation Quality Assurance Program.

17.2.7.2 Major Supplier Evaluations

The Authority's Quality Assurance Program provides for the evaluation of Quality Assurance Programs of major suppliers and delegated organizations. These evaluations assure that they are capable of providing equipment, material and services which meet the applicable regulatory guides, codes, industry standards and regulatory requirements. Audits will be performed to verify that the major suppliers and delegated organizations are satisfactorily implementing approved QA Program requirements.

The Authority's Quality Assurance Program requires that qualified personnel evaluate the supplier's capability to provide acceptable quality services and products before the award of the procurement order or contract. QA and engineering personnel participate in the evaluation of those suppliers providing critical components. The results of supplier evaluations are documented and filed.

17.2.7.3 Source and Vendor Evaluations

Based upon complexity of purchased items and supplier performance history, source inspections or audits of vendors shall be performed, as necessary, to assure that the required quality of the purchased items is obtained. Surveillance of suppliers' fabrication, inspection, testing, and shipment of materials, equipment and components will be planned, performed and reported in accordance with written procedures which assure conformance to the purchase order requirements. Source inspections, surveillances or audits of supplier activities shall be performed by qualified personnel from quality assurance, engineering and/or operations as determined necessary during the procurement phase.

Suppliers' certificates of conformance are periodically evaluated by audits, source or receiving inspection activities, independent inspections, or tests to assure their validity. Results of these evaluations are documented in appropriate reports.

The Authority's Quality Assurance Program requires that the effectiveness of the control of quality by suppliers be assessed at intervals consistent with their importance and complexity.

The Authority's Quality Assurance Program requires that spare or replacement parts of safety-related structures, systems and components are subject to controls at least equivalent to those used for the original equipment.

The Authority may delegate control of purchased material, equipment and service activities for plant structures, systems and components, and procurement quality control and activities, including plant receiving inspection, to an A-E/Consultant in accordance with Section 17.2.2, Paragraph 17.2.2.1. A-E/Consultant responsibility may include the preparation of specifications, drawings, and requisitions for the purchase of materials, equipment and services by the Authority. Included in this activity will be the quality evaluation of those vendors recommended for procurement. A-E/Consultant may provide inspection, surveillance and audit service at vendor facilities for plant equipment and on established notification points of selected delegated organization items.

17.2.7.4 Authority Controls

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

17.2.8.1 General Description

The Authority's Quality Assurance Program requires that all organizations performing safety-related activities establish procedures to provide identification and maintain control of materials, parts and components, including partially fabricated assemblies to prevent the use of defective, unapproved or incorrect materials and equipment. These procedures, as applicable, shall provide for the unique identification of items by serial numbers, part number or other appropriate means. The identification shall be placed on the item whenever practical and shall not degrade the quality or function of the item or on records directly and readily traceable to the item. Verification of identification shall be accomplished at appropriate stages throughout manufacturing, shipment, receipt and installation.

The program provides measures which assure that traceability of items to records, which will verify conformance of the materials, parts and components to specified requirements (e.g. chemical and physical properties, tests, inspections, etc.), shall be provided from initial receipt of materials to installation, use, testing, and throughout the life of the item during operation, modification and repair. For consumable items traceability requirements shall be met by documentation which indicates that only acceptable materials have been used.

The operating organization will identify and maintain control of materials, parts and components at the plant in accordance with approved written procedures which conform to the Authority's Quality Assurance Program.

17.2.8.2 Authority Controls

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.9 CONTROL OF SPECIAL PROCESSES

17.2.9.1 General Description

The Authority's Quality Assurance Program requires that special processes be adequately controlled.

A special process is defined as a unique manufacturing, inspection or test process where the assessment of quality by direct inspection of the process or product is disadvantageous or impractical after the operation is complete. Processes of this nature require the application of effective controls on the process as described later in this Section. Special processes include, but are not limited to, welding, cadwelding, studwelding, heat treating, non-destructive examination (NDE), protective coating application, concrete placement, and chemical cleaning.

The Authority's program requires that all organizations performing special processes on safety-related equipment at the plant or at manufacturing plants shall do so in accordance with approved procedures under controlled conditions, and that procedures, equipment and personnel shall be qualified in accordance with applicable codes, standards and specifications; such qualification records for plant personnel shall be maintained at the plant and kept current. Special process procedures shall reference the applicable codes, standards or specifications and provide methods of documenting accomplished activities.

The operating organization will control special processes at the plant in accordance with approved written procedures which conform to the requirements of the Authority's Quality Assurance Program.

17.2.9.2 Authority Controls

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.10 INSPECTION

17.2.10.1 General Description

The Authority's Quality Assurance Program defines the program requirements that are applicable to inspections performed on safety-related equipment throughout all phases of operations.

The Quality Assurance Program shall provide for inspection during manufacturing, shipping, receiving, storage, handling, installation, testing, operations, repairs, maintenance and modifications, as applicable. Inspection requirements shall be translated into written procedures, instructions and/or checklists. These documents shall govern the conduct and the degree of inspection activity to ensure that the required quality is obtained and objective evidence of the inspections is available.

The Authority's Quality Assurance Program requires that design specifications, drawings, procedures or instructions shall include the necessary inspection requirements, including acceptance criteria to provide assurance that items and work conform to the design requirements.

Where direct inspection is not practicable, control of processing, equipment and personnel shall be used to determine acceptability.

When sampling plans are used, they shall be based on recognized standard sampling plans.

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Inspection procedures, instructions or plans shall be made available where the activity is to be performed prior to the start of work. When notification or hold points have been established, either contractually by purchase documents or internally by the fabricator, or at the plant by the operating organization, the inspection program or plan provides, and the process control procedure shall include provisions to ensure that work does not progress beyond the notification points until released by the designated authority. The method of inspection used shall be consistent with the complexity and nature of the work performed, i.e., nondestructive examination (NDE).

Qualified inspectors shall perform inspection using proper equipment that has been calibrated in compliance with the requirements of Section 17.2.12. Inspectors shall be qualified in accordance with appropriate criteria and applicable codes, standards, and training programs. Inspector qualifications and certifications shall be kept current.

Routine in-process inspections required during maintenance and operations shall be performed by qualified personnel of the plant staff or delegated organizations. Specific elements of work requiring quality acceptance shall be identified by the QA staff who shall perform the inspection and witness testing either at the plant or vendor facilities.

Acceptance inspection activities are performed by qualified inspection personnel who have not performed the work to be inspected. Inspection results are evaluated to determine that requirements have been satisfied.

Inspection requirements, based on applicable requirements of codes, standards and regulatory guides, are translated into inspection programs or plans by the manufacturing activities, to provide documented records of the inspection efforts required to assure quality. Inspection plans shall make use of in-process and final inspection operations, as required.

Maintenance and modification procedures are reviewed by qualified personnel to determine the necessary requirements related to such items as inspection, designation of inspection personnel and the need for documenting the results of subsequent inspections. Inspection of a repair or modification shall be performed by the same method and to the same criteria as the original inspection, or by an approved alternate method.

Inspection operations, including monitoring, witnessing and/or auditing, shall be documented and validated by inspection stamps and/or inspectors sign-off.

17.2.10.2 Authority Controls

The Authority will perform planned and periodic audits of delegated organizations and participate in inspections at selected vendors' facilities, to verify program implementation in accordance with approved QA Program requirements.

17.2.11 TEST CONTROL

17.2.11.1 General Description

The Authority's Quality Assurance Program defines the basic requirements for all organizations performing tests on safety-related materials, equipment, components, systems and structures throughout all phases of operation.

Tests performed after modification, repair or replacement shall be in accordance with the original design testing requirements or acceptable alternatives. The extent of testing shall be based on the complexity of the modifications, replacements or repairs. Acceptable alternatives must be approved by an appropriately designated organization.

The Authority's program requires that tests necessary to demonstrate that materials, equipment, components, systems and structures will perform satisfactorily in service shall be undertaken in accordance with written procedures, as required. These procedures are based on codes, standards, and applicable regulatory requirements. The test procedures, to the extent applicable, shall include provisions to assure that all prerequisites have been met prior to further processing, such as the availability of appropriate calibrated equipment, completeness of the item, condition of the item, proper environmental conditions, and arrangements for witness of mandatory tests by the Authority, contractor or authorized inspector. Test procedures shall be sufficient in detail, and will include caution or safety notes, so that the test operator interpretation is not required.

Test personnel will be trained, qualified and certified, as necessary, for the various test functions. Test results shall be documented with sufficient detail to prevent misinterpretation. The organization that develops the design objectives or test limits, or other duly authorized organization, establishes the acceptance criteria. Test results will be evaluated in accordance with the established criteria by a qualified, responsible individual or group. Test records will be filed and stored in an appropriate manner upon completion of the test and evaluation.

The operating organization will conduct tests and test control activities at the plant in accordance with approved written procedures which conform to the requirements of the Authority's Quality Assurance Program.

17.2.11.2 Authority Controls

The Authority will review, comment, and concur with selected written test procedures and specifications related to: testing, instrumentation and its maintenance and calibration, environmental conditions required for the performance of the test, and the acceptance limits relating to the test.

The Authority will review, comment, and concur with the tests specified in procurement documents.

The Authority will review and comment on methods of documenting and recording test data and results.

The Authority will witness selected tests at vendor facilities and witness selected tests at the plant.

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.12 CONTROL OF MEASURING AND TEST EQUIPMENT

17.2.12.1 General Description

The Authority's Quality Assurance Program defines the requirements for the control of measuring and test equipment throughout all phases of measurement, inspection and monitoring of safety-related materials, components, systems and structures during operations. The Authority's program requires that all organizations performing measurement, inspection and testing of safety-related materials, components, systems, structures, and installation have written procedures that are based on applicable requirements of codes, standards and regulatory guides, describing the identification, control, maintenance, and calibration of all measuring and test equipment. The procedures must include calibration techniques, calibration frequency, and reference transfer standards that are required. These procedures are for measuring and test equipment used in checking, repairing, maintaining, modifying or installing safety-related systems or components. It also includes permanent plant instruments whose calibration is a prerequisite of system surveillance and testing as required by Technical Specifications.

All measuring and test equipment shall be uniquely identified and have traceability to the calibration records and technical data. Identification shall include the use of labels, tags, decals, etc., affixed to the equipment, when practical, denoting the date of calibration and the due date of the next calibration.

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Calibration frequency shall be dependent on the required accuracy, purpose, degree of usage, stability characteristics, manufacturer's recommendations, or other conditions affecting the measurement.

The reference and transfer standards shall be traceable to nationally recognized standards and, for any exceptions, provisions shall be made to document the basis for calibration. Calibration standards shall have an uncertainty (error) requirement of not more than 0.25 of the tolerance of the equipment being calibrated. A greater uncertainty, limited by the "state-of-the-art", may be acceptable.

In the event measuring or test equipment is determined to be out of calibration, an investigation shall be conducted to determine the validity of previous inspections performed with this equipment. The results of this investigation shall be documented and, if required, previous inspection requirements will be repeated using calibrated equipment.

The operating organization shall control measuring and test equipment used at the plant in accordance with approved written procedures which conform to the requirements of the Authority's Operation Quality Assurance Program.

17.2.12.2 Authority Controls

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.13 HANDLING, STORAGE AND SHIPPING

17.2.13.1 General Description

The Authority's Quality Assurance Program defines the requirements for handling, storage and shipping activities performed on all safety-related equipment. The Authority's Program requires that organizations performing handling, storage and shipping activities do so to written procedures, as appropriate. These procedures, based on applicable requirements of codes and standards, have provisions for handling, cleaning, preservation, storage, packaging and shipping of equipment, as required.

The written procedures include detailed requirements for cleaning, coating and specifying environmental conditions for handling, storage and shipping.

The written procedures describe special handling and precautions required during unloading or storage at the plant and other storage locations. The procedures contain the inspection instructions necessary to verify conformance with established criteria using qualified personnel, as required.

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When necessary, the procedures specify the inspection and the inspection frequency of items in storage to preclude damage, loss or deterioration from environments such as corrosive atmosphere, moisture and temperature.

The operating organization will control handling, storage and shipping activities at the plant in accordance with approved written procedures which conform to the requirements of the Authority's Quality Assurance Program.

17.2.13.2 Authority Controls

The Authority will review specifications, drawings, procedures and instructions which contain the requirements for handling, storage, shipping, cleaning, preservation and maintenance of material and equipment whether in storage or installed at the plant as structures, systems or components.

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.14 INSPECTION, TEST AND OPERATING STATUS

17.2.14.1 General Description

The Authority's Quality Assurance Program describes the requirements for the control of inspection, test and operational status of all safety-related material, equipment and structures.

The organizations that perform tests and inspections on safety-related items of nuclear power plants have established measures for identifying the test, inspection or operating status of these items. Such measures conform to applicable codes and standards, and are implemented by written procedures which describe the use of indicators, such as tags, markings, shop travellers, stamps, route cards or inspection checklists that identify the status of the items at any given time.

Only authorized personnel are permitted to apply or remove tags, markings, or stamps to or from the equipment and/or the documentation. Stamps, such as for welding, inspection of test, are controlled and documented such that the individual using the stamp is readily and uniquely identified.

The program assures that inspections and tests performed out of sequence are adequately documented and do not compromise system integrity.

The procedures provide for positive identification and control of nonconforming items in accordance with Section 17.2.15 to prevent their inadvertent use.

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The program requires that when bypassing or waiver of a designated QC inspection, test or critical work operation is required, it shall be controlled under cognizant QA personnel.

The operating organization will maintain the inspection, test, and operational status of all safety-related material, equipment and structures at the plant in accordance with approved written procedures which conform to the Authority's Quality Assurance Program.

17.2.14.2 Authority Controls

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.15 NONCONFORMING MATERIALS, PARTS OR COMPONENTS

17.2.15.1 General Description

The Authority's Operation Quality Assurance Program describes the requirements for the disposition, handling and control of nonconforming material during operation. The Authority's system for control of nonconformances provides measures for nonconformances, observed by Authority personnel, to be documented, reviewed, dispositioned, and transmitted to the responsible delegated organization for corrective action. The documentation shall fully identify the item, nonconforming characteristics, inspection requirements, the specific requirements violated, the disposition of the nonconformances, and the appropriate approval of the disposition.

The program provides for the identification of personnel or group(s) responsible for assigning dispositions to nonconforming items. Dispositions authorizing a change in requirements shall be made by the same personnel or group(s) responsible for establishing the original requirement or by another authorized organization.

The Authority's program also requires that nonconforming items be clearly identified by appropriate means (tags, labels, stickers, marking, etc.) and segregated, if practical, until the disposition instructions for the nonconforming item have been received. The description of nonconformance identified as "use as is" or "repair" are reviewed for acceptability by Quality Assurance and/or cognizant technical personnel.

Measures have been established in the program to assure that nonconformance data related to work performed at the Contractor/major vendor's facilities, relative to "use as is" or "repair" dispositions are reflected in the inspection records and forwarded to the plant to be retained as part of the plant records following a review for acceptability by Quality Assurance and/or cognizant technical personnel.

Acceptability of rework or repair of materials, parts, components, systems, and structures is verified by reinspecting and retesting the item as originally inspected and tested or by a method which is equivalent to the

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original inspection and testing method; and inspection, testing, rework, and repair procedures are documented.

The program requires identification, classification, resolution and follow-up of material nonconformances which are detected during the course of operation activities. Periodic reviews are made of material nonconformance reports by Authority Quality Assurance personnel. These reviews are performed and results are documented and reported to appropriate management.

The Authority's program provides measures to prevent inadvertent use or installation of safety-related materials, parts and components when determined to be in noncompliance with the requirements of applicable codes, standards, drawings, specifications and procurement documents.

The operating organization will control nonconforming items at the plant in accordance with approved written procedures which conform to the requirements of the Authority's Quality Assurance Program.

17.2.15.2 Authority Controls

The Authority will review and comment on selected deficiency reports generated by delegated organizations at vendor facilities.

The Authority will verify, at the plant, that rework and repair activities are accomplished in accordance with disposition instructions.

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

17.2.16 CORRECTIVE ACTION

17.2.16.1 General Description

The Authority's Quality Assurance Program describes the requirements for a corrective action program and assures that conditions adverse to or affecting quality are promptly identified, reported and corrected. The Authority's Program provides for systematic analysis of deficiencies, including nonconformance reports, the determination of the need for corrective action and the reporting to an appropriate level of the management, the condition, cause and corrective action taken.

The Authority's Program requires identification of the significant conditions adverse to or affecting quality and the need for corrective action to be documented. The circumstances creating or contributing to the adverse condition, the action necessary to correct the condition, and measures taken to preclude recurrence are determined and documented by the organization responsible for implementing the needed corrective action.

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Follow-up action is taken to verify that specified corrective action has been properly implemented. Verification of proper implementation, or any action taken which is not considered acceptable, is documented and distributed to appropriate levels of management. This distributor includes management of the organization responsible for implementation of the specified corrective action.

Reports of the conditions adverse to quality are formally issued to appropriate levels of management of affected organizations.

Records are maintained to substantiate that these corrective action measures have been properly implemented. This corrective action system is implemented through the use of approved written procedures.

If the specified disposition for corrective action affects design of structures, systems or equipment, a technical review shall be made by the organization that established the original design criteria, or by other qualified responsible organizations delegated by the Authority to verify adequacy of the stated disposition.

A corrective action system will be implemented at the plant in accordance with approved written procedures which conform to the requirements of the Authority's Quality Assurance Program.

17.2.16.2 Significant Deficiencies

In accordance with NRC regulatory requirements, significant deficiencies which are determined to be within the scope of the Code of Federal Regulation, 10 CFR 21, will be reported to the NRC Directorate of Inspection and Enforcement

17.2.16.3 Authority Controls

The Authority will review and concur with corrective action in conjunction with nonconformance documents.

The Authority will perform planned and periodic audits of delegated organizations to verify program implementation in accordance with approved QA Program requirements.

7.2.17 QUALITY ASSURANCE RECORDS

17.2.17.1 General Description

The Authority's Operation Quality Assurance Program requires that quality records of safety-related items and activities shall be identified, reviewed, retained and retrievable. These requirements are imposed on all organizations performing safety-related functions during operation. The

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quality program describes the requirements for record storage facilities which shall be constructed, located and secured in such a manner as to prevent destruction of the records through fire, flooding, theft and deterioration by environmental conditions. Records generated during the design, procurement and construction phases, shall be maintained and stored in the same described manner.

The Authority's program requires that records generated during the operation phase, documenting evidence of quality of items and activities, include such items as: operating logs; principal maintenance and modification activities; results of reviews, inspections, tests, audits; abnormal occurrences; monitoring of work performance and material analysis; the qualification of personnel, procedures, and equipment; and other documentation such as drawings, specifications, procurement documents, calibration procedures, calibration reports, design changes, and nonconforming and corrective action reports.

Requirements for identification, transmittal, retention, maintenance, and review of quality related records are indicated in specifications, quality programs and procedures. Documentary evidence of these activities shall be available at the plant prior to release of material or equipment for installation.

The quality program specifies the type of information and data to be compiled for the inspection records, such as: description of operation; evidence of completion or verification of manufacturing, inspection or test operation; inspection and test results; information concerning nonconformances; and acceptability of the item tested or inspected. The qualifications training records of test and inspection personnel shall also be documented.

The operating organization will maintain and store records at the plant in accordance with approved written procedures which conform to the Authority's Quality Assurance Program.

17.2.17.2 Authority Controls

The Authority maintains records generated by Authority personnel, both onsite and offsite, in accordance with the requirements of the Quality Assurance Program.

The Authority will perform planned and periodic audits of delegated organizations to verify implementation in accordance with approved QA Program requirements.

17.2.18 AUDITS

17.2.18.1 General Description

The Authority's Quality Assurance Program includes a comprehensive system of

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planned and periodic audits to be carried out by the Authority Quality Assurance organization to verify compliance with all aspects of the program. This audit system provides data for a continuing evaluation of the effectiveness of the program. In addition, surveillance audits are conducted routinely on an unscheduled basis of ongoing or day-to-day activities to verify satisfactory completion of the activity.

The Authority will perform planned and periodic audits of delegated organizations to verify program implementations in accordance with appropriate QA program requirements. Specific program areas are subsequently audited, consistent with the project schedule or where quality concerns are noted, so that the total program is reaudited within a scheduled period of time.

Audits are performed in accordance with pre-established procedures, check-lists, etc., and conducted by trained personnel not having direct responsibilities in the areas being audited.

The Authority's audit program requires audit results to be documented, reviewed by or with management responsible for the area audited, and appropriate action initiated to correct any deficiencies. The organization conducting the audit is responsible for conducting the follow-up actions including reaudit of deficient areas to assure correction of the discrepancies. Results of audits are summarized in audit reports which are reviewed by Quality Assurance.

The Authority's audit program, as defined in the Authority's Quality Assurance Program, includes the following types of audits to provide a comprehensive, independent verification and evaluation of all quality related procedures and activities to assure they are in compliance with the Authority's established program requirements:

- 1) Audits of delegated organizations
- 2) Audits of selected vendors and contractors
- 3) Audits of plant operation activities
- 4) Audits internal to the Authority

Independently, or concurrent with the audits and inspections by delegated organizations, the Authority may conduct audits of vendors and contractors such as equipment fabricators, material suppliers, consultants and various contractors working on plant activities.

17.2.18.2 Authority Controls

The Director-QA, based on his review, reports audit findings and the actions to be taken to correct the deficient conditions to the Vice President-Quality Assurance and Reliability. These reports also serve as a

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source of information for the Authority's Quality Assurance Program evaluation by management.

The Authority will perform planned and periodic audits of delegated organizations and participate in audits at selected vendors' facilities to verify program implementation in accordance with approved QA Program requirements.

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APPENDIX 17.2A

ARCHITECT-ENGINEER/CONSULTANTS

The Authority may delegate to Architect-Engineers/Consultants quality affecting activities for modifications and/or additional facilities or services. Any work so delegated shall be in accordance with an approved Quality Assurance Program and implementing procedures as may be required for the performance of such tasks.

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APPENDIX 17.2B

CONFORMANCE WITH NRC REGULATORY GUIDES

1. Personnel Selection and Training (Regulatory Guide 1.8, March 1971)
The selection and training of personnel used at the Nuclear Power Plant conforms with Regulatory Guide 1.8.
2. Quality Assurance Program Requirements (Design and Construction) (Regulatory Guide 1.28, June 1972)
The design and construction of safety-related structures, systems, and components resulting from modifications or design changes are subject to quality assurance requirements that comply with the positions defined in Regulatory Guide 1.28, which endorses ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants".
3. Quality Assurance Requirements for Installation, Inspection, and Testing of Instrumentation and Electric Equipment (Regulatory Guide 1.30, August 1972)
The installation, inspection, and testing of all IEEE Class IE electric power, instrumentation, control equipment and systems, including auxiliary equipment and associated material, comply with the requirements of Regulatory Guide 1.30.
4. Quality Assurance Program Requirements (Operation) (Regulatory Guide 1.33, November 1972)
The Quality Assurance requirements for the operation of the nuclear power plant comply with Regulatory Guide 1.33.
5. Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants (Regulatory Guide 1.37, March 1973)
The Quality Assurance requirements for cleaning of fluid systems and associated components comply with Regulatory Guide 1.37, with the following exceptions:

Regulatory Position C.3 - Safety-related systems other than the following:
 - a. Reactor coolant pressure boundary
 - b. Systems required for reactor shutdown
 - c. Systems required for emergency core cooling
 - d. Reactor vessel internals that are relied upon to permit adequate core cooling for any mode of normal operation or under credible postulated accident conditions,

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are flushed with water in accordance with ANSI N45.2.1-73, except that the quality of water is as close as practical to that of the operating system water. The systems listed comply with NRC Regulatory Position C.3. These are the most critical systems in a plant and must be carefully protected from contamination, especially for stainless steel systems. For other QA Category I systems it is adequate to use water defined by ANSI N45.2.1-73, except that the flush water is matched as close as practical to that intended for system operation. For example, demineralized water is used for systems that operate with demineralized/deionized/condensed water. It is not necessary to flush such systems with water containing 0.15 ppm chlorides when the 1.0 ppm maximum chlorides required by ANSI would be adequate to prevent contamination.

6. Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants (Regulatory Guide 1.38, March 1973)

The Quality Assurance requirements for packaging, shipping, receiving, storage, and handling comply with Regulatory Guide 1.38, with the following exceptions:

- a. Regulatory Position C.3 - Tapes, dessicants and dessicant bags do not contain the following as a basic and essential chemical constituent: lead, zinc, copper, mercury, cadmium and other low melting point metals, their alloys, and/or compounds.
- b. As prescribed in ANSI N45.2.2-1972, maximum levels of water leachable chlorides, total halogens, and sulfur and their compounds are imposed upon tapes.
- c. Dessicants and dessicant bags contain nonhalogenated and nonsulfur bearing materials.

7. Housekeeping Requirements for Water-Cooled Nuclear Power Plants (Regulatory Guide 1.39, March 1973)

The housekeeping program complies with Regulatory Guide 1.39.

8. The Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Plant (Regulatory Guide 1.54, June 1973)

The Quality Assurance requirements for protective coatings comply with Regulatory Guide 1.54, with the following exceptions:

In lieu of the inspection defined in Section 6.2.4 of ANSI N101.4-1972, inspection is in accordance with ANSI N5.12-1974 Section 10, Inspection for Shop and Field Work.

Regarding the extent of coverage, the following offers clarification of paragraph 1.2.4 of ANSI N101.4-72:

Regulatory Guide 1.54 will be applied as follows:

- a. Surfaces within the primary containment liner boundary:
 - i) For large surface area components, the documents shall be retained by the Authority as required by ANSI N101.4-72. These components include such items as the reactor building crane, containment, structural steel (including miscellaneous steel and handrails), concrete, ductwork, uninsulated pipe, exterior of uninsulated tanks and vessels, and major equipment supports.
 - ii) For manufactured equipment such as pumps, motors, pipe hangers and supports, the documentation required by ANSI N101.4-72 shall be maintained in the Seller's files for the complete duration of the contract warranty/guarantee period. A certificate of compliance signed by responsible management personnel shall be furnished by the Seller.
- b. Other surfaces where coating failure could compromise the design function of equipment or components intended to prevent or mitigate the consequences of postulated accidents which could affect the public health and safety.

Because of the impracticability of imposing the Regulatory Guide requirements on the standard shop process used in painting valve bodies, handwheels, electrical cabinetry and control panels, loudspeakers, emergency light cases and like components, the Regulatory Guide will not be invoked for these items since the total surface of such items is relatively small when compared to the total surface area for which the requirements will be imposed.

The reference substitution of ANSI N5.12 as the basis for inspection, rather than ANSI N5.9 reflects a revision to a standard referenced in the based document, ANSI N101.4.

9. Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel (Regulatory Guide 1.58. Revision 1, September 1980)

Qualification of nuclear power plant inspection, examination, and testing personnel complies with Regulatory Guide 1.58, which endorses ANSI N45.2.6-1978, "Qualifications of Inspection, Examination, and Testing Personnel for the Construction Phase of Nuclear Power Plants", with the following exceptions:

- a. Regulatory Position C.6 - Education and Experience -
Recommendations

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An individual's technical training, experience and performance capability are the more significant parameters for establishing qualifications. The Authority will comply with the requirements of the ANSI Standard, in lieu of Regulatory Position C.6.

- b. Regulatory Position C.10 - Determination of Initial Capability and Evaluation of Performance

Determination of the qualifications of a new Authority employee will be accomplished in accordance with the requirements of Section 3.5 of the ANSI Standard amplified by the following: all new Authority employees are assigned a probationary period. During this period, new employees receive on-the-job training and assigned work tasks. An ongoing evaluation of the employee's performance is conducted by appropriate supervision and, at the end of the probationary period, the evaluation is documented.

Depending upon education, experience and day-to-day performance, a person may or may not be qualified until the probationary evaluation has been completed. The Authority utilizes this evaluation process as the measure for determining an individual's competence prior to formal certification. In addition, written or oral tests may be used in conjunction with the evaluation as determined and directed by the appropriate supervisor to verify satisfactory experience.

Authority personnel and personnel provided by a contractor to the Authority for plant quality assurance services comply with the above mentioned Regulatory Guides and their associated ANSI standards including the alternative provided herein with regard to qualifications.

10. Quality Assurance Requirements for the Design of Nuclear Power Plants (Regulatory Guide 1.64, October 1973)

The Quality Assurance requirements for the design or design change resulting in modification of the nuclear power plant comply with Regulatory Guide 1.64.

11. Quality Assurance Terms and Definitions (Regulatory Guide 1.74, February 1974)

The nuclear power plant Quality Assurance Program degree of compliance with Regulatory Guide 1.74 is as follows:

The Authority uses the appropriate definitions of ANSI N45.2.10-1973.

12. Preoperational and Initial Startup Test Programs for Water-Cooled Power Reactors (Regulatory Guide 1.68)

Not applicable for our phase of operations.

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13. Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records (Regulatory Guide 1.88, Revision 2, October 1976)

Regulatory Guide 1.88 Revision 2, endorses the requirements and guidelines as specified in ANSI N45-2.9-1974. The Authority, however, has taken an exception to the four hour fire-rating criterion used in the ANSI standard for the construction of an archival storage facility. A two hour fire-rating criterion, as specified in a revised ANSI standard (ANSI N45.2.9-1979), will be utilized.

Collection, storage and maintenance of nuclear power plant Quality Assurance records will continue to conform with Regulatory Guide 1.88, Rev. 2. The one exception is the utilization of a fire-rating of two hours for constructing archival storage facilities instead of four hours.

14. Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (Regulatory Guide 1.146, August 1980)

Qualification of Quality Assurance personnel for nuclear power plants conforms with Regulatory Guide 1.146 with the following exceptions:

Certifications for lead auditors shall be accomplished and documented in accordance with ANSI N45.2.23 with the alternative of satisfying paragraph 4.2 as indicated below. The need for certification in accordance with the requirements of paragraph 4.2 shall be determined on an individual basis commensurate with previous experience and training. The Authority designated Quality Assurance supervisors may waive the requirements for paragraph 4.2 and utilize the following type data for purposes of certification of a lead auditor:

- a) Experience records which include identification of the performance of audits necessary to fulfill the requirements of paragraph 2.3.4 whether performed through previous employment or with the Authority.
- b) Certification records to N45.2.23 from a previous employer, if applicable.
- c) On-the-job training with the Authority staff to become knowledgeable of our audit program and related procedures.
- d) Participation in audits with and under the direction of Authority lead auditors.

The objective evidence of qualification in such cases would be maintenance of the experience records from previous employment, records of on-the-job training, and identification of the audit reports performed with and under the supervision of an Authority lead auditor in lieu of a specific examination. Final authority for certification shall be the responsibility of the Authority designated Quality Assurance supervisors.

APPENDIX 17.2C
PLANT ADMINISTRATIVE PROCEDURES
GENERAL LIST

Title

Plant Organization
Plant Operating Review Committee
Procedure Control
Security
Emergency
Radiation Safety
Reporting of Significant Occurences
Work Requests
Work Permits
Waste Release Permits
Plant Modifications
Jumper Control
Training
Quality Control
Calibration of Measuring and Test Equipment
Document Control
Operations Surveillance Test Procedures
Maintenance Procedures
Operating Procedures
Instrument Surveillance Procedures
Instrument Maintenance Procedures
Special Nuclear Material Controls
Conduct of Operations
Conduct of Maintenance
Conduct of I & C
Conduct of Radiological and Chemical Services
Conduct of Technical Services
Plant Safety
Warehouse Controls
Start-up Test Controls
Preoperational Tests Controls
Control of Equipment Markups, Etc.
Maintenance of Plant Records
Administrative Controls

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APPENDIX 17.2D
QA PERSONNEL QUALIFICATION

Qualification requirements have been established for activities requiring various levels of proficiency and training for personnel on an individual basis. Personnel assigned to perform Quality Assurance activities will have qualifications that are commensurate with the responsibilities with which they are charged. Quality Assurance personnel will have demonstrated their ability to perform competently in those areas for which they will be held responsible. Qualifications of personnel performing QA functions shall be determined from the following data:

Education

- a. A degree in engineering or a related field of study.
- b. Where a college degree has not been obtained, two years of experience in the paragraph "Experience Requirements - Area" below, will be acceptable in lieu of each year of college level education. This requirement is based on a four-year accredited curriculum.

Experience Requirements - Area

- a. Design
- b. Construction
- c. Operation
- d. Quality Assurance
- e. Nuclear

Experience Requirements - Years

The required number of years of experience, listed herinafter, shall be the sum of all the years in any or all of the areas listed in the Experience paragraph above, plus a degree in engineering or a related field of study.

Position - HQ

Experience Years

Vice President-Quality Assurance & Reliability	10 *
Director-Quality Assurance	7 *
QA Managers	7
QA Engineers	5

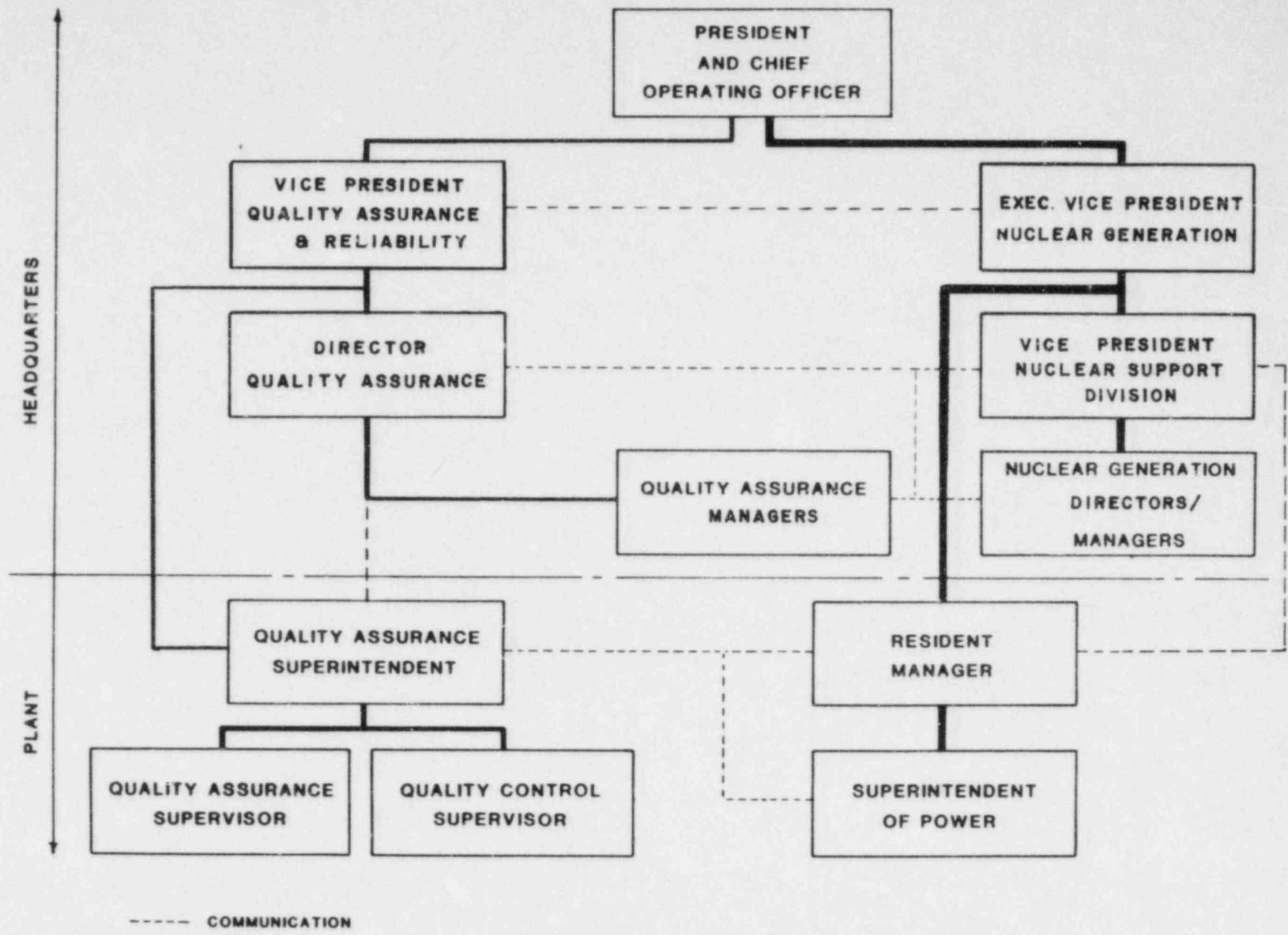
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<u>Position - Plant</u>	<u>Experience Years</u>
QA Superintendent	7 *
QA Supervisors	5
QA Engineers	5
QC Supervisors	5

Plant QC personnel shall be certified based on the experience and education requirements as defined in Regulatory Guide 1.58 (Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel) and ANSI N45.2.6 (Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants) per Appendix 17.2B. The experience level certification shall be commensurate with the activity to be performed.

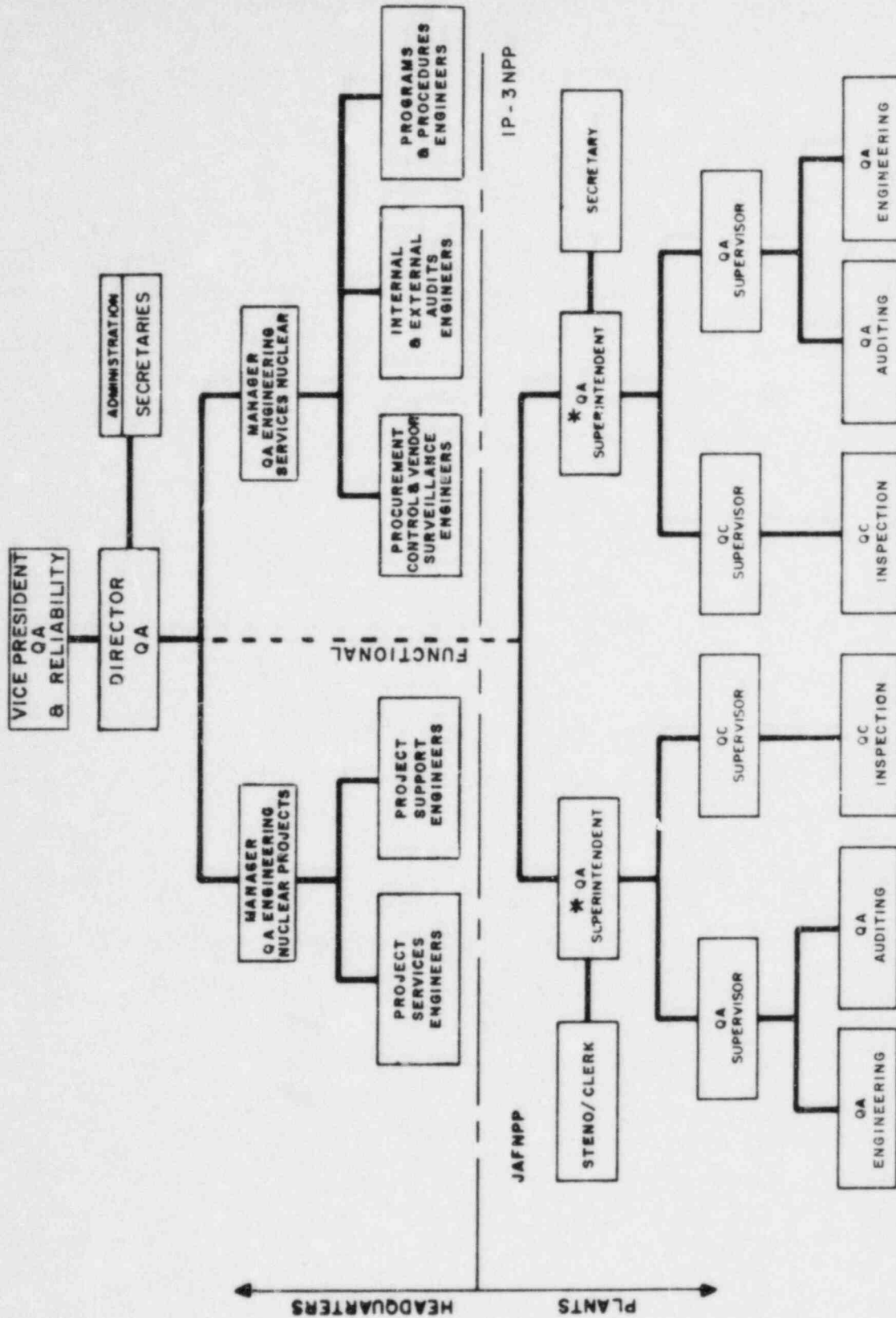
Qualification requirements have been established for QA personnel, not included in this appendix, commensurate with training and experience necessary to perform a designated function.

* At least one (1) year of this experience shall be associated with work on nuclear power plants, in the implementation of the QA Program.



JAMES A. FITZPATRICK FSAR UPDATE
 AUTHORITY QA ORGANIZATION INTERFACE WITH OPERATING ORGANIZATION
 REV. 2 JULY, 1984 FIGURE NO. 17.2-1

QUALITY ASSURANCE

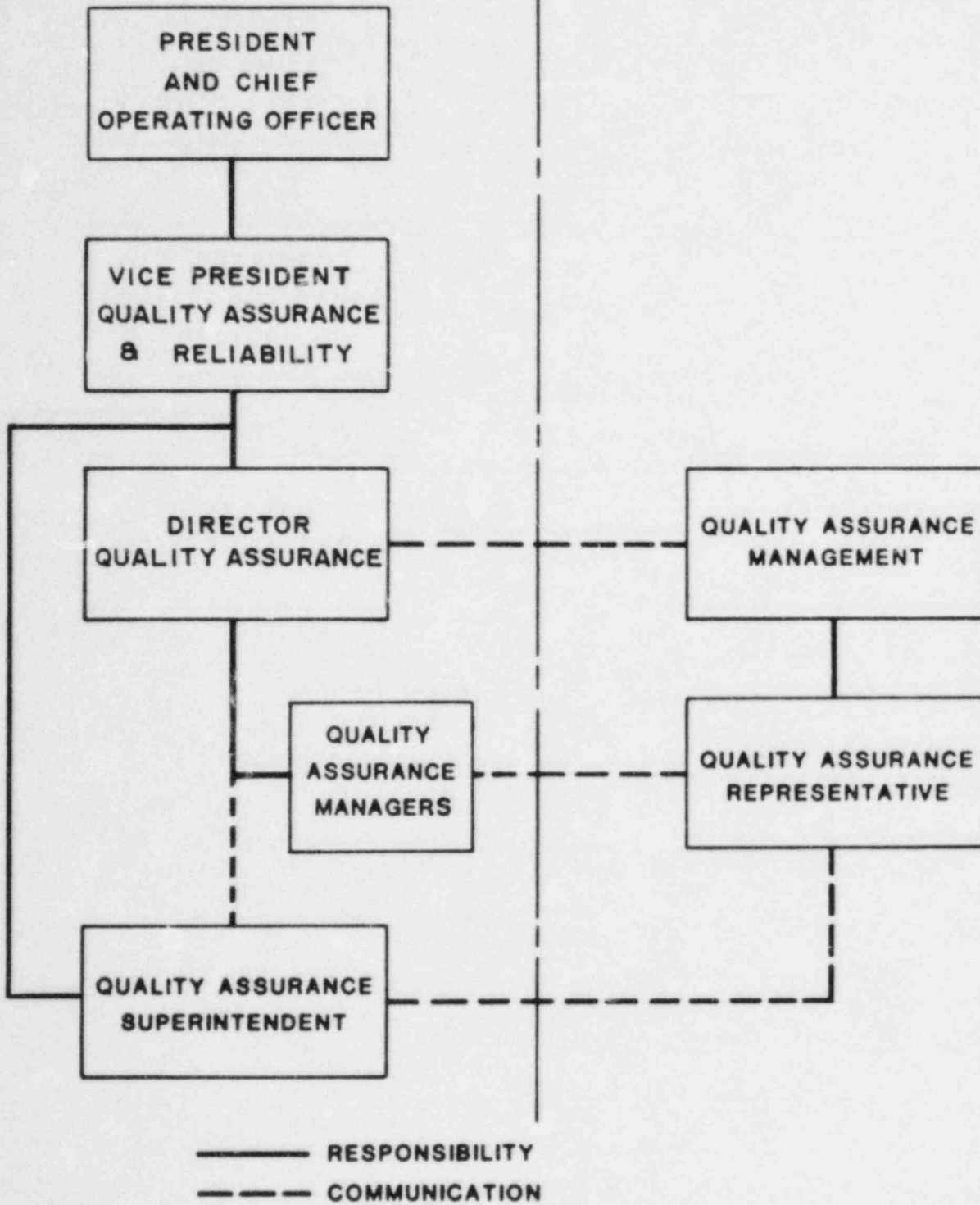


NOTE: * QA SUPERINTENDENTS
REPORT TO V.P. - QA & R

JAMES A. FITZPATRICK	FSAR UPDATE	
AUTHORITY QA ORGANIZATION		
REV. 2	JULY, 1984	FIGURE NO. 17.2-2

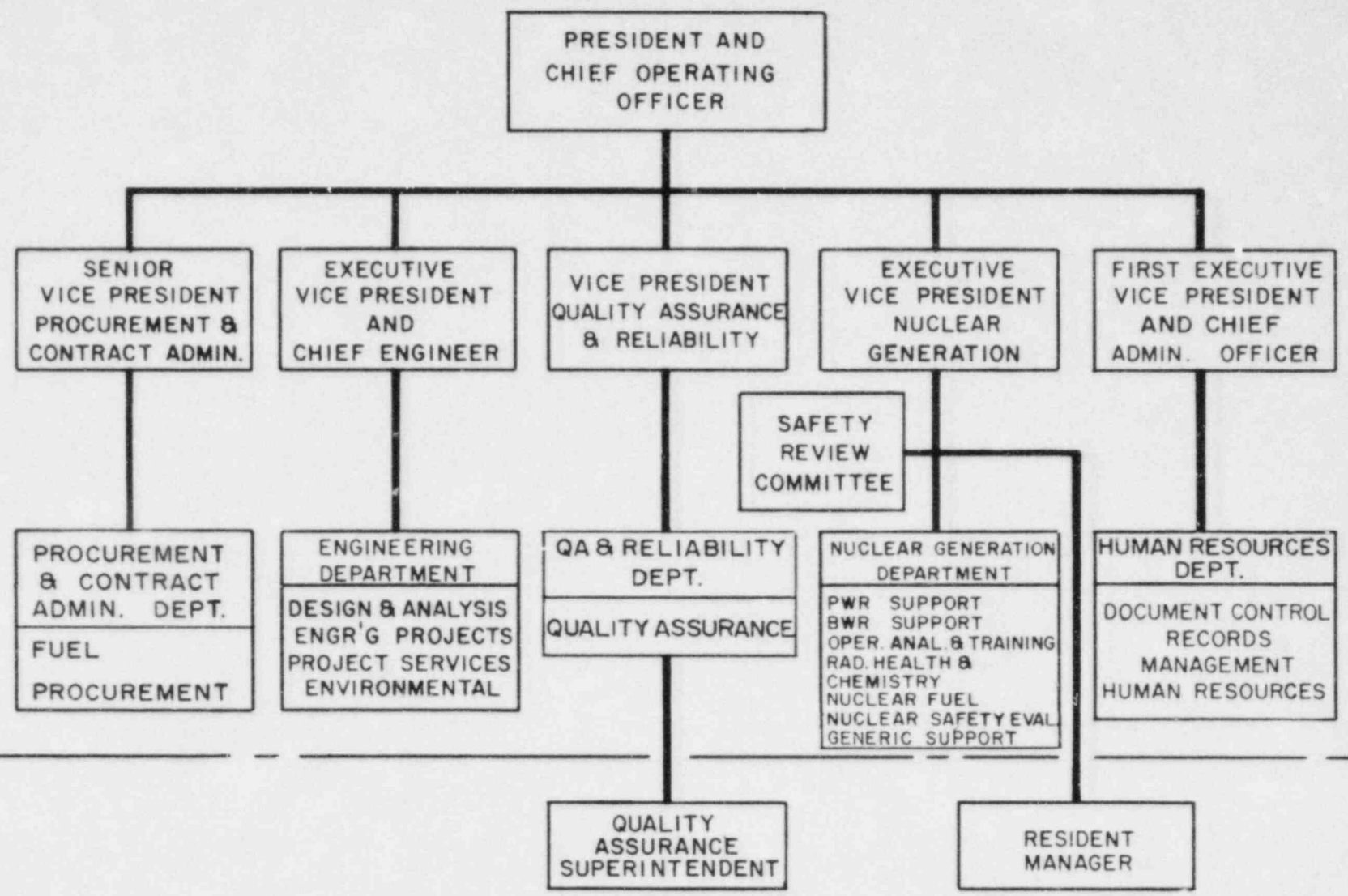
NEW YORK
POWER AUTHORITY

MAJOR CONTRACTOR,
ARCHITECT ENGINEER,
CONSULTANT, NSSS



JAMES A. FITZPATRICK		FSAR UPDATE	
AUTHORITY AND MAJOR CONTRACTOR INTERFACE			
REV. 2	JULY, 1984	FIGURE NO. 17.2-3	

AUTHORITY HEADQUARTERS
 PLANT



JAMES A. FITZPATRICK FSAR UPDATE
 AUTHORITY QA ORGANIZATION
 AND QA RELATED ORGANIZATIONS
 REV 2 JULY, 1984 FIGURE NO. 17.2-4

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APPENDIX B
QUALITY
ASSURANCE
CRITERIA

	ORGANIZATION	QUALITY ASSURANCE PROGRAM	DESIGN CONTROL	PROCUREMENT DOCUMENT CONTROL	INSTRUCTIONS, PROCEDURES AND DRAWINGS	DOCUMENT CONTROL	CONTROL OF PURCHASED MATERIAL EQUIPMENT & SERVICES	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	CONTROLS OF SPECIAL PROCESSES	INSPECTION	TEST CONTROL	CONTROL OF MEASURING AND TEST EQUIPMENT	HANDLING, STORAGE AND SHIPPING	INSPECTION, TEST & OPERATING STATUS	NONCONFORMING MATERIALS, PARTS, OR COMPONENTS	CORRECTIVE ACTION	QUALITY ASSURANCE RECORDS	AUDITS
AUTHORITY QUALITY ASSURANCE PROGRAM MANUAL	17.2.1	17.2.2	17.2.3	17.2.4	17.2.5	17.2.6	17.2.7	17.2.8	17.2.9	17.2.10	17.2.11	17.2.12	17.2.13	17.2.14	17.2.15	17.2.16	17.2.17	17.2.18
AUTHORITY QUALITY ASSURANCE PROCEDURE MANUAL	1.1 1.2 1.3 1.5	2.1 2.2 2.3 2.4	3.1	4.1	5.1 5.2	6.1 6.2 6.3	7.1 7.2 7.3 7.4 7.5 7.6 7.7	8.1	9.1	10.1	11.1 12.1	13.1	14.1	15.2	16.1 16.3 16.4	17.1	18.1 18.2 18.3 18.4 18.5	

* PLANT ADMINISTRATIVE GENERAL PROCEDURES ARE LISTED IN APPENDIX 17.2-8 OF QA PROGRAM MANUAL.

GAP NO	QUALITY ASSURANCE PROCEDURE TITLE
1.1	QUALITY ASSURANCE ORGANIZATION
1.2	ORGANIZATION INTERFACE - MAJOR CONTRACTORS
1.3	CONDITIONAL RELEASE AND STOP WORK - PLANT
1.4	DELETED - INCORPORATED IN NDE MANUAL
1.5	QUALIFICATION REQUIREMENTS, DUTIES AND TRAINING OF AUDITORS
2.1	QA PROGRAM SCOPE
2.2	QA PROGRAM STATUS REPORTING TO MANAGEMENT
2.3	INDOCTRINATION AND TRAINING - HEADQUARTERS
2.4	QA PROGRAM ASSESSMENT
3.1	DESIGN CONTROL
4.1	PROCUREMENT DOCUMENT REVIEW
5.1	PREPARATION AND PROCESSING OF QA PROCEDURES
5.2	PREPARATION AND PROCESSING OF QA PROGRAMS
6.1	CONTROL OF QA MANUALS
6.2	CONTROL OF QA CORRESPONDENCE
6.3	PROCESSING QA DOCUMENTS
7.1	VENDOR SELECTION AND EVALUATION
7.2	MONITORING OF EXTERNAL A-E ORGANIZATIONS DELEGATED PROCUREMENT ACTIVITIES BY THE AUTHORITY
7.3	RECEIVING INSPECTION
7.4	VENDOR EVALUATION
7.5	SUPPLIER QUALIFICATION UTILIZING THE CASE REGISTER
7.6	AUTHORITY QA PARTICIPATION IN THE CASE PROGRAM
7.7	CONTRACTOR / VENDOR SURVEILLANCE INSPECTION
8.1	IDENT. & CONTROL OF MATERIAL, PARTS & COMPONENTS
9.1	CONTROL OF SPECIAL PROCESSES
10.1	INSPECTION OF QUALITY RELATED ACTIVITIES
11.1	TEST CONTROL
12.1	CONTROL OR MEASURING AND TEST EQUIPMENT
13.1	HANDLING STORAGE AND SHIPPING
14.1	INSPECTION, TEST, AND OPER. STATUS
15.1	DELETED - COMBINED WITH 15.2
15.2	CONTROL OF NONCONFORMING MATERIAL, PARTS OR COMPONENTS
16.1	CORRECTIVE ACTION CONTROL - PLANT
16.2	DELETED - COMBINED WITH 16.1
16.3	CORRECTIVE ACTION CONTROL - HEADQUARTERS
16.4	CORRECTIVE ACTION CONTROL/RECOMMENDATION- APPRAISAL PROGRAM
17.1	AUTHORITY QA DEPARTMENT RECORD RETENSION
18.1	QA AUDIT PROGRAM - PLANT
18.2	QA FOR CONTRACTORS AND SUBCONTRACTORS
18.3	AUDIT OF MAJOR CONTRACTORS - HEADQUARTERS
18.4	INTERNAL AUDITS - HEADQUARTERS
18.5	PROGRAM APPRAISALS

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CROSS REFERENCE MATRIX
OF IMPLEMENTING DOCUMENTS

REV. 2 JULY, 1984 FIGURE NO. 17.2-5