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PSEG

Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038

Nuclear Department

August 17, 1983

Mr. Glenn Meyer
U.S. Nuclear Regulatory Commission - Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Meyer:

UPDATED FSAR, CHAPTER 17
NO. 1 AND 2 UNITS
SALEM GENERATING STATION
DOCKET NOS. 50-272 AND 50-311

As requested by you, we are sending herewith a copy of Chapter 17 (titled, Quality Assurance) of the Updated FSAR, amended with Revision 1 for your use. Should you have any questions, please contact us.

Very truly yours,

E. A. Liden
Manager - Nuclear
Licensing and Regulation

MB:dlh

Enclosure

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17.1 QUALITY ASSURANCE DURING THE DESIGN AND CONSTRUCTION PHASES

This section is not applicable since these phases are completed. See Appendix D of Amendment 43 to the FSAR for the Quality Assurance Program applicable during design and construction.

17.2 QUALITY ASSURANCE DURING THE OPERATIONS PHASE

OVERALL APPROACH AND SCOPE

Public Service Electric and Gas Company (PSE&G) is responsible for assuring that the operation, maintenance, refueling and modification of the Salem Generating Station is accomplished in a manner which protects public health and safety and which is in compliance with applicable regulatory requirements. To carry out this responsibility, PSE&G developed and implemented a comprehensive Quality Assurance Program which was applicable to the design, construction, and testing phases, and is now applied to the operation phase of the Salem Generating Station.

This Operation Quality Assurance Program is documented in the Nuclear Department Quality Assurance Program Manual which is maintained by Quality Assurance Nuclear Operations (QANO). The Program provides the measures essential for controlling the quality of safety related structures, systems, components, materials, and services. The Quality Assurance Program encompasses fire protection of safety related areas and other activities enumerated in Regulatory Guide 1.33. A planned monitoring and audit program assures that specified requirements of the Nuclear Operations Quality Assurance Program are met. The Program provides coordinated and centralized quality assurance direction, control, and documentation as required by the NRC criteria set forth in 10CFR50, Appendix B. In addition, the Nuclear Operations Quality Assurance Program is based upon the policy statements of PSE&G Management. It is implemented through Procedures, Instructions, Standards, Specifications, and Forms which provide the details of how that policy is implemented for 10CFR50, Appendix B. Applicable NRC Regulatory Guides, codes and standards, and the policy statements contained in the Nuclear Department Quality Assurance Program Manual are used by PSE&G organizations performing safety-related activities to prepare appropriate implementing procedures. To assess the effectiveness of the Nuclear Operations Quality Assurance Program,

independent auditors from outside the company periodically audit the program for compliance with 10CFR50, Appendix B, and other Regulatory commitments. Reports of such audits are made directly to upper management.

PSE&G requires its suppliers and contractors to assume responsibility for establishing and implementing QA/QC programs, as applicable, to meet 10CFR50, Appendix B. QANO reviews those programs and conducts appropriate monitoring and auditing as required to assure that suppliers properly implement their QA/QC programs. The Nuclear Operations QA Program verifies that requirements necessary to assure quality are properly included or referenced in procurement documents. In addition, PSE&G suppliers are required to extend applicable PSE&G QA requirements to sub-suppliers, as documented in the suppliers' procurement documents.

17.2.1 ORGANIZATION

17.2.1.1 General

The Nuclear Operations QA Program, referred to hereafter as the QA Program, assures that adequate administrative and management controls are established for the safe operation of Salem Generating Station.

Implementation is assured by ongoing review, monitoring and audit under the direction of the Manager - Quality Assurance Nuclear Operations who reports to the Vice President - Nuclear.

Company organization is shown in Figures 17.2-1 through 17.2-4. Responsibilities for quality assurance related activities are described in the following sections.

17.2.1.2 Nuclear Department

The Vice President - Nuclear who reports to the Senior Vice President - Energy Supply and Engineering is responsible for managing and directing

the nuclear activities of the Company. Reporting to the Vice President - Nuclear are the General Manager - Nuclear Services, General Manager - Nuclear Support, General Manager - Salem Operations, and General Manager - Hope Creek Operations and Manager - QA Nuclear Operations.

The General Managers are responsible for the implementation of quality assurance requirements by their staff. These QA requirements are contained in the station administrative procedures and in other department manuals.

17.2.1.2.1 Nuclear Department - Nuclear Services

The General Manager - Nuclear Services is responsible for providing technical support to Station organization in the areas of radiation protection, site protection, (including fire, security, and emergency preparedness) planning and scheduling of plant betterment and maintenance work, in-service inspection, nuclear procurements and materials control, and station personnel training.

17.2.1.2.2 Nuclear Department - Nuclear Support

The General Manager - Nuclear Support is responsible for providing support to the station in the areas of reactor engineering, engineering and design, fuel management, licensing and regulatory activity, nuclear safety, and risk assessment analysis.

17.2.1.2.3 Nuclear Department - Salem Operations

The General Manager - Salem Operations is responsible for the safe and efficient operation of the plant, and for the general direction of the station Operating, Maintenance, Radiation Protection, and Technical Support Departments. The General Manager - Salem Operations directs the activities of the Station Operations Review Committee (SORC) and is responsible for assuring that plant positions are staffed by fully qualified and trained personnel.

17.2.1.2.4 Quality Assurance Nuclear Operations

The Manager - Quality Assurance Nuclear Operations is responsible for the approval and coordination of nuclear-related QA programs established and implemented by Company departments. He is responsible for conducting independent audits, with his staff or consultants, of quality related activities of Company departments, suppliers, and contractors.

The Manager - Quality Assurance Nuclear Operations has the authority and responsibility to:

1. Establish and implement a Quality Assurance Program in conformance with the requirements of 10CFR50, Appendix B,

2. Provide centralized coordination of Quality Assurance functions regarding Nuclear Operations.

3. Review and approve PSE&G procedures which implement the QA Program to the extent necessary to verify compliance with applicable quality-related Regulatory Guides and standards as committed to in the Safety Analysis Report (SAR),

4. Establish and interpret quality assurance requirements and policies for other departments,

5. Interpret quality assurance requirements of regulatory commitments and assist upper management in establishing policies needed to meet those commitments,

6. Assure compliance with PSE&G Quality Assurance policies and applicable government regulations including Regulatory Guides, Standards, Codes, etc., as committed in the Safety Analysis Reports and license,

7. Provide top management with visibility into the status and adequacy of implementation of the QA Program by reporting significant quality problems and their solutions, and recommending preventive or corrective action to prevent their recurrence,

8. Provide support to other PSE&G departments in order to assure that nuclear facilities are designed, fabricated, constructed, tested, operated, maintained, and modified in a manner which protects public health and safety,

9. Represent the PSE&G Quality Assurance Nuclear Operations at regulatory agency public hearings and other meetings, on matters affecting the QA Program, and

10. Stop work when significant conditions adverse to quality require such action.

The PSE&G policies and organization structure assure that the Manager - Quality Assurance Nuclear Operations has sufficient organizational freedom and independence to carry out his responsibilities.

17.2.1.2.4.1 QA Nuclear Operations Personnel Qualifications

Position qualification requirements for QA positions are:

1. An engineering degree in one of the basic engineering disciplines (mechanical, electrical, civil or metallurgical) and/or experience and demonstrated technical ability which may be as an inspector, test engineer, or by special study of quality control techniques, testing and inspection methods, and/or by having acquired working knowledge of and familiarity with the requirements of the applicable Codes and Standards for accomplishing quality activities performed in the nuclear power plant industry,

2. Demonstrated interest in professional development as indicated by activities in appropriate technical societies, and/or additional study in the field or associated fields of specialty, and

3. Ability to work well with others.

Engineers reporting to the Manager - QANO fulfill the above qualifications with the addition of the following:

1. 10 to 15 years of applicable experience,

2. Professional stature (which can be met by significant activity in technical societies or in the State Professional Engineers Organization), and

3. Proven leadership capability.

The Manager - QANO shall fulfill the above qualifications with the addition of the following:

1. Knowledge and experience in Quality Assurance

2. High level of leadership with the ability to command the respect and cooperation of company personnel, vendors, and operations forces, and

3. Initiative and judgment to establish related policies to attain high achievements and economy of operations.

The Station Quality Assurance Engineer (SQAE) must have a combination of six years experience in the field of quality assurance and operations. At least one of these six years experience must be nuclear power plant experience in the overall implementation of a quality assurance program. A minimum of one year and a maximum of four years of this six years experience may be fulfilled by related technical or academic training. The SQAE must be certified as a Level III in accordance with

Regulatory Guide 1.58 with the exception as noted in the list of Regulatory Guides in Section 2. Other personnel performing inspections, examinations and test activities are certified as Level I or Level II as appropriate to their responsibilities, also in accordance with Regulatory Guide 1.58 as noted.

17.2.1.2.5 Independent Review Groups

Two advisory groups are responsible for reviewing and evaluating activities affecting nuclear safety. The onsite advisory group is designated the Station Operations Review Committee (SORC). Composed of key station personnel, its responsibilities include review of plant operations, reportable occurrences, investigation of Technical Specification violations (with recommendations to preclude recurrence), and procedure reviews for safety-related activities or plant modifications. Recommendations of this advisory group are forwarded to the General Manager - Salem Operations, with copies to the Chairman of the Nuclear Review Board. The SQAE is invited to all SORC meetings and attends them periodically as part of the planned surveillance program. He receives minutes of all the meetings.

The off-site advisory group is the Nuclear Review Board (NRB), which advises the Vice President - Nuclear in matters affecting nuclear safety or relating to plant operation or modification to the plant design. The NRB is responsible for performing an independent review of plant activities. In addition, NRB is responsible for selected planned, independent audits of plant operations in accordance with Technical Specification requirements. These audits are generally conducted by QANO under NRB cognizance.

SORC and NRB organization and responsibilities are delineated in the Technical Specifications.

In addition to these two groups, the onsite Safety Review Group also provides independent review of activities affecting the safe operation of the station. The onsite Safety Review Group is composed of five members having collective expertise in technical disciplines involved in station operation. This group reports to the General Manager - Nuclear Support and is independent of station staff.

17.2.1.3 Research & Testing Laboratory

The Research and Testing Laboratory is a part of the PSE&G Research Corporation which is a subsidiary.

The Research & Testing Laboratory performs calibrations, analyses and evaluations on systems, equipment, and materials as requested by PSE&G departments, and maintains compliance with its QA Program.

17.2.1.4 Fuel Supply Department

The General Manager - Fuel Supply reports to the Vice President - Fuel Supply. The Vice President - Fuel Supply reports to the Senior Vice President - Energy Supply and Engineering. The Fuel Supply Department is responsible for arranging the procurement of uranium ore, conversion and enrichment services and fuel assembly fabrication services to satisfy Nuclear Department core designs, enrichment requirements, and delivery schedules.

17.2.1.5 Transmission and Distribution Department

The Vice President - Transmission and Distribution reports to the Senior Vice President - Customer Operations. This organization is responsible for transmitting electrical energy to the area of use and for distributing it to the consumers. It is responsible for setting and testing protective relays for the external vital power supplies at the Station.

17.2.1.6 Purchasing Department

The General Manager - Purchasing reports to the Vice President - Corporate Services under the Senior Vice President - Administration.

Initiation of requests for procurement of materials, equipment, structures, and services required to support operations at the Station is the responsibility of the Nuclear Department. Procurement of same is the responsibility of the General Manager - Purchasing. Both activities are bound by Corporate purchasing policies established by the Purchasing Department.

17.2.1.7 Nuclear Assurance and Regulation Department

The General Manager - Nuclear Assurance and Regulation reports to the Senior Vice President - Energy Supply & Engineering. The Nuclear Assurance & Regulation Department provides management with independent evaluation of the effectiveness of nuclear safety and quality programs; pursues licensing, safety analysis and environmental programs as required to obtain and retain regulatory approval; coordinates company participation in meetings and public hearings with local, state, regional, and federal regulatory agencies; and provides a management focal point for generic regulatory matters.

17.2.2 QUALITY ASSURANCE PROGRAM

The QA Program is designed to comply with the requirements of 10CFR50, Appendix B and with the Fire Protection Program requirements of Appendix A of Branch Technical Position No. 9.5-1. Items and activities covered by the QA Program are delineated in the Salem Q-list (Table 17.2-1).

The QA Program is applied during the operational phase using a graded approach to an extent consistent with the item's or activity's importance to safety. These activities are performed in compliance with

license requirements and with applicable regulatory guidance. Such regulatory guidance, with exceptions noted, includes:

1. Regulatory Guide 1.8, "Personnel Selection and Training", 9/75, (endorses N18.1),

2. Regulatory Guide 1.17, "Protection of Nuclear Plants Against Industrial Sabotage", 6/73, (endorses N18.17),

3. Regulatory Guide 1.29, "Seismic Design Classification", 8/73,

4. Regulatory Guide 1.30, "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation Electric Equipment", 8/72, (endorses N45.2.4),

5. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," 2/78, (endorses N18.7-1976/ANS-3.2),

6. Regulatory Guide 1.37, "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants", 3/73, (endorses N45.2.1),

7. Regulatory Guide 1.38, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants", 10/76, (endorses N45.2.2),

8. Regulatory Guide 1.39, "Housekeeping Requirements for Water-Cooled Nuclear Power Plants", 3/73, (endorses N45.2.3),

9. Regulatory Guide 1.52, "Design, Testing and Maintenance Criteria for Atmosphere Cleanup System Air Filtration and Absorption Units of Light Water-Cooled Nuclear Power Plants", 6/73,

10. Regulatory Guide 1.54, "QA Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants", 6/73, (endorses N101.4),

11. Regulatory Guide 1.58, "Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel", 9/80, (endorses N45.2.6).

All PSE&G personnel performing inspection, examination, or testing, are qualified in accordance with this Regulatory Guide, with the following exception:

Paragraph 6 of Regulatory Guide 1.58 requires that for "... Level I, II, and III personnel, the candidate should be a high school graduate or have earned the General Education Development Equivalent of a high school diploma."

Other factors may provide reasonable assurance that a person can competently perform a particular task. The other factors which may demonstrate capability in a given job are previous performance or satisfactory completion of testing. These two factors will be considered when evaluating education and experience requirements for certification. In addition, qualification certificates for personnel performing inspection and test activities are issued for the duration of the person's employment by PSE&G unless the person's status is changed,

12. Regulatory Guide 1.64, "Quality Assurance Requirements for the Design of Nuclear Power Plants", 10/73, (endorses N45.2.11),

13. Regulatory Guide 1.74, "Quality Assurance Terms and Definitions", 2/74, (endorses N45.2.10),

14. Regulatory Guide 1.88, "Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records", 10/76, (endorses N45.2.9). Provisions for the storage of records comply with the requirements of Section 17.4 of NUREG-0800 (Standard Review Plan), revision 2, July 1981,

15. Regulatory Guide 1.94, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants", 4/76 (endorses N45.2.5). Major modifications made to the Salem Station will comply with Regulatory Guide 1.94,

16. Regulatory Guide 1.137, "Fuel-Oil Systems for Standby Diesel Generators", 10/79. Diesel fuel oil sampling is performed as follows:

    1. A fuel oil sample is taken from each truck delivering fuel oil to Salem whenever possible. However, if several trucks arrive at once, a minimum of 1 in 4 trucks is sampled depending on the shift, staffing, and existing personnel work load at the time.

    2. All newly received fuel oil is pumped into the 20,000 barrel Fuel Oil Storage Tank. Fuel oil in this tank is sampled at least once every 30 days.

    3. A small percentage of the fuel oil in the 20,000 barrel tank is introduced into the diesel fuel oil storage system as necessary. This small percentage is added infrequently to the four 30,000 gallon Diesel Fuel Oil Storage Tanks (two for each unit) as necessary to maintain the minimum level above the 20,000 gallon limit in each Diesel Fuel Oil Storage Tank as specified by the Salem Technical Specifications.

    4. Fuel oil in the four 30,000 gallon Diesel Fuel Oil Storage Tanks is sampled as required by the Salem Technical Specifications.

5. All fuel oil samples taken in actions 1-4 above are sent to an independent laboratory within 48 hours of the time the sample is taken. The analysis performed is consistent with Regulatory Guide 1.137 and the analysis report is submitted to the Salem Station within 30 days of receipt of the sample at the laboratory.

6. All fuel oil deliveries, samples taken, and related analysis reports are logged at the station. When reports indicate that fuel oil quality is not within acceptable limits, station management will take appropriate action to restore it to within acceptable limits.

7. Actions 1-6 above are subject to verification during routine monitoring and audits of the fuel oil program and procedures conducted by QANO personnel,

17. Regulatory Guide 1.146, "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants", 8/80, (endorses N45.2.23).

    PSE&G Quality Assurance Program audit personnel are qualified in accordance with this Regulatory Guide with the following exception:

    Audits are conducted by audit teams comprised of a certified lead auditor. Audits conducted by a single individual are conducted by or under the guidance of a certified lead auditor.

18. Branch Technical Position 9.5-1, Appendix A, "Guidelines for Fire Protection for Nuclear Plants Docketed Prior to July 1, 1976", 2/77.

    The QA Program is applied to the Fire Protection Program to an extent consistent with the requirements of Section C of Appendix A to BTP 9.5-1.

The overall QA program is described in the Nuclear Department Quality Assurance Manual which is prepared and maintained by QANO.

PSE&G organizations performing activities affecting nuclear safety, prepare and maintain implementing procedures and in structions. These procedures and instructions, and subsequent revisions thereto, are subject to QANO review and approval to an extent necessary to verify compliance with the QA Program and the applicable quality-related Regulatory Guides and standards identified above.

The General Manager - Salem Operations has instituted and will maintain an Administrative Procedures Manual for Salem Generating Station to implement the detailed requirements of the Program relative to the station.

The Station Administrative Procedures and all subsequent revisions thereto are prepared by the Technical Manager, are reviewed by the Assistant General Manager, and are approved by the General Manager - Salem Operations and the Manager - Quality Assurance Nuclear Operations.

Regulatory Guide 1.33 requires that safety-related plant activities be conducted in accordance with written administrative controls prepared by management. The departmental procedures and instructions by which plant activities are performed are prepared by the responsible station department, as required by the Station Administrative Procedures, reviewed by the SQAE for quality requirements, approved by the department head responsible for the activity, reviewed by the SORC (if safety related), and approved by the General Manager - Salem Operations. Procedures cannot be implemented unless the review/approval process is accomplished. Station Administrative Procedures provide a means to accommodate on-the-spot changes to sub-tier implementing procedures. The routine practice for revising a procedure is to repeat the original review and approval sequence.

Implementation of the QA Program is verified by means of independent inspections, monitoring, and audits conducted by QANO.

QANO reviews and analyzes quality-related problems occurring during the operational phase. Items subject to review include:

1. Documented nonconformances occurring at the vendor's facility and during receiving, storage, installation, test, and operation (e.g., Deficiency Reports, Non-Conformance Reports, Licensee Event Reports, etc.),

2. Documented corrective actions taken on significant noncompliances and on audit findings, and

3. NRC inspection findings, notices, bulletins, etc.

The Manager - Quality Assurance Nuclear Operations or his designee, has the authority to stop work where continuance of an activity would seriously compromise safety or constitute a persistent and deliberate failure to correct a serious deficiency.

QANO reports significant problems affecting the Program to respective management along with:

1. Measures taken to improve QA program controls, and

2. Appropriate recommendations to achieve compliance with applicable requirements.

Management policy and implementing procedures provide all personnel awareness and direction for reporting of defects and non-compliances pursuant to 10CFR21.

The QA Program requires that activities affecting nuclear safety, including activities affecting the fire protection of safety-related

areas, be accomplished under suitably controlled conditions. The program takes into consideration the need for procedures, special controls, cleanliness, special processes, test equipment, tools, and skills to obtain the required quality and the verification of quality by inspection, test, examination, monitoring and independent review and audit. These activities include, but are not limited to, designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, and modifying.

Personnel who have the responsibility to implement the Nuclear Operations Quality Assurance Program also have the responsibility and authority to escalate unresolved quality problems to the level of management necessary to effect resolution. This escalation is applied by QANO personnel, who are independent of cost and scheduling, to increasingly higher levels of management up to the Vice President - Nuclear as required.

Personnel performing safety-related activities are trained and/or indoctrinated as necessary to assure that suitable proficiency is achieved and maintained. The Manager - Quality Assurance Nuclear Operations is responsible for the training of QANO personnel. Orientation is provided for new employees entering the QANO Department, whether from other parts of PSE&G or from outside the Company. An outline of the course content is contained in the QANO Orientation, Training, and Qualification Manual. The training and indoctrination program is designed to familiarize the employee with:

1. Codes, regulations, specifications, etc., applicable to nuclear and other power generation equipment,

2. QA procedures, instructions, specifications, documentation, records, etc.,

3. Auditing objectives and techniques,

4. Nuclear Operations QA Program,

5. The QA program and the organization of major contractors,

6. Other organizations within PSE&G with which QANO interfaces, and

7. The general theory, structure, function and mode of operation of nuclear generating stations.

QANO also offers formal training sessions for personnel in the Nuclear Department and other departments such as Construction, Engineering, Fuel Supply, Research & Testing Laboratory, etc., who perform activities related to nuclear operations safety.

QANO personnel requiring certification are evaluated to establish their qualifications for their respective level. The qualifications are approved by QANO management for the required certification level.

Training programs of supporting organizations are described in their manuals which comply with the Corporate QA Program.

17.2.3 DESIGN CONTROL

The Nuclear Support Department procedures, approved by the Manager - QA Nuclear Operations, provide implementation direction for the intent of Regulatory Guide 1.64 "Quality Assurance Requirements for the Design of Nuclear Power Plants". Within that department, the Nuclear Engineering Department has the following responsibilities:

1. Prepare and update detailed engineering and design documents, including drawings and specifications, for all systems, components and structures,

2. Specify applicable codes, standards, regulatory and quality requirements, acceptance standards and other design input in design output documents,

3. Identify systems, components, and structures which are covered by the QA Program,

4. Perform design verification for systems, components, and structures,

5. Perform safety evaluations of proposed design changes,

6. Prepare documents for procurement of equipment, materials and components,

7. Recommend engineering consultants and laboratories for procurement services and coordinate their activities,

8. Review design documents submitted by suppliers (including the NSSS supplier) and contractors, and

9. Specify, or approve as required, inspections and/or tests.

10. Designate whether they will use the services of other qualified engineering organizations both inside and outside PSEG.

The cognizant Engineer is responsible for the identification and completion of design analyses. The purpose of design analyses is to assure that the technical design is accomplished in a planned, controlled and correct manner. Types of design analyses include, but are not limited to, reactor physics, stress, seismic, thermal, hydraulic and accident.

Design verification is performed on design analyses, drawings, specifications and other design documents, as applicable. Design verification is the process of reviewing, confirming or substantiating the adequacy of a design by one or more methods. Design verification is performed on

changes to previously verified designs including evaluation of the effects of those changes on the overall design. Design verification is performed by competent individuals or groups other than those who performed the original design with the following exception: A design verifier may be the design originator's supervisor provided that he did not specify a singular design approach or rule out certain design considerations and did not establish the design inputs used in the design, or if the supervisor is the only individual competent to perform the verification.

Design verification methods include but are not limited to:

1. Design reviews,

2. Alternate or independent calculations, and

3. Qualification testing.

Changes to specifications prepared by the Engineering Department for items covered by the QA Program are reviewed and approved by QANO to assure that the QA Program requirements are specified. Specifications are forwarded to QANO for review and approval of quality and quality assurance requirements. QANO performs the same function in this case as during the original design stage.

The SORC reviews proposed changes affecting nuclear safety and makes recommendations concerning implementation of the change to the General Manager - Salem Operations. If the proposed modification involves a Technical Specification change or is considered by the SORC to involve an unreviewed safety question (10CFR50.59), the matter is submitted to the NRB for a determination of its safety implication before a license change request is submitted for NRC approval.

External interfaces with manufacturers, consultants, and other departments, including procedures for the preparation, transmittal, review and

approval of design information, are identified in documents such as contracts, specifications, purchase orders, design data sheets, and drawings.

Updating of records, including drawings, blueprints, instructions and technical manuals, and specifications resulting from design changes, is the responsibility of the Nuclear Support Department.

17.2.4 PROCUREMENT DOCUMENT CONTROL

All procurement documents and changes thereto for the purchase of Q-listed material, equipment or services, are reviewed and approved by QANO prior to issuance by the Purchasing Department to the prospective supplier. This does not include reorder of items classified as commercial grade items which have been determined by QANO on the initial procurement to have no QA requirements applicable. QANO review assures that spare and replacement parts are procured utilizing controls which are at least equivalent to the original procurement.

The review also assures that procurement documents adequately and correctly:

1. Identify applicable QA Program requirements,

2. Reference applicable regulatory requirements, codes, and standards,

3. Provide right of access for source surveillance and audit by QANO or its agents,

4. Provide for required supplier documentation to be submitted to PSE&G or maintained by the supplier, as appropriate, and

5. Provide for PSE&G review and approval of critical procedures prior to fabrication, as appropriate.

Procurement documents require suppliers and contractors of other than commercial grade items to provide services or components in accordance with a QA program which complies with applicable criteria of 10CFR50 Appendix B.

17.2.5 INSTRUCTIONS, PROCEDURES AND DRAWINGS

Organizations engaged in Q-listed activities are required to perform these activities in accordance with written and approved procedures, instructions or drawings, as appropriate.

Simple routine activities, that can be performed by qualified personnel with normal skills, do not require a detailed written procedure. Complex activities shall require detailed instructions.

Procedures include, as appropriate, scope, statement of applicability, references, prerequisites, precautions, limitations, and checkoff lists of inspection requirements in addition to the detailed steps required to accomplish the activity. Instructions, procedures, and drawings also contain acceptance criteria where appropriate.

The General Manager - Salem Operations is responsible for assuring that station procedures are prepared, approved, and implemented in compliance with the Station Administrative Procedures. Documents affecting nuclear safety are reviewed by the SORC for technical content, and by the SQAE for QA requirements including designation of QA hold points where required and are approved by the responsible station department head and the General Manager - Salem Operations.

The General Manager - Nuclear Support is responsible for issuing specifications, drawings, blueprints, instruction manuals and technical manuals associated wih structures, systems, and components covered by the QA Program. These reference documents are kept up to date for the life of the station by the incorporation of approved and implemented modifications and design changes. Master lists of current editions or

revisions of these documents are issued by the General Manager - Nuclear Support to the General Manager - Salem Operations periodically to assure that only current, approved reference documents are used at the station.

The SQAE reviews and approves station inspection plans, and procedures for test, calibration, maintenance, modification and repair. Changes to these documents are also reviewed and approved. In addition QANO is responsible for review and approval of the following documens: PSE&G specifications, test procedures, and results of preoperational testing.

17.2.6 DOCUMENT CONTROL

Instructions, procedures, and drawings and changes thereto are approved by appropriate levels of management of the PSE&G organizations producing such documents. Supplier documents are controlled according to contractual agreements with suppliers.

The following is a generic listing of documents for the operational phase showing organizational responsibility for review and approval, including changes thereto:
Design Specifications: Nuclear Department/Engineering Department, QANO

Design, manufacturing, construction and installation drawings: Nuclear Department/Engineering Department

Procurement documents: Nuclear Department/Engineering Department, Purchasing Department, QANO

QANO Manual: QANO

Station Administrative Procedures: General Manager - Salem Operations, QANO

Maintenance, modification, calibration procedures for Q-listed station work activities: General Manager - Salem Operations, QANO

Operating procedures: General Manager - Salem Operations, Station Operations Review Committee (SORC)

FSAR: Nuclear Department, QANO

Manufacturing, inspection and testing instructions: Nuclear Department/Engineering Department, QANO

Test Procedures: Nuclear Department, QANO

Design Change Requests: Nuclear Department/Engineering Department, QANO

The establishment and maintenance of a document control system for all instructions, procedures, specifications, and drawings received from the Nuclear Department/Engineering Department, or prepared at the station for use in operating, maintaining, refueling, or modifying the nuclear safety-related structures, components and systems is the responsibility of the General Manager - Salem Operations. The Station Administrative Procedures Manual describes the control of specific documents. Control of station practices is included in Administrative Procedures and in department instructions authorized by the responsible station department heads. Measures have been established to insure that the Administrative Procedures and department instructions are up to date, are properly authorized, are changed only after required review and the approvals are obtained, and are distributed to cognizant personnel.

17.2.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

QANO maintains an up-to-date listing of approved suppliers of material, equipment, and services covered by the QA Program. This list identifies suppliers and contractors which have demonstrated the ability to

supply acceptable material, equipment, or services. The list need not include original manufacturers of commercial catalog items. All QANO Program procurements are made from approved suppliers.

Selection and evaluation of prospective bidders and suppliers are performed by the responsible engineer and the QANO. The responsible engineer determines the technical competence of the supplier. The QANO evaluates the prospective supplier's quality assurance program for compliance with the capability of meeting applicable requirements of 10CFR50 Appendix B and for the requirement that applicable program requirements be extended to subtier suppliers.

Qualified QANO personnel evaluate the prospective supplier's quality assurance capability utilizing one or more techniques including, but not necessarily limited to:

1. Evaluation of supplier's or contractor's procedures or manuals and changes thereto,

2. ASME code stamp approval,

3. CASE register listing,

4. Satisfactory past history of providing similar items, and

5. Survey of supplier's facility.

The evaluation of prospective suppliers is conducted utilizing standard checklist/forms designed to include the 18 quality criteria of 10CFR50 Appendix B as appropriate. Surveys of suppliers' capabilities shall include evaluation of management systems, and manufacturing process, as well as adherence to QA/QC procedures. The results of supplier evaluations are documented by the appropriate checklist/form and filed.

Supplier control is maintained through a planned inspection, monitoring and audit program by QANO.

A review of the manufacturing process for complex manufactured items such as pumps, valves, heat exchangers, vessels, electrical panels, etc. is conducted by the QANO and the responsible sponsor engineer. This review establishes critical inspection points and establishes a Notification Point Program for the identified inspection or surveillance activities. The established inspection or surveillance activities are implemented by qualified QANO personnel or QANO agents. Standard catalog items, where quality can be verified by receiving inspection or installation checkout, are not normally included in the Notification Point Program.

Monitoring of suppliers/contractors during fabrication, installation, modification, repair, inspection, testing and shipment of materials, equipment and services, is conducted by qualified QANO personnel or QANO agents at the supplier's/contractor's facility or at the generating station. Surveillances are conducted in accordance with written procedures and are designed to assure conformance with procurement requirements in accordance with the safety significance of the item or service. Consistent with the importance or complexity of the item or service, periodic evaluations of the supplier/contractor quality program are conducted. Dependent upon the evaluation, additional audits or corrections may be required of the supplier/contractor.

Procurement of replacement parts is by adherence to the original design criteria, where feasible (such as NSSS components in accordance with Westinghouse documentation, other code components in accordance with AWWA, AISC, SPCC and ASME Section III 1971 and Summer 1972 Addenda or later). This will provide the intended level of safety, and will not result in redesign of the system. Quality assurance requirements are consistent with the FSAR commitments.

The requirement for appropriate supplier documentation of conformance to applicable code, standard, specification or other quality requirement is provided by the procurement document. The supplier-provided documentation is reviewed either at the supplier's facility during an inspection or surveillance visit, or at receiving inspection. A data review check off is provided and utilized documenting the acceptability of the supplier provided data or identifying discrepancies.

Receiving inspection of supplier equipment, material and services is conducted by qualified personnel to verify correct identification, and appropriate documentation, and to verify that the item is acceptable and can be released for storage, installation, or use.

Nonconforming items identified at receiving inspection are tagged or segregated to prevent inadvertent use. Nonconforming items are controlled as described in Section 17.2.15.

17.2.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Procurement document controls provide assurance that materials, parts, and components received can be properly identified. The identification is marked directly on the item, or on records traceable to it. The data review conducted at receiving assures that proper documentation of received items is available. Materials and items received without proper identification are tagged or segregated until satisfactory documentation and identification is obtained.

Procedures require that Q-listed materials, parts, and components be marked or otherwise identified and require that such identity be maintained either on the item or on records traceable to it throughout receipt, storage, installation, and use. Protection against use of incorrect or defective items is also provided.

Material identification and traceability shall be maintained for repairs, replacement, and modifications throughout operation.

17.2.9 CONTROL OF SPECIAL PROCESSES

Procedures for special processes such as welding, heat treating, and NDE, assure compliance with codes and design specifications. The General Manager - Nuclear Support is responsible for preparing special process specifications. These specifications are reviewed and approved by QANO for necessary quality content.

Procedures for implementing the requirements of the specifications are prepared either by the Nuclear Department or by supplier personnel, and are approved by the General Manager - Nuclear Support (with the exception of special process procedures prepared by code suppliers holding an "N" stamp). Procedures prepared by suppliers are also reviewed and approved by QANO.

17.2.10 INSPECTION

A planned inspection program is conducted by personnel appropriately qualified in accordance with Section 17.2.2. The inspection program verifies conformance to the established procedure, code or standard, consistent with the activity's importance to safety.

When required, Inspection Hold Points, to be accomplished by the applicable QA or QC representative, are identified and included in the procedure or instruction.

Station Department Heads are responsible for inserting inspection hold points for critical activities in procedures they approve. These hold points are witnessed by members of the SQAE staff. The Station Operations Review Committee (SORC) may recommend to the General Manager -

Salem Operations, additional or different hold points, as a result of their review. The SQAE can also require that additional inspection hold points be added to a procedure. The hold points must not be passed without authorization from the applicable QA or QC representative. Typical critical activities include:

1. Visual and NDE of ASME Pressure boundary welds,

2. Verification of cleanliness prior to closing safety-related systems,

3. Verification of reactor trip and Engineered Safety Features initiation setting after adjustment,

4. Packaging and loading of radioactive material for shipment,

5. Hydrostatic testing of safety related systems,

6. Acceptance testing of safety related system modifications, and

7. acceptance testing of major repairs on safety related systems.

Repair and maintenance activities are inspected by qualified individuals other than those who performed or directly supervised the activity being inspected. These activities typically include periodic inspections of:

1. Storage areas,

2. Housekeeping (General),

3. Fire protection equipment,

4. Special handling tools and equipment, and

5. NDE visual inspection required by the Inservice Inspection Program.

Inspection of operating activities (work functions associated with the normal operation of the plant, routine maintenance, and certain technical services) may be conducted by second line supervisory personnel or other qualified personnel not assigned first-line supervisory responsibilities for conduct of the work.

The applicable inspection and retest requirements necessary to assure that modifications or repairs have been accomplished correctly are provided by the design change package, work order, or procedure. The inspection and retest requirements for modification and repair are based on the original inspection and test program, and the nature and scope of the modification or repair activity.

A planned and documented surveillance program is conducted for Q-Listed activities. Monitoring of implementation of the QA Program by station personnel is conducted by the SQAE. QANO performs monitoring of supplier and contractor activities. Discrepancies discovered during the conduct of the monitoring are brought to the attention of the management responsible for accomplishment of the activity.

17.2.11 TEST CONTROL

Q-listed equipment or components (a) which require seismic or environmental qualification, (b) which must be tested periodically to assure satisfactory performance, or (c) which have been replaced, modified or repaired, are tested by qualified personnel in accordance with written procedures which provide acceptance criteria.

Retest requirements following repair or modification are provided by engineering specifications and/or the responsible engineer, as were the original test requirements.

Test procedures prescribe:

1. Prerequisites,

2. Instrumentation and equipment for conduct of the test adequate to the test objective,

3. Suitable environmental conditions and adequate test methods, and

4. Acceptance criteria.

Test results are documented and reviewed for acceptability by the qualified department representative. System tests performed following modifications to safety-related systems require review of test procedures and test results by the SORC.

The SQAE maintains monitoring over the conduct of the design change acceptance tests to assure compliance with the test procedure. Test results are reviewed for the following:

1. Presentation of proper documentation,

2. Assurance that tests meet objectives, and

3. Identification and reporting of unacceptable results and initiation of corrective measures.

Retention of test reports are described in Administrative Procedures.

17.2.12 CONTROL OF MEASURING AND TEST EQUIPMENT

Test equipment, instrumentation, and controls used to monitor and measure activities affecting quality and personnel safety are identified, controlled, and calibrated at specific intervals. Written procedures for meeting these requirements include provisions for:

1. Specifying calibration frequency,

2. Recording and maintaining calibration records,

3. Controlling and calibrating primary and secondary standards,

4. Determining methods of calibration, and

5. Tracing use on safety related components.

Prior use of measuring and test equipment found to be out of calibration is evaluated for possible effect on safetyrelated equipment or functions. Measurements are repeated where necessary.

Secondary standards are calibrated by certified calibration laboratories and are traceable to the National Bureau of Standards (NBS) or best industry standards where no NBS standards exist. The accuracy of the primary standards used to perform this calibration is at least greater than the accuracy of the device being calibrated to the extent permitted by the state-of-the-art.

Test equipment is marked to indicate the latest calibration date and the next required calibration date.

Out-of-calibration identification is used for instruments and controls to indicate this status pending calibration, repair, or replacement.

17.2.13 HANDLING, STORAGE, AND SHIPPING

The control of handling, storage, cleaning, and preservation of material and equipment covered by the QA Program is the responsibility of the sponsor organization. Manufacturers' instructions and recommendations, design requirements, and applicable codes and standards are implemented, as appropriate. Compliance with specific handling, storage or shipping

requirements, as established by the cognizant Nuclear Department/ Engineering Department engineer is required. Requirements for new components and spares, where applicable, are included in the procurement documents.

17.2.14 INSPECTION, TEST AND OPERATING STATUS

Procedures are required to specify the periodic tests and inspections required for equipment covered by the QA Program, and to include the necessary management controls to assure that such required tests and/or inspections are completed in accordance with specified requirements.

Equipment awaiting repairs, under repair, or repaired, and received materials are marked to indicate the status of inspection and test requirements and/or acceptability for use. Procedures provide for tagging valves and switches to prevent inadvertent operation. These procedures are designed to prevent operation of valves and/or switches which could result in personnel hazard or equipment damage.

Valve and equipment status boards or logs are maintained to indicate status.

17.2.15 NONCONFORMING MATERIALS, PARTS OR COMPONENTS

Nonconforming materials, parts or components identified during receiving inspection or during performance testing of equipment are identified and, where practical, segregated to prevent installation or use until proper approvals are obtained. Materials, parts, or components which have failed in service are identified, and where practical segregated. Documentation of the nonconformance includes a description of the nonconformance, and the disposition and inspection or retest requirements, as appropriate. All dispositions for repair or use-as-is are required to be approved by the responsible engineering representative. Rework or repair of nonconforming material, parts, or components are inspected

and/or retested in accordance with specified test and inspection requirements established by the cognizant engineer based on applicable code requirements.

QANO and other organizations in the Nuclear Department review nonconformance reports for quality problems and initiate reports to higher management, identifying significant quality problems with recommendations for appropriate action. In addition, copies of nonconformance report summaries are distributed to the resident NRC inspector and to the onsite Safety Review Group.

17.2.16 CORRECTIVE ACTION

Organizations involved in activities covered by the QA Program are required to maintain corrective action programs commensurate with their scope of activity. Noncompliances with the QA Program identified by the QANO are documented and controlled by the issuance of an Action Request. QANO monitors these Action Requests, through periodic summary and status reports.

Responses to Action Requests are based on the four elements of corrective action which are:

1. Identification of cause of deficiency,

2. Action taken to correct deficiency and results achieved to date,

3. Action taken or to be taken to prevent recurrence, and

4. Date when full compliance was or will be achieved.

Proper implementation of corrective action is verified through surveillance or audit as appropriate.

The General Manager - Salem Operations is responsible for assuring that conditions adverse to quality are promptly identified and corrected for all activities involving station operation, maintenance, testing, refueling and modification.

Administrative procedures which govern station activities covered by the QA Program, provide for the timely discovery and correction of non-conformances. This include receipt of defective material, failure or malfunction of equipment, deficiencies or deviations of equipment from design performance, and deviations from procedures. In cases of significant conditions adverse to quality, the cause of the condition is determined and measures established to preclude recurrence. Such events, together with corrective action taken, are documented and reported as described in Section 17.2.15. Corrective action is initiated by the responsible department head.

The SQAE maintains close monitoring over station conditions requiring corrective action. The SQAE has the authority to stop work when significant conditions adverse to quality require such action.

Repetitive deficiencies, procedure or process violations at the Station which are not classified as Operational Incidents or Reportable Occurrences or nonconformances under the QA program are documented by the SQAE by the issuance of an Action Request. This request will provide the SQAE with a formal administrative vehicle to alert management of conditions adverse to quality that require corrective action.

17.2.17 QUALITY ASSURANCE RECORDS

Records necessary to demonstrate that activities important to quality have been performed in accordance with applicable requirements, originated by the station or other departments, are identified and maintained in accordance with Regulatory Guide 1.88 as noted in 17.2.2.

Design and construction records are replicated via microform and stored in record facilities at the generating station and at off-site locations.

The General Manager - Salem Operations is responsible for the permanent storage of station records. The retention period for records, the permanent storage location, and methods of control, identification, and retrieval are specified by administrative procedure. Individual station department heads are responsible for submitting applicable department records to the Technical Document Room for retention.

17.2.18 AUDITS

Audits of PSE&G and supplier organizations which implement the QA Program are performed by the QANO to verify compliance with the applicable portions of the Quality Assurance Program.

Audits are conducted by audit teams comprised of a certified lead auditor, and certified auditors. Single member audits are conducted by or under the guidance of a certified lead auditor.

Audits are conducted using pre-established written procedures and checklists. Areas of deficiency revealed by audits are reviewed with management and are required to be corrected in a timely manner. Required corrective action shall be documented and verified. Follow-up action, including reaudit of deficient areas, is performed.

The audit program conducted by QANO includes, but is not limited to, the following activities covered by the QA Program.

1. Operation, maintenance, and modification,

2. Preparation, review, approval, and control of design, specifications, procurement documents, in structions, procedures, and drawings,

3. Inspection programs,

4. Indoctrination and training,

5. Implementation of operating and test procedures,

6. Calibration of measuring and test equipment,

7. Fire protection, and

8. Other applicable activities delineated in Table 17.2-1.

A written report of the results of each audit is distributed to appropriate management representatives of the organization(s) audited as well as other affected management personnel. Periodically, QANO is audited by independent auditors to verify implementation of the corporate QA Program. Reports of these audits are directed to appropriate PSE&G management personnel.

TABLE 17.2-1 (Sheet 1 of 4)
SALEM Q-LIST

The listing below identifies those activities, services, structures, components and systems to which the operational Quality Assurance Program applies.

I. Activities/Services

A. Safety Related Activities Delineated in Regulatory Guide 1.33, App. A (See R.G. for further breakdown of activities)

A.1 Administrative Procedures

a) Security Program (Regulatory Guide 1.17)
b) Equipment Control (e.g., Locking and Tagging)
c) Shift and Relief Turnover
d) Bypass of Safety Functions and Jumper Control
e) Maintenance of Minimum Shift Complement and Call-In of Personnel
f) Fire Protection Program including Inspection by Fire Consultants
g) Communication System

A.2 General Plant Operating Procedures
A.3 Startup, Operation, and Shutdown of Safety-Related Systems

A.4 Abnormal, Offnormal, or Alarm Conditions
A.5 Combating Emergencies and Other Significant Events
A.6 Control of Radioactivity

a) Liquid Radioactive Waste System
b) Solid Waste System
c) PWR Gaseous Effluent System
d) Radiation Protection including Occupational Radiation Exposure per R.G.8.8
e) Area Radiation Monitoring System Operation
f) Process Radiation Monitoring System Operation
g) Meteorological Monitoring and Data Collection Program
h) Packaging and Transport of Radioactive Material per 10CFR71
i) Decontamination

A.7 Tech Spec. Surveillance
A.8 Performing Maintenance
A.9 Chemical and Radiochemical Control

B. Additional NRC Requirements:

B.1 Tech Spec Administrative Controls
- a) SORC
- b) NRB
- c) Reportable Occurrences

B.2 Inservice Inspection Plan
B.3 Reporting of Defects and Noncompliance
B.4 Fuel Management
B.5 License Conditions
- a) Shift Technical Advisor
- b) Shift Supervisor Duties
- c) Safety Review Group and Onsite Evaluation

II. Equipment, Components, and Structures

A. The following are items and systems contained in commitment letters to the NRC.

A.1 Accident Monitoring Instrumentation.
A.2 AC control power buses and inverters.
A.3 All systems which penetrate containment, up to and including the containment isolation valve (identified in FSAR Section 5.4)
A.4 Anticipatory reactor trip on turbine trip.
A.5 Auxiliary Building (including Control Room and Diesel Generator Area).
A.6 Auxiliary Building Ventilation System (supply and exhaust units)
A.7 Auxiliary Feedwater Storage Tank Auxiliary
A.8 Feedwater System
A.9 Component Cooling System
A.10 Containment (including penetrations, concrete shielding, interior structures, air locks, equipment hatch) Containment Polar Crane
A.11 Containment Pressure - Vacuum Relief System Control
A.12 Area Air Conditioning System
A.14 Control Panels - Class IE circuits
A.15 Electrical Cable Tunnels
A.16 Emergency Power for Pressurizer Heaters.
A.17 Emergency Power Supply Systems

- a) DC Power Supply System
- b) Diesel Generator Area Ventilation System
- c) Diesel Generators (including associated fuel oil, lubeoil, starting auxiliary systems, fuel storage and day tanks, jacket cooling, governor, voltage regulation and excitation systems) piping and valves).

d) Control Boards and Motor Control Centers
e) Control equipment, facilities and lines required for above items
f) Power distribution lines to equipment required for emergency transformers and switchgear supplying Engineered Safety Features (includes 4 kV, 460V and 230V vital buses).

A.18 Emergency Response Facilities (NUREG-0696 document control and verification of functionality only).

A.19 Engineered Safety Features

a) Containment Spray System (including spray pumps, spray headers, spray additive tank, connecting piping and valves)
b) Containment Ventilation System (including fan coolers, distribution ducts, dampers, HEPA filters and moisture separators).
c) ECCS (including Safety Injection and RHR pumps, RWST, Accumulators, RHR Heat Exchangers, containment sump, sump screen, vortex suppression devices, and connecting pipes and valves)
d) Portions of the CVCS (including Centrifugal Charging pumps, Boron Injection Tank, connecting

A.20 Expendable and consumable items necessary for the functional performance of critical structures, systems, and components (i.e., weld rod, boric acid, fuel oil, etc).

A.21 Feedwater System (to outermost isolation valve)

A.22 Fire Protection System for safety-related areas (hardware).

A.23 Fuel Handling Building

A.24 Fuel Handling Building Ventilation System (exhaust units).

A.25 Fuel Handling System

A.26 Fuel Transfer Tube

A.27 Hydrogen Recombiners, Hydrogen Analyzers, and Supports

A.28 Instrument Air System (including accumulators, interconnecting piping and valves) for air-operated valves that perform a safety function.

A.29 Instrumentation and Control Systems required for safe shutdown (including safety related instrumentation)

A.30 Instrumentation for detection of inadequate core-cooling.

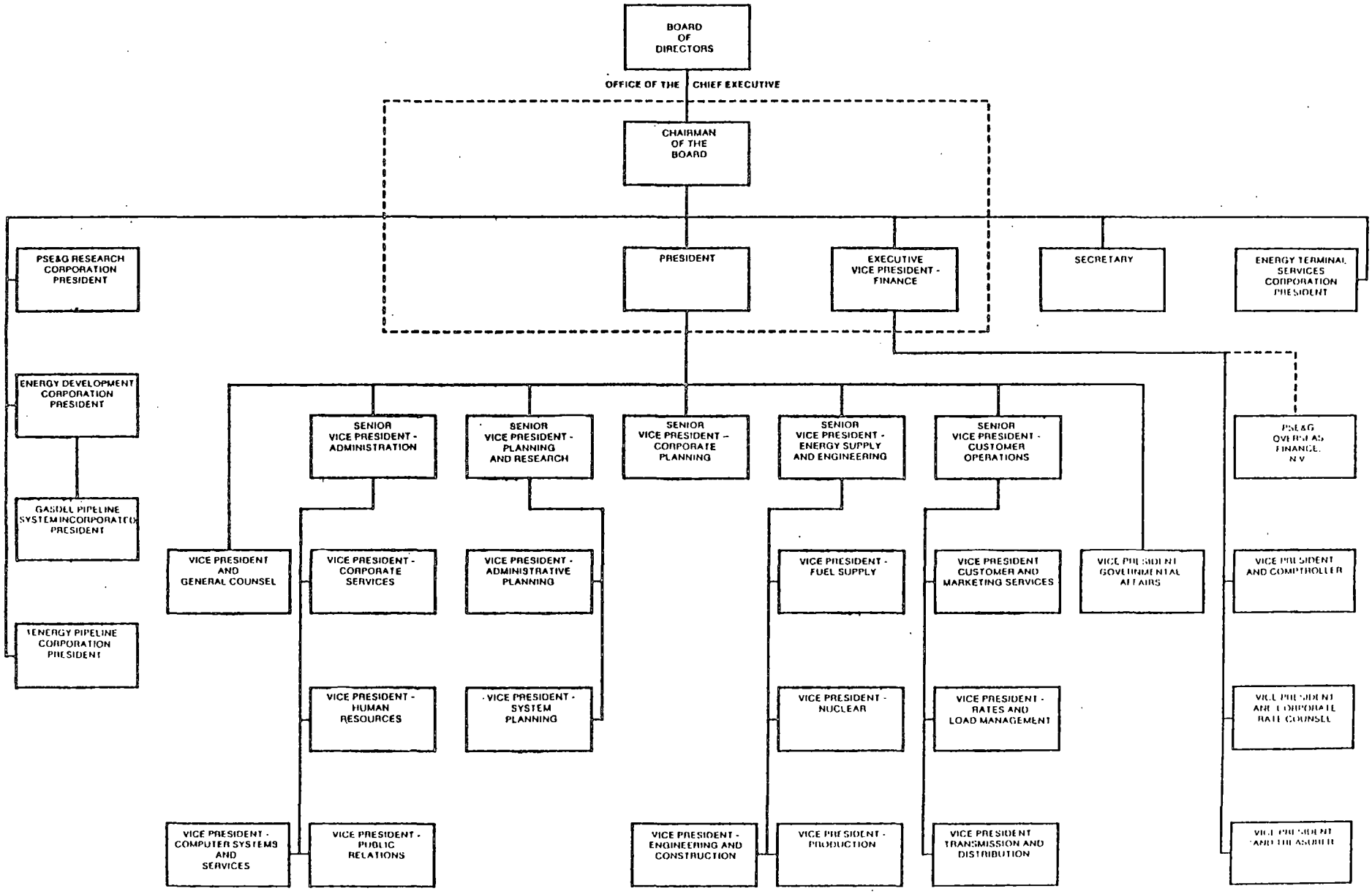
A.31 Leakage Detection System (as discussed in FSAR Section 4.2.7.).

A.32 Main Steam System (to isolation valve)

A.33 Meteorological Data Collection Program (Hardware).
A.34 Missile Barriers (protecting safety-related equipment).
A.35 Nuclear Instrumentation System
A.36 Plant Shielding
A.37 Process Instrumentation and Controls (those portions re-quired for Class I equipment and systems)
A.38 Radiation Monitoring System (those portions required for Class I equipment and systems)
A.39 Radioactive Waste Disposal Systems
a) Gas Decay Systems
b) Compressor
A.40 Reactor Coolant System (Including piping, valves, steam generators, pressurizer, safety and relief valves, block valves, piping to pressurizer relief tank, reactor coolant pumps, and supports)
A.41 Reactor (including vessel, supports, internals, fuel assemblies, RCC assemblies and drive mechanisms, supporting and positioning members, and in-core instrumentation)
A.42 Reactor Protection System
A.43 Residual Heat Removal System.
A.44 Safety Parameter Display Console (instrument calibration and verification only).
A.45 Sampling System (to outermost containment isolation valve)
A.46 Service Water Intake Structure
A.47 Service Water System (entire system serving the nuclear portion of the plant, as shown in FSAR Figure 9.9-1)
A.48 Shoreline Dike (for protection against excessive wave action).
A.49 Spent Fuel Pool Cooling System
A.50 Steam Generator Blowdown System (to outermost containment isolation valve)
A.51 Switchgear Room Ventilation System Valve operators for all valves incorporated in this list.

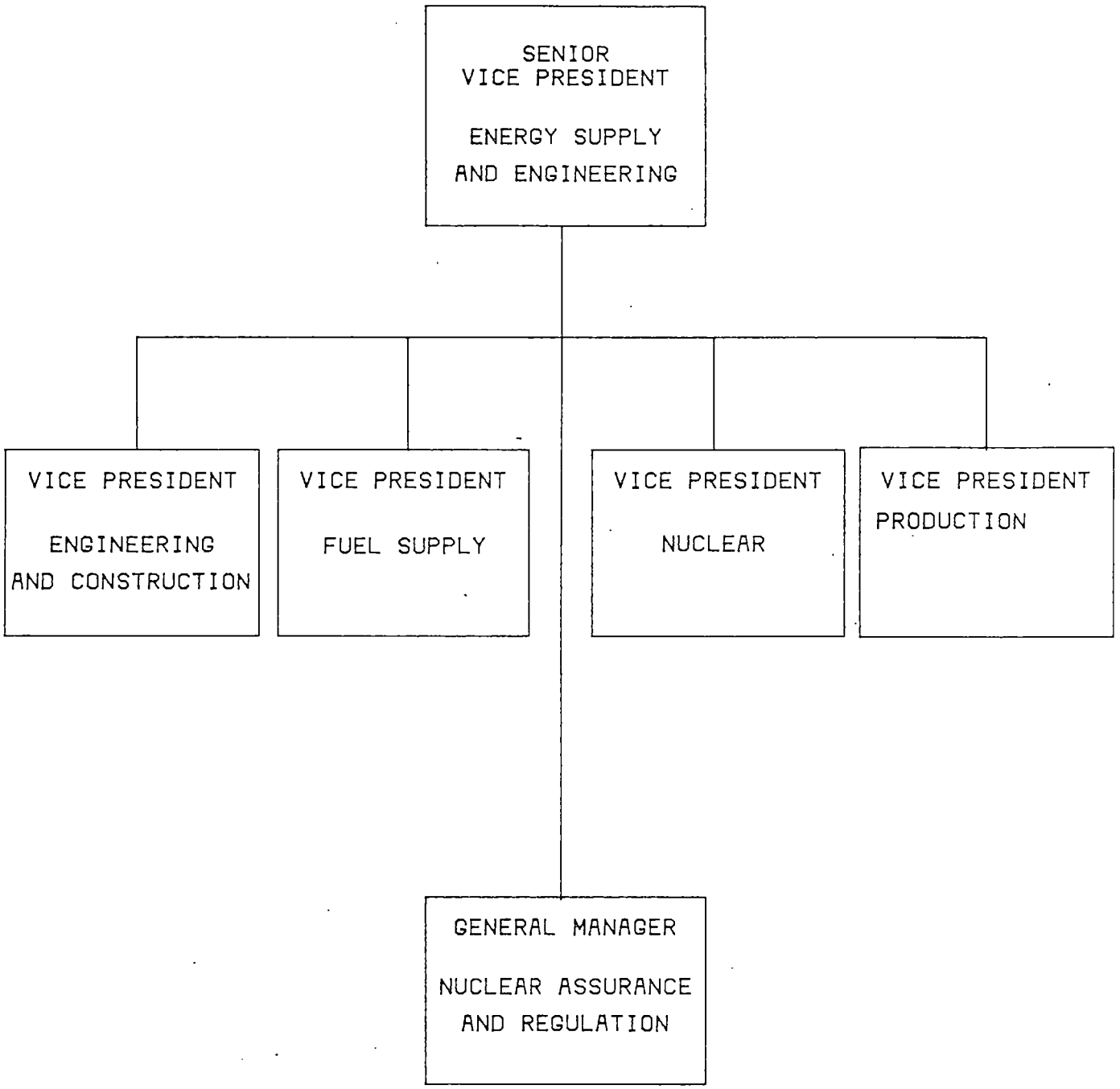
B. Items designated in the Salem Master Equipment List (MEL) as safety-related "Yes" and other items designated safety-related "No", QA "Yes".

C. Items Required by Reg. Guide 1.29 "Seismic Design Classifications" Regulatory Position 3.



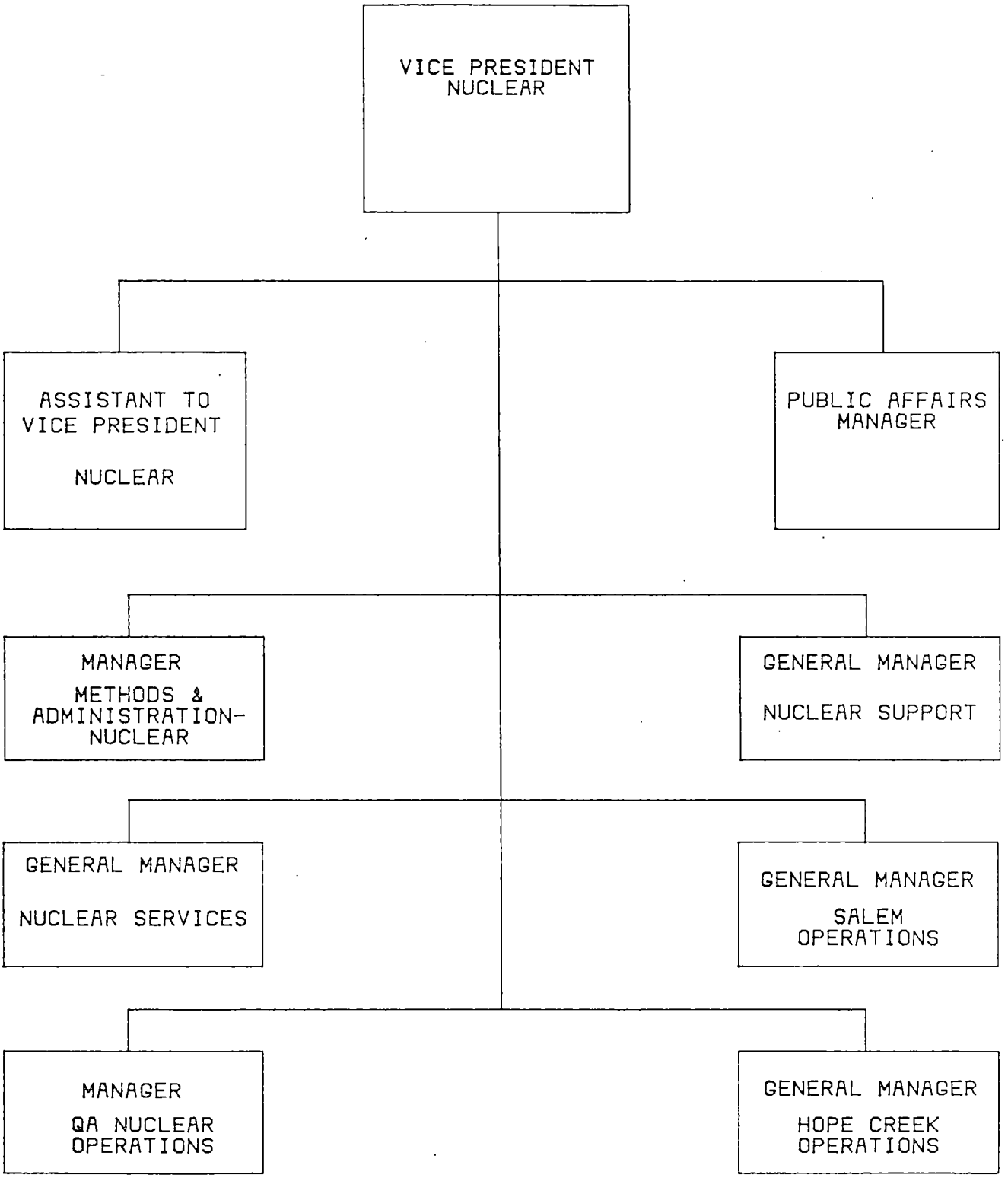
PUBLIC SERVICE ELECTRIC AND GAS COMPANY SALEM NUCLEAR GENERATING STATION	General Company Organization Chart
	UPDATED FSAR FIG 17.2-1

Revision 1
July 22, 1983



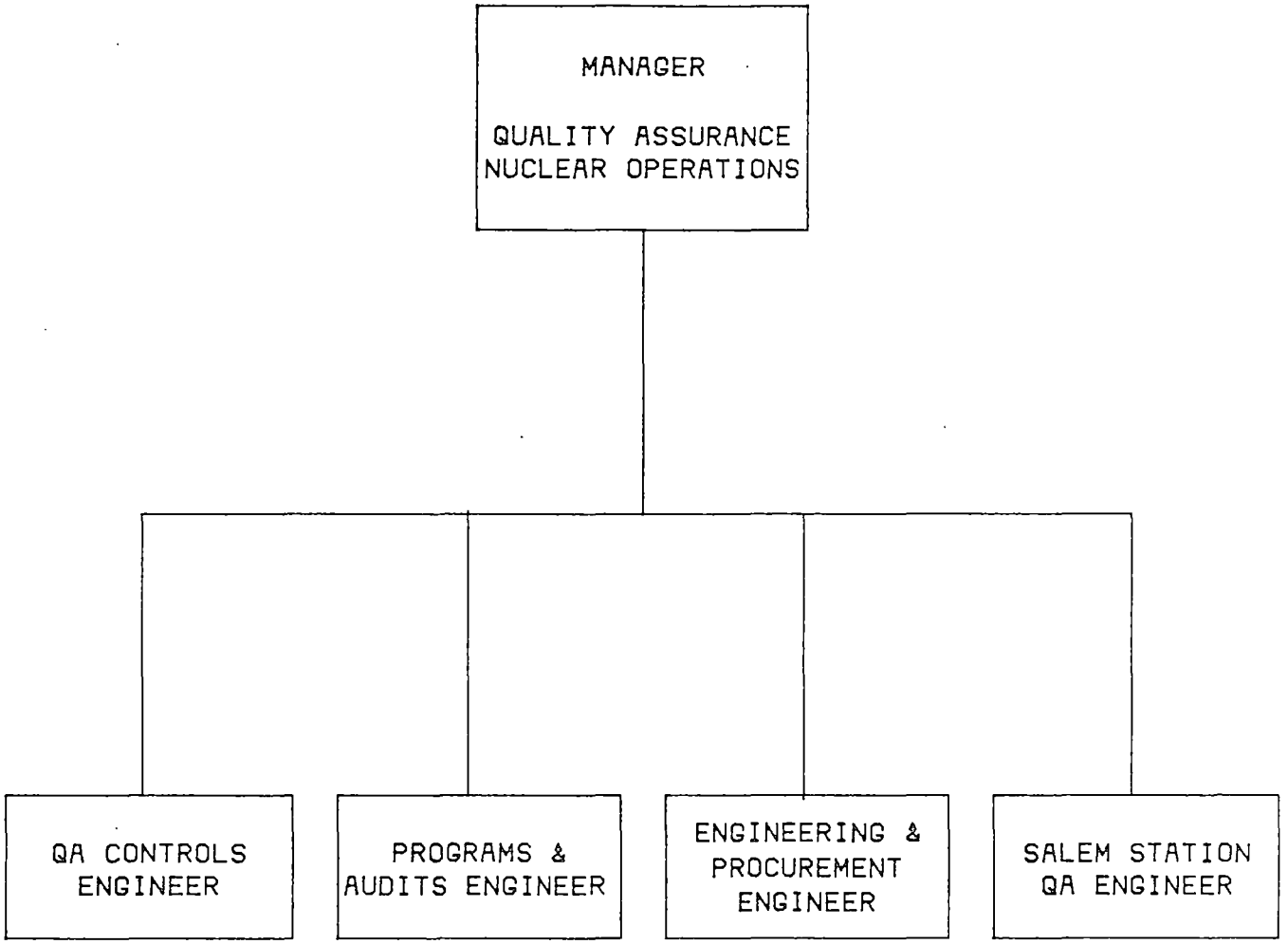
Revision 1
July 22, 1983

PUBLIC SERVICE ELECTRIC AND GAS COMPANY SALEM NUCLEAR GENERATING STATION	Office of the Senior Vice President- Energy Supply and Engineering
	UPDATED FSAR FIG 17.2-2



Revision 1
July 22, 1983

PUBLIC SERVICE ELECTRIC AND GAS COMPANY SALEM NUCLEAR GENERATING STATION	Nuclear Department
	UPDATED FSAR FIG 17.2-3



Revision 1
July 22, 1983

PUBLIC SERVICE ELECTRIC AND GAS COMPANY SALEM NUCLEAR GENERATING STATION	Quality Assurance - Nuclear Operations
	UPDATED FSAR FIG 17.2-4