

August 31, 1984  
SBN- 707  
T.F. B7.1.2

United States Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Mr. George W. Knighton, Chief  
Licensing Branch No. 3  
Division of Licensing

References: (a) Docket Nos. 50-443 and 50-444  
(b) PSNH Letter, dated August 31, 1984, "New Hampshire Yankee  
Division of Public Service Company of New Hampshire  
Pursuant to 10CFR50.55(f)", W. P. Johnson to  
Dr. T. E. Murley

Subject: New Hampshire Yankee Division Present Role in Seabrook  
Construction

Dear Sir:

On August 9, 1984, representatives of the New Hampshire Yankee Division of Public Service Company of New Hampshire, Yankee Atomic Electric, Westinghouse, and United Engineers and Constructors met with numerous managerial level NRC representatives for the purpose of providing a status report on several aspects of the Seabrook Project in support of the NRC Staff's Operating License Application review activities.

At this meeting, Mr. Edward A. Brown, who was elected President and Chief Executive Officer of the New Hampshire Yankee Division by the PSNH Board of Directors, presented the Joint Owners "Resolution for Transfer of Managing Agent Responsibility" (Resolution). The Resolution was adopted by the Joint Owners on June 23, 1984. Pursuant to the Resolution a division of Public Service Company of New Hampshire has been created by PSNH, known as the New Hampshire Yankee Division. The New Hampshire Yankee Division has primary responsibility for the construction of Seabrook Station. As stated at the August 9, 1984 meeting, contrary to the form of organization contemplated by the Resolution, Mr. Brown is the only member of the New Hampshire Yankee Division that is on the payroll of Yankee Atomic Electric Company at this time. The remaining officers of the New Hampshire Yankee Division remain employees of PSNH.

The purpose of this letter is to document the verbal presentation given on August 9, 1984 regarding the present organizational structure at the Seabrook Site. We have chosen to illustrate this through the device of annotating Operating License Application (FSAR) pages in such a way as to reflect the changes which result solely from the implementation of the Resolution to date. As evidenced by the enclosed annotated FSAR pages, Public Service Company of New Hampshire, through its New Hampshire Yankee Division,

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CHAPTER 1

INTRODUCTION AND GENERAL DESCRIPTION OF PLANT

1.1 INTRODUCTION

1.1.1 Project Identification

The Final Safety Analysis Report (FSAR) is submitted to the U.S. Nuclear Regulatory Commission (NRC) in support of an application by Public Service Company of New Hampshire (PSNH) for an Operating License for Seabrook Station Units 1 and 2 located in the town of Seabrook, Rockingham County, New Hampshire. The application is for a Class 103 license as set forth in 10CFR50.22.

The site at Seabrook, New Hampshire is approximately eight miles southeast of the county seat of Exeter and five miles northeast of Amesbury, Massachusetts. The center of the Boston metropolitan area is approximately 40 miles to the southeast of the site.

Each unit employs a four-loop, pressurized water reactor and support auxiliary systems designed by Westinghouse Electric Company. The Seabrook units are similar in design to Duke Power Company's W.B. McGuire Nuclear Station, Texas Utility Generating Company's Comanche Peak Station, and Commonwealth Edison Company's Byron-Braidwood Nuclear Plants.

Each nuclear unit is housed in a steel-lined reinforced concrete containment structure and a concrete containment enclosure structure. These structures were designed by United Engineers and Constructors Inc.

The two units are essentially the same. Descriptions of one unit shall be interpreted as applying to both units, except where specifically noted otherwise. Differences between the two units and structures, systems and components that are shared between the two units are specified in the appropriate location in the FSAR and are summarized in Subsection 1.2.2.

Each unit will be initially operated at core levels up to and including 3411 megawatts thermal (MWt). This corresponds to a nuclear steam supply system thermal output of 3425 MWt and a corresponding net electrical output of 1198 MWe. The engineered safety features have been evaluated at a design rating of 3579 MWt.

The scheduled completion date for construction of Unit 1 is ~~September 1984~~ <sup>April 1986</sup> its scheduled commercial operating date is ~~December 1984~~. The scheduled completion date for construction of Unit 2 is ~~April 1987~~; its scheduled commercial operating date is ~~July 1987~~ <sup>indeterminate at this time.</sup>

August  
1986



1.4 IDENTIFICATION OF AGENTS AND CONTRACTORS

1.4.1 Applicants

The New Hampshire Yankee (NHX) Division of PSNH is the organization within PSNH which will carry out these functions

Public Service Company of New Hampshire (PSNH) is the principal owner and has the responsibility for the design, construction, startup and operation of Seabrook Station. The following contractors and service organizations have been engaged to perform engineering, design, procurement, construction and technical support services for the construction and operation of Seabrook Station.

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1.4.2 Yankee Atomic Electric Company

PSNH has contracted with the Nuclear Services Division (YNSD) of Yankee Atomic Electric Company (YAEC) for the services which include project administration, facility design control, construction coordination, quality assurance, NRC licensing, and fuel supply. YAEC will also provide technical guidance and engineering services necessary to support the operation of Seabrook Station.

of certain personnel involved in project engineering

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1.4.3 Westinghouse Electric Corporation

Westinghouse Electric Corporation has been contracted to design, fabricate and deliver the nuclear steam supply system (NSSS) and nuclear fuel for the plant. Westinghouse will also provide technical assistance for installation and startup of their supplied equipment. NSSS equipment is listed in Table 3.2-2.

In addition, PSNH has contracted with YAEC for establishing and implementing the Quality Assurance Program

1.4.4 United Engineers & Constructors Inc.

United Engineers and Constructors (Philadelphia, Pennsylvania) has provided engineering, design and procurement services for the balance of plant. As Construction Managers, UE&C has directed construction of the plant by the various subcontractors and also provides technical assistance in the startup program when requested. Balance of plant equipment supplied through UE&C is listed in Table 3.2-2.

1.4.5 General Electric Company

In July 1984 various subcontractors were terminated and UE&C assumed responsibility for direction of the majority of the construction labor forces

General Electric Company has been contracted to supply the turbine generators for the plant.

1.4.6 Major Construction Contractors

which have provided, or are

Other major construction contractors or subcontractors providing construction services are listed below:

Mechanical Engineering  
Electrical Engineering  
Instrument and Control Engineering  
Systems Engineering  
Welding  
In-Service Inspection  
Nuclear Engineering  
Accident Analyses  
Transient Analyses  
Reload Analyses  
Health Physics  
Dose Assessment  
NRC Licensing  
Meteorology  
Fuel Fabrication  
Fuel Procurement  
Operations  
Fire Protection  
Vendor QA Auditing  
Engineering QA  
Emergency Planning  
Environmental Engineering

The Station, Nuclear Production, Nuclear Quality and Training Center staffs supply the additional necessary expertise to support and operate the station. A combination of administrative controls, the setting of specific responsibilities for each organization, and open communications paths between organizations are used to assure a safe and efficient working relationship between the support organizations.

#### 13.1.1.5 Construction and Operation Interface

The PSNH Nuclear Production Staff and YNSD function as the operational support organization for Seabrook Station, and their responsibilities, authority, qualifications and training have been presented in the preceding sections. However, since Seabrook is a two-unit station with one unit scheduled later than the other, there will be construction and operation at the site occurring simultaneously. The role assumed by YNSD for engineering, design and construction phases of Unit 1 will continue intact until Unit 2 is constructed.

There are additional groups, other than those shown in Figure 13.1-2, which take part in the construction phase and will continue until Unit 2 is complete. PSNH has a project group reporting to the Executive Vice President whose general responsibilities are to monitor and provide PSNH inputs into the station design and construction. YNSD has a construction department for the construction phase only. There are also contractor organizations who will be involved in the construction of Unit 2 while Unit 1 is in operation.

Westinghouse is responsible for the design, fabrication and delivery of the nuclear steam supply system, related auxiliary systems and the nuclear fuel.

See new section 13.1.1.5

## new section 13.1.1.5

### 13.1.1.5 CONSTRUCTION AND CONSTRUCTION/OPERATION INTERFACE

#### a) Construction Phase

The New Hampshire Yankee (NHY) Division of Public Service Company of New Hampshire is responsible for the construction of Seabrook Station. The overall responsibility for all activities associated with Seabrook Station resides in descending order with the PSNH Chairman and Chief Executive Officer, the NHY President and Chief Executive Officer, and the NHY Senior Vice President, who is designated as management official in overall charge of the construction of the station. The NHY entity is dedicated to the completion of this construction project.

An integrated project organization has been established, working under the direction of the NHY Senior Vice President, to ensure effective project management control. This integrated organization is comprised of the Director of Engineering and Licensing and his staff; the Vice President of Nuclear Production and his staff; and the Vice President in charge of Administrative Services is responsible for interfacing with YAEC Quality Assurance Department. The director of Construction serves as the focal point for all construction activities. The Assistant Director of Construction working with middle level managers directs the construction efforts with regard to project services, constructed systems turnover, project controls, cost and special studies. The Director of Construction is responsible for ensuring timely and effective direction for completion of construction of the project.

Similarly, the Director of Engineering and Licensing provides the focal point for all engineering and licensing activities. An Assistant Director of Engineering and middle level managers provide the direction needed for completion of engineering, special projects, change control and the licensing efforts.

The Quality Assurance Department, which interfaces very closely with the Engineering and Construction Directors' organizations, reports to the YAEC Director of Quality Assurance and interfaces with the NHY Vice President. All other entities receive project direction through senior management or Vice Presidential levels described above.

The Operations Department is guided and informed of project status for Construction and Engineering through communication interface and meetings with the Construction and Engineering Directors' organizations. This is supplemented by the Startup Test Department that interfaces between Construction/Engineering and Operations. The Operations and Startup Test Departments report to the Vice President of Nuclear Production.



## new section 13.1.1.5 (continued)

### 13.1.1.5 CONSTRUCTION AND CONSTRUCTION/OPERATION INTERFACE - Continued

By virtue of the above organizational structure, senior and upper level project management are able to provide project direction and control that ensures schedule and budget adherence, problem resolution, accountability, and timely execution for the project. They are also able to establish, monitor, and consequently meet project goals.

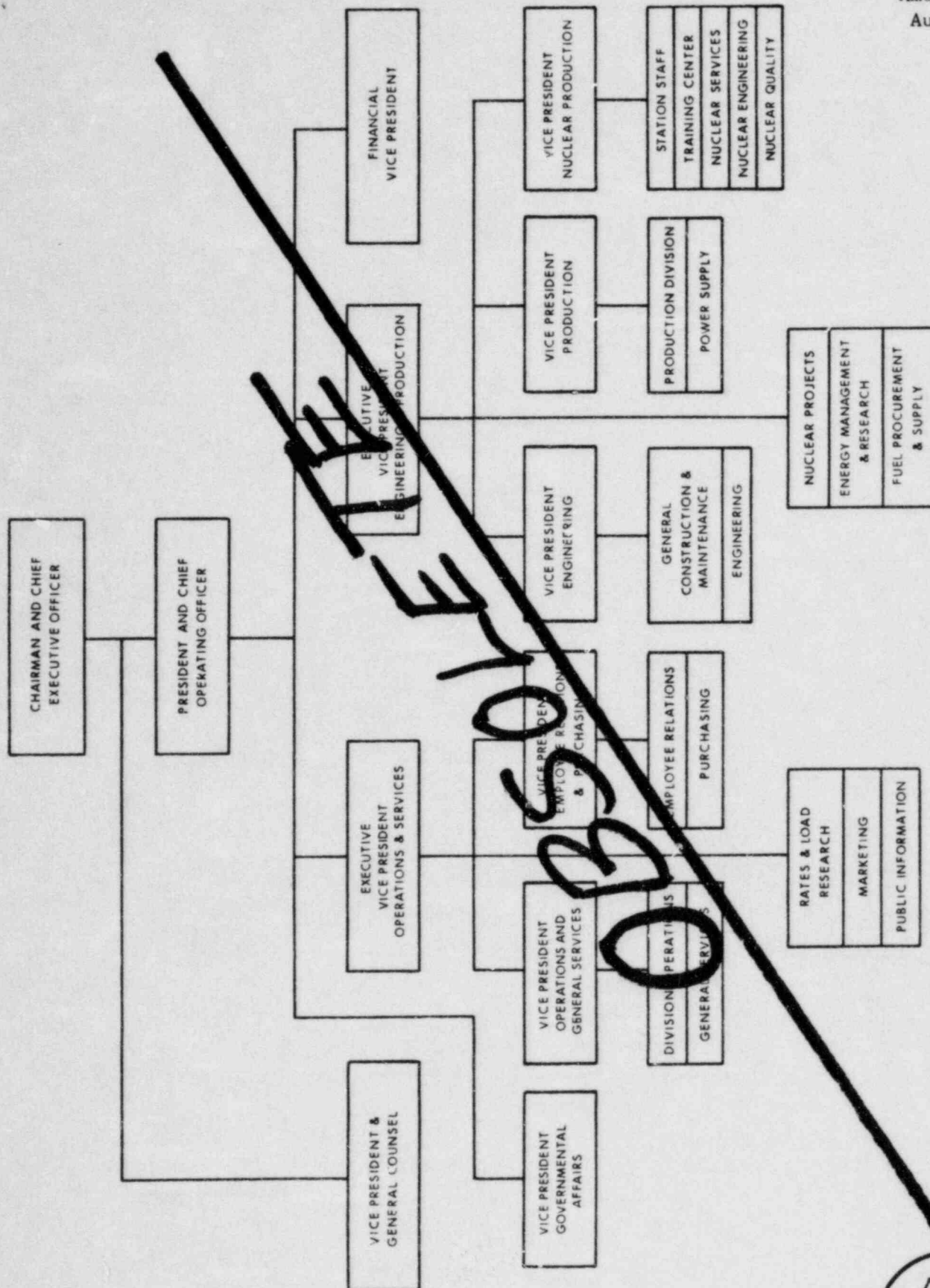
Having an organization that virtually funnels from four individuals to one assures quick problem resolution and timely execution on the project.

Westinghouse, United Engineers & Constructors (UE&C) and General Electric are three other organizations having major responsibilities for the design and construction of the Seabrook Project.

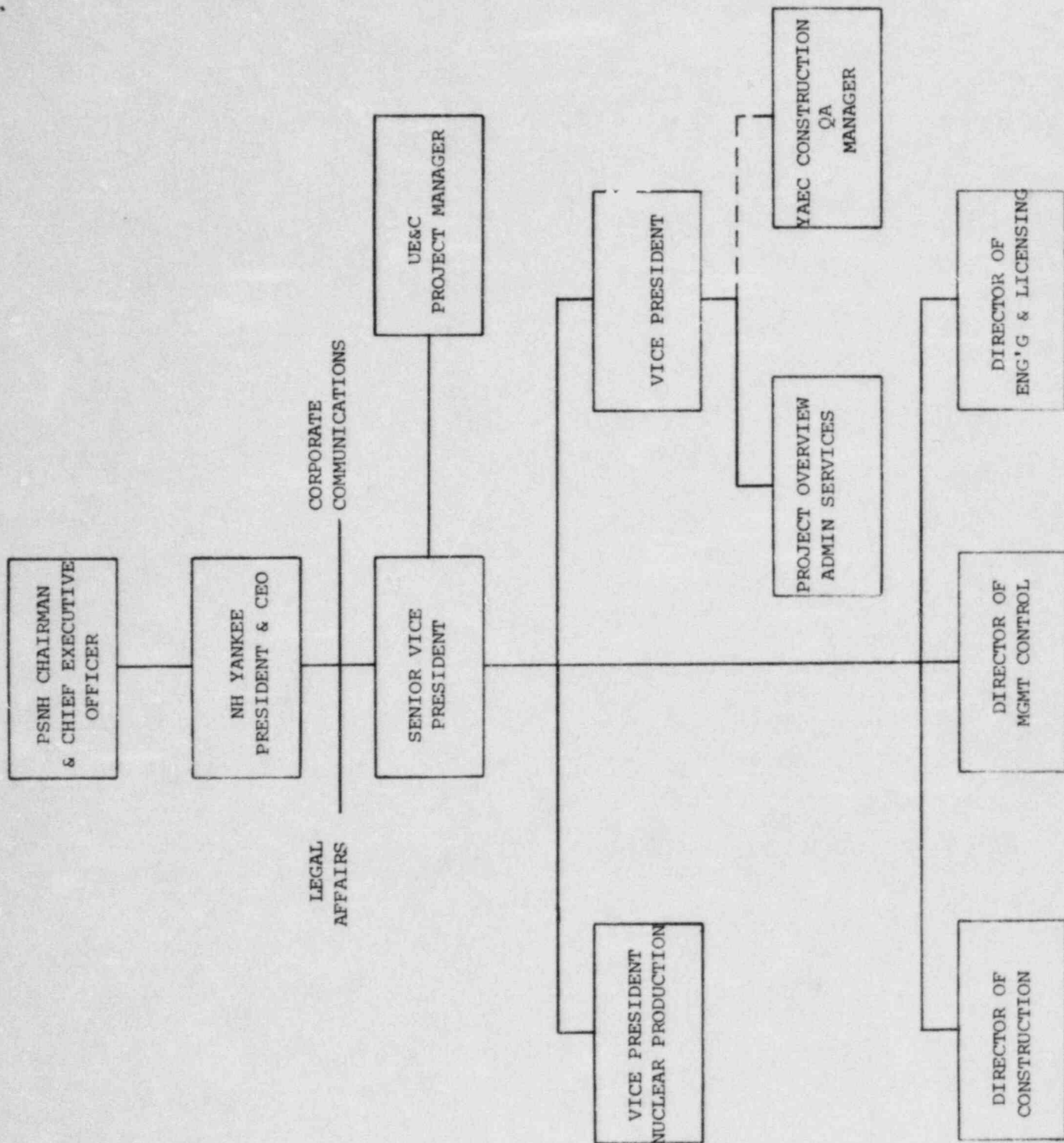
Westinghouse is responsible for the design, fabrication and delivery of the nuclear steam supply system, related auxiliary systems and the nuclear fuel. Technical direction for the installation of the equipment and technical assistance throughout the pre-operational testing, initial core loading and testing programs are further responsibilities of Westinghouse.

United Engineers and Constructors (UE&C) is responsible for the engineering, design and construction of the station. Included in their services is the furnishing of the balance of plant systems and components, structures and switchyards such that a complete and integrated facility will result.

General Electric is responsible for the design fabrication and delivery of the turbine-generator unit.



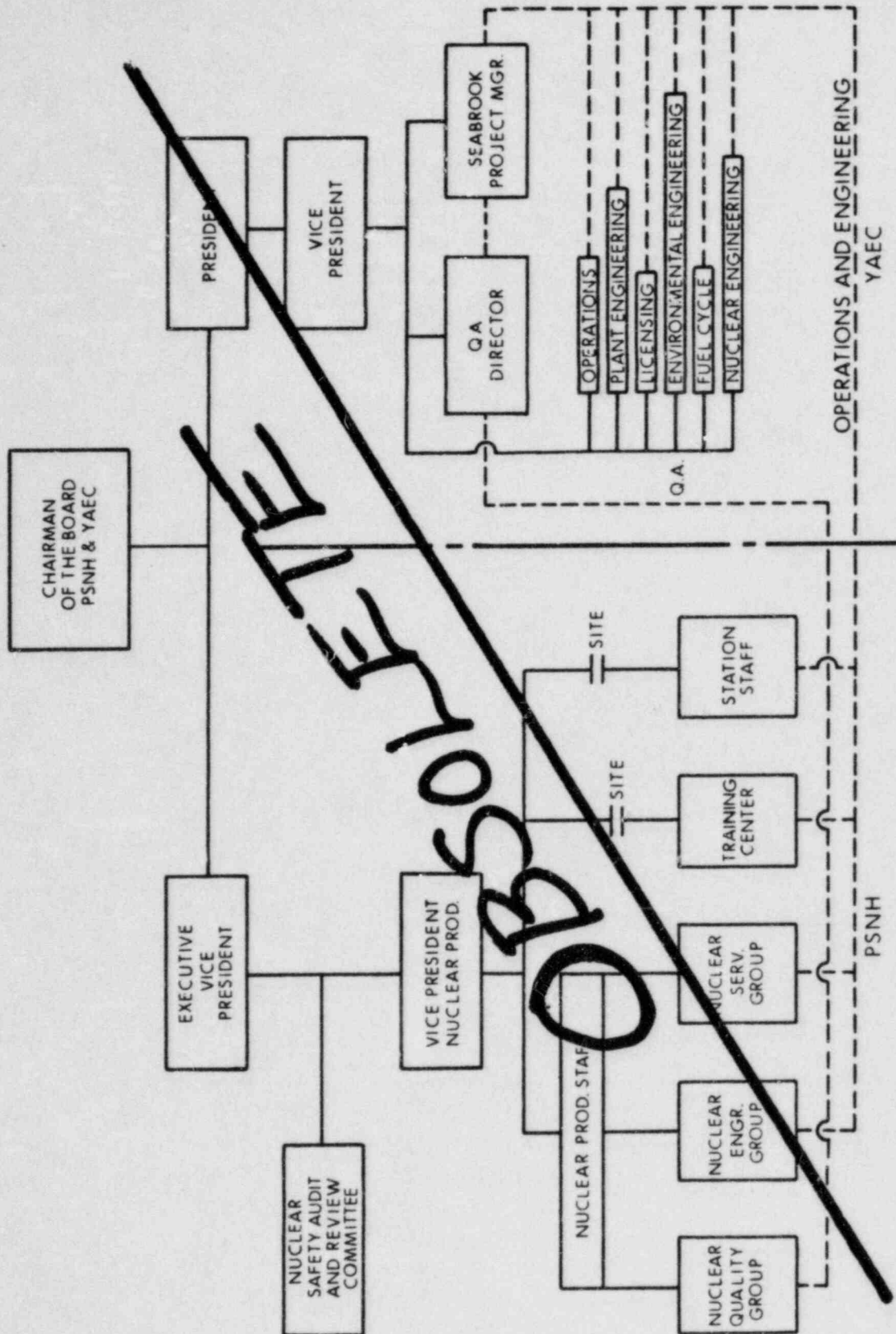
5A



5B

SEABROOK PROJECT ORGANIZATION  
Figure 13.1-1



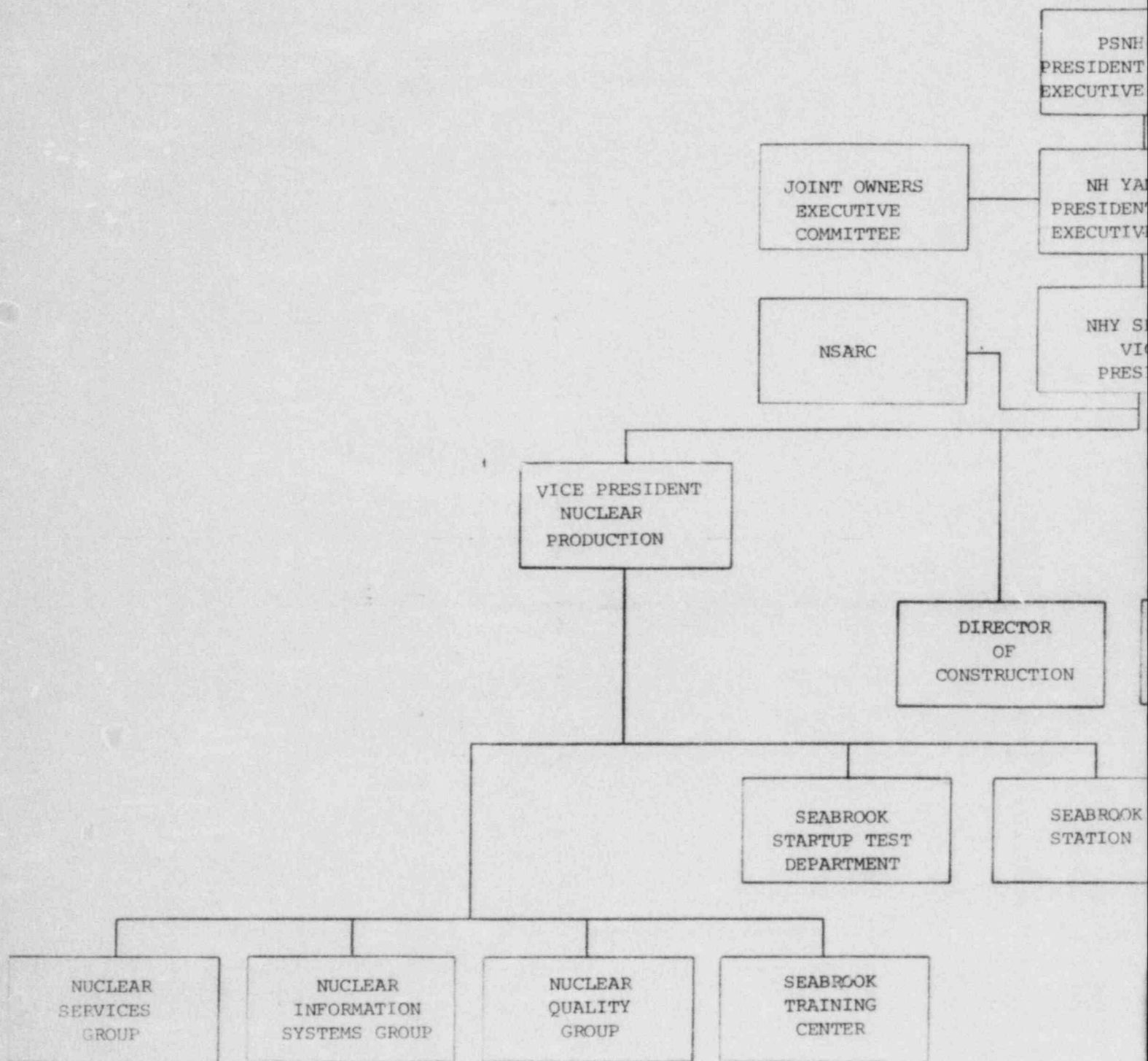


5C

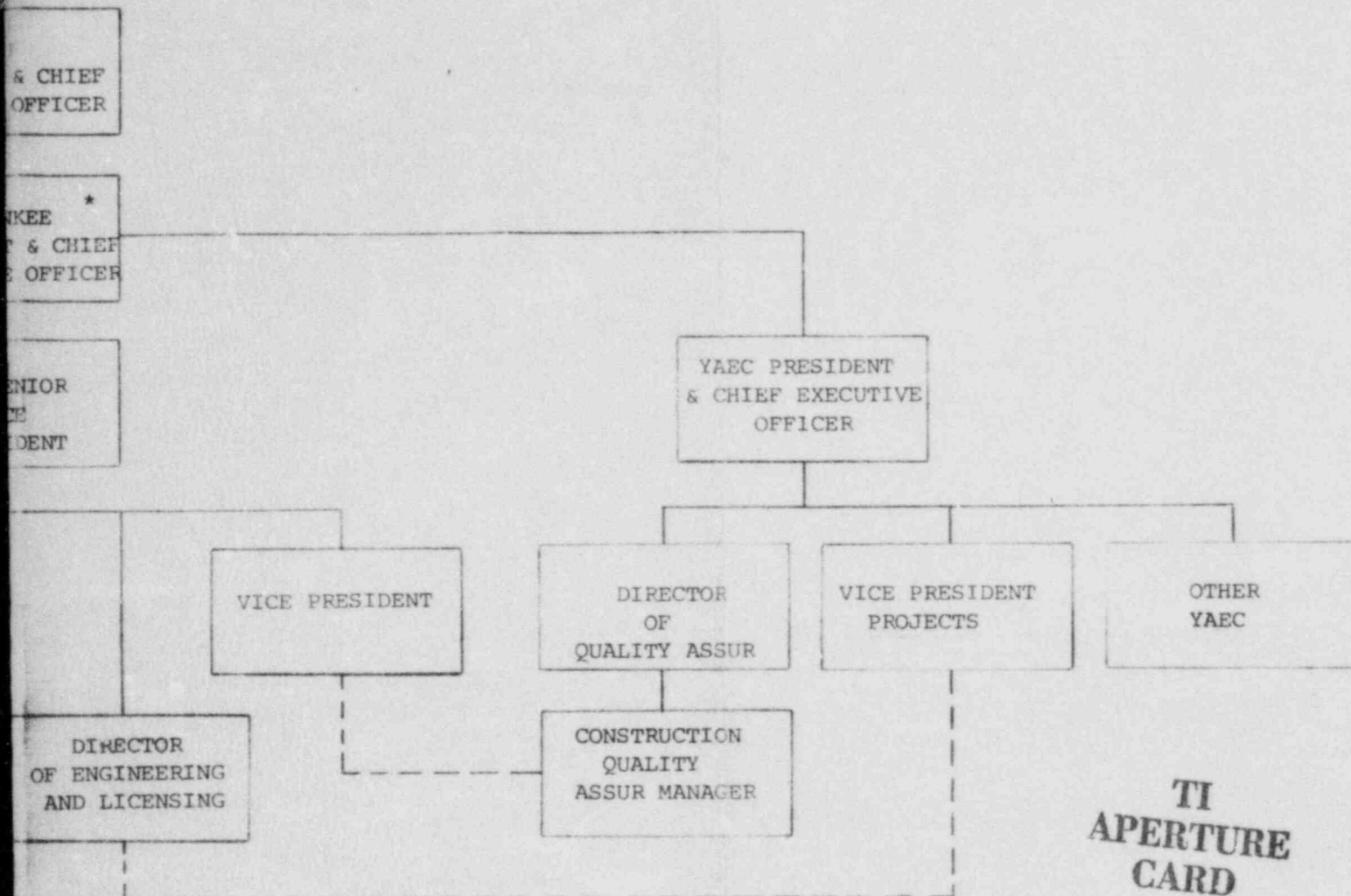
----- AUTHORITY

----- COMMUNICATION

\* ALSO CHAIRMAN OF THE YAEC BOARD



NUCLEAR SUPPORT SERVICES



Also Available On  
Aperture Card

5D

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE  
SEABROOK STATION - UNITS 1 & 2  
FINAL SAFETY ANALYSIS REPORT

SEABROOK  
ORGANIZATIONAL INTERFACE

FIGURE 13.1-2

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CHAPTER 17

QUALITY ASSURANCE

17.1 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

17.1.1 Yankee Atomic Electric Company

17.1.1.1 Organization

a. Authority, Responsibilities, and Duties

The Public Service Company of New Hampshire (PSNH) retains overall responsibility for Quality Assurance, and has delegated to the Yankee Atomic Electric Company (YAEC) the responsibility for the development, execution, and administration of the quality assurance program which involves quality-related activities during the design, procurement, construction, and preoperational testing phases for safety-related structures, components and systems.

Yankee Atomic Electric Company has established the organizational structure shown in Figure 13.1-2 for the design, procurement and construction phases of the Seabrook (SB) Project. This figure shows the lines of ~~administrative~~ authority and communication as it relates to the ~~YAEC corporate~~ organization. Figure 17.1-1 depicts the overall intercompany project organization chart showing the major organizations involved and how they interrelate. For additional details, reference Section 13.1 of this FSAR.

quality  
Assurance

YAEC has delegated to the Engineer-Constructor, United Engineers & Constructors Inc. (UE&C), and to the nuclear steam system supplier, Westinghouse Electric Corporation-Water Reactor Divisions (WRD), administration and execution of large portions of the quality assurance program associated with the design, procurement and installation of safety-related structures and equipment, as defined in Tables 17.1-1, 17.1-2 and 17.1-3. UE&C and WRD and their vendors and subcontractors who are responsible for safety-related components and structures, are required to have quality assurance programs consistent with the requirements of 10CFR50, Appendix B, and of this Program.

The responsibilities of YAEC management are outlined below:

~~A Vice President, who reports to the President, is responsible for the policies, direction and management of the project Quality Assurance Program. He resolves disputes which may arise between~~

~~various YAEK departments and, on a continuing basis, evaluates the effectiveness of the Quality Assurance Program. At least annually, he (in conjunction with PSNH management) performs, or has performed for him, audits of the performance of Construction QA. Reporting to a Vice President and responsible for their respective portions of the Seabrook Project Quality Assurance Program are the Director of Construction, the Director of Quality Assurance, the Project Manager and the Startup Test Group Manager.~~

*The YAEK*

*NHY* The Director of Quality Assurance who reports to a Vice President is responsible for establishing policies under which the Yankee Quality Assurance organization works, and under which contractors comply. He approves the Seabrook Station Quality Assurance Manual which governs all YAEK Program activities and receives copies of correspondence and reports generated by the Quality Assurance Department (QAD). He evaluates and reports to the Vice President on the effectiveness of the Quality Assurance Program. He reports on a quarterly basis to the ~~PSNH~~ management to keep them advised of the Program status. He coordinates the activities and program direction of quality assurance during design, construction and certain phases of operation to maintain a consistency of the program and a continuity of the effort.

The Construction Quality Assurance Manager (QAM) who reports to the Director of Quality Assurance, is responsible for the direction and supervision of work performed by the Construction Quality Assurance Group staff, at both the corporate office and at the plant site, and by consultants hired to supplement this staff. Off-site personnel (Home Office QA Engineers) perform staff functions, i.e., develop QA programs and procedures, review technical and QA documentation submittals, provide training and indoctrination and perform audit and/or surveillance functions internally as well as over contractors, constructors, subcontractors and suppliers. ~~The personnel (Field QA Manager and Field QA Engineers)~~ perform QA line functions, i.e., plan and develop verification procedures and controls, perform surveillance activities over constructors and subcontractors and review contractor and subcontractor implementing procedures. Qualification requirements for the position responsible for establishing and implementing the Seabrook Station QA Program are as follows:

1. Graduate of an accredited college or university, with a technical degree.
2. Ten years minimum experience consisting of:
  - (a) Significant experience in a utility, nuclear, heavy construction or heavy equipment industry.

qualifications and performance of personnel are evaluated annually. The training program is described in the Seabrook Station Assurance Manual. The Quality Assurance Department is staffed with personnel knowledgeable and qualified in the following:

1. SNT-TC-1A Levels II and III
2. Quality Assurance for mechanical equipment
3. Quality Assurance for electrical equipment
4. Quality Assurance for instrumentation and control equipment
5. Quality Assurance for construction activities.

Personnel qualifications to review design and procurement documents and QA Programs and to perform audits are reviewed annually at which time a determination is made for the need for further training. Responsibilities and duties are assigned to personnel having qualifications required for the assignments. The QAM, and personnel reporting to him, have the authority to order that work be stopped on any operation they find being performed contrary to approved procedures, specifications, instructions, or drawings.

The YAEC Director of Construction, who reports directly to a Vice President is responsible for construction direction and planning and for the surveillance of construction activities at the plant site. He is assisted by a staff of Construction Engineers both at the corporate office and at the plant site. The Site Manager, with a staff of construction specialists, works at the site during construction under his direction. He and his staff maintain surveillance of construction activities and have the authority to stop work that is not properly performed.

Senior Vice President and Vice President/Manager of Operations, who report directly to the President are responsible for the direction and supervision of work performed by plant-related engineering staffs. They are responsible for reviews of selected plant system specifications and drawings for plant operability and maintainability. They are responsible for maintaining an awareness of technical and regulatory developments and for YAEC compliance with applicable requirements. They are also responsible for assuring that quality assurance programs and procedures are implemented within the engineering departments under their supervision.

The Project Manager, who reports to a Vice President is responsible for the Seabrook Project inter-company and Yankee inter-department coordination of engineering, construction and quality assurance efforts on the Project. His responsibilities include control procedures for communications on policy matters, the formalizing of resolution of problems including those

SC2 insert for FSAR pages  
17.1-4 and 17.1-5



see insert for FSAR pages  
17.1-4 and 17.1-5

involving internal and inter-company interfaces, the approvals of documents, and other matters requiring coordination or expediting. Technical details are discussed on a day-to-day basis by YAEC design, quality and construction engineers with their contractor counterparts. The Project Manager is informed of items of significance discussed by design, construction, or quality engineers and formalizes in writing all questions, answers, position, conclusions, and agreements. He is responsible for maintaining project logs, drawings, specifications and files covering YAEC engineering reviews. He has the authority to order that engineering and procurement activities be stopped at the principle contractors. The Project Manager is assisted by a staff of Project Engineers. Although coordination of the project as a whole is the responsibility of the Project Manager, the Engineering Managers, the Director of Construction, as well as the Construction Quality Assurance Manager perform their respective functions independent and not under the direct supervision of the Project Manager and his staff. The Project Manager shall ensure the reporting of significant deficiencies as detailed in Section 17.1.1.15.

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*NBY*  
The Startup Test Group Manager, who reports to the Vice President *- Nuclear Production* is responsible for managing and providing overall direction for the initial test program which includes integrated systems pre-operational tests and initial startup tests. He shall insure that applicable portions of the Seabrook Station Quality Assurance Program are applied in activities related to the initial test program.

Consultants retained by YAEC or PSNH as necessary to supplement the work of the YAEC quality assurance organization are required to comply with this Program. Their work will be reviewed on a continuing basis by the YAEC individual responsible for their scope of work.

The quality assurance organizations of companies performing quality related activities covered by this program are required to be structured such that they have the required authority and organizational freedom to identify problems; to initiate, recommend, or provide solutions; to verify implementation of solutions; and stop work or control further processing, use, or installation of a nonconforming item or unsatisfactory condition until proper dispositioning has occurred. The personnel performing quality assurance activities are independent of the individual or group responsible for performing the activity.

The NHY Construction Director reports to the Senior Vice President of NHY and is responsible for managing all field personnel, thus ensuring that all construction-related activities are properly completed. The Construction Director is charged with the responsibility for completing the field construction activities in accordance with corporate guidelines, project planner and scheduler, project objectives, engineering drawings, specification, instructions, and procedures.

The Construction Director is responsible for performing the full range of management functions, including organizing, staffing, directing, leading and controlling the work of the assigned field personnel and contractors, as well as serving as the focal point for all groups involved with the construction-related work at the jobsite, both within and outside New Hampshire Yankee.

The Director of Engineering and Licensing reports to the Senior Vice President (NHY) and is responsible for providing direction and selected review of all project engineering, design, and NRC licensing work performed; for ensuring that the project engineering organization receives consistent direction and guidance, ensuring consistent and acceptable quality throughout the engineering organization; and for evaluating the impact of regulatory changes to the project.

*insert For FSAR pages 17.1-4 and 17.1-5*

The UE&C organization is described in Topical Report No. UEC-TR-001. The WRD organization is described in the Westinghouse WRD Quality Assurance Plan (WCAP-8370).

*quality management*  
The interface between YAEC and UE&C ~~and WRD~~ is shown in Figure 17.1-1. The YAEC Construction Quality Assurance Manager has direct communication with ~~the Westinghouse Product Assurance Manager~~ and ~~the UE&C Reliability and Quality Assurance Manager~~ regarding quality-related activities. YAEC reviews and concurs with all quality-related procedures, programs, plans, etc. that are generated by the AE (UE&C). YAEC reviews and concurs with the Westinghouse ~~Product Assurance Manual~~ and reviews department procedures in the process of auditing Westinghouse performance.

QA Topical Report

The contractors are responsible for the review and approval of their supplier and subcontractor quality related documents. The adequacy of the contractors' reviews are verified by YAEC audit and/or surveillance either at contractors' facilities or at the facilities of supplier and subcontractors. Audit and/or surveillance of contractors (AE) and suppliers is performed by YAEC home office personnel. Surveillance of subcontractors at the construction site is performed by the YAEC QA representatives assigned to the site. Audit at the construction site will be performed by YAEC home office QA personnel.

b. Responsible Management Levels

*has overall responsibility*  
Public Service Company of New Hampshire, ~~as lead applicant for the regulatory licenses, is responsible~~ for quality assurance on the Seabrook Project. The Chief Executive Officer of PSNH has delegated to YAEC the responsibility for establishment and implementation of the Quality Assurance Program. He, or his staff, maintains cognizance of and evaluates the Program activities in the following manner.

1. Review and approval of the YAEC Quality Assurance Program as described in the Seabrook Station Quality Assurance Manual.
2. Participates in major QA decisions and program changes.
3. Receives copies of all YAEC audit reports (internal and external) pertaining to the Project. Monthly he receives the Status of Outstanding Items indicating the status of audit findings.
4. Participates on a quarterly basis in selected external audits by YAEC to assess YAEC performance in contractor activities. As an alternate to participating in the audit, they may review YAEC external audit reports. The diversity of audits



shall be sufficient to assure that YAEC complies with the requirements of Subsection 17.1.1.18. The ~~FSM~~ member of the audit team shall act as an observer to assess the performance of the YAEC auditor(s). NHY

5. Participates on a quarterly basis in selected internal audits of YAEC to assess YAEC performance in QA activities. Participating applicant personnel are required to recommend actions to utility management over and above those recommended by YAEC if they deem it necessary. The diversity of audits shall be sufficient to assure that YAEC complies with the requirements of Subsection 17.1.1.18. The ~~FSM~~ member of the audit team shall act as an observer to assess the performance of the YAEC auditor(s). NHY
6. Performs management audits of YAEC Construction Quality Assurance performance. The management audits are conducted annually using approved checklists and follow a preestablished schedule assuring compliance with the program. 49
7. Reviews quarterly evaluations of QA Program activities.
8. Receives copies of all YAEC correspondence with contractor relating to QA Program activities.

*the Director of Quality Assurance*  
Within YAEC, ~~a Vice President~~ is responsible for coordination of the Program activities and for the overall effectiveness of the Program. The responsibility for completeness of the Program requirements, issuance and maintenance of the Seabrook Station Quality Assurance Manual, and compliance with Program requirements has been delegated to the YAEC Construction Quality Assurance Manager. An audit of the activities of the YAEC Construction Quality Assurance is performed under the cognizance of the YAEC ~~Vice President and FSM~~ Management. The audit team shall include at least one representative from the applicant's management. NHY

The duties and responsibilities of ~~a YAEC Vice President~~, the YAEC Director of Quality Assurance and the YAEC Construction Quality Assurance Manager (QAM) are described in Section 17.1.1.1a. 44

c. Scope of Delegation of Work

YAEC had delegated to the Project architect-engineers, United Engineers & Constructors Inc. (UE&C), and to the supplier of the nuclear steam supply system, Westinghouse Electric Corporation (WRD) administration and execution of large portions of the quality assurance program associated with the design, procurement and installation of safety-related equipment as defined in Tables 17.1-1, 17.1-2 and 17.1-3 of this Program. Procurement

SB 1 & 2  
FSAR

of safety related equipment is performed by either UE&C or Westinghouse under the provisions of their topical reports and QA Programs. These are reviewed and concurred upon by ~~the~~ YAEC personnel. Compliance to the aforementioned is assured via a system of audits performed by YAEC Home Office personnel who also review the UE&C and Westinghouse in-house departmental procedures. UE&C and WRD, and their vendors and subcontractors who are responsible for safety-related components or structures, are required to have quality assurance programs consistent with the requirements of 10CFR50 Appendix B, and of this Program.

The UE&C and WRD quality assurance programs are extensions of the YAEC program and as such have been reviewed and accepted by YAEC. The structure of the UE&C quality assurance organization is described in the UE&C Quality Assurance Program (Topical Report No. UEC-TR-001) and referenced in Section 17.1.2 of this FSAR. The structure of the WRD quality assurance organization is described in the Westinghouse NES Divisions' Quality Assurance Plan Topical Report (WCAP-8370) and referenced in Section 17.1.3 of this FSAR. Both Topical Reports have been reviewed and approved by the Nuclear Regulatory Commission.

Conformance to approved requirements and programs is assured through close liaison between the Project Managers of YAEC, WRD and UE&C and between their quality assurance organizations.

~~Figure 17.1-1, Quality Assurance Interfaces, shows the managerial and quality assurance lines of authority, responsibility, and communication between YAEC, WRD, and UE&C and within these organizations. It also indicates responsibility to audit vendors and manufacturing divisions.~~

YAEC maintains control of contractor and internal quality-related activities principally by means of an audit and surveillance program which involves audits, surveys, investigations and reviews by the YAEC Project staff, Engineering, Quality Assurance, ~~Site Resident Engineering,~~ and Site Quality Assurance.

~~Interface between YAEC, UE&C and WRD is described in Figure 17.1-1 and indicates the lines of communication between the contractors to assure necessary coordination and control of the Quality Assurance Program.~~

#### 17.1.1.2 Quality Assurance Program

In order to assure overall implementation of the quality assurance requirements, YAEC has developed a Program which covers quality-related activities during design, purchasing, fabrication, construction, and preoperational testing which affects those structures, systems and components that are necessary to assure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and

*management* Should any disputes arise between YAEC departments, they are resolved, wherever possible, by the heads of the departments involved. If resolution is not possible at this level, the differences are presented to ~~the Vice President~~ for settlement. In either case, the resolution is documented.

f. Personnel Training

All activities affecting quality are performed by suitably trained personnel. Each YAEC department whose activities are discussed in the FSAR prepares documents detailing the scope of their training program including a schedule for implementation and identifying the individuals by job description or title or groups required to attend the sessions. Indoctrination and training programs assure that:

1. Personnel responsible for performing quality activities are instructed as to the purpose, scope, and implementation of the quality-related manuals, instructions and procedures;
2. Personnel performing quality-related activities are trained and qualified in principles and techniques of the activity being performed;
3. Appropriate training procedures are established;
4. Personnel are made cognizant of quality-related policies, manuals, and procedures that are mandatory requirements and which must be implemented and enforced.

The measures which assure that the YAEC indoctrination and training program define the scope, objective and method of implementing the program and maintain proficiency of personnel include:

1. Section 17.1 of the FSAR details the program objectives, scope and methods as required by the NRC Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants. The description meets the criteria of 10CFR Part 50 Appendix B and of the NRC Standard Review Plan. The implementing program is prepared by the Construction Quality Assurance Manager and is approved by the YAEC Director of Quality Assurance.
2. Establishment of detailed YAEC departmental training programs which comply with FSAR commitments.



3. Auditing of departments performing quality affecting activities. The Quality Assurance Department performs the audits of other YAEC departments and it in turn is audited by the applicant's ~~Nuclear Quality Group~~. During audits, the degree of compliance with policies and procedures is established and compliance with Project commitments is confirmed. Personnel become informed on the scope of Project technical and QA commitments by reviewing the FSAR and applicable referenced documents. They are instructed in the objectives, scope and details of manuals and instructions defining the YAEC control measures for work within individual departments and for interfacing, by both attendance at group indoctrination sessions conducted by QA personnel and by departmental supervision, meetings and directives. Special training in areas such as: nondestructive testing, Boiler and Pressure Vessel Code, auditing and documentation is provided as required. The scope, objectives and methods employed to indoctrinate and train personnel is defined in departmental procedures. Assignments of work to be performed without direct supervision are made only to individuals who have demonstrated that they are qualified, based on experience or training, to perform the tasks assigned.
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Proficiency is maintained through performance of work in accordance with established control measures, by reviewing and commenting on drafts of standards and Regulatory Guides, and by participating in technical society activities, including codes and standards committee activities. The performance of individuals is reviewed at least yearly by Department Heads to ensure continued proficiency.

g. Qualification Requirements

The YAEC Construction Quality Assurance Manager is responsible for assuring effective implementation of the Project QA program and the contractor programs. The qualification requirements for this position are described in Section 17.1.1 of this FSAR.

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h. Controlled Conditions

It is a requirement that all quality-related activities, such as inspection and test, are performed with appropriate equipment and under suitable environmental conditions and in compliance with necessary prerequisites for the given activity.

i. Management Review

YAEC QAD, on a scheduled basis, conducts audits of the YAEC, UE&C and WRD QA program activities to assure that there is proper implementation and that the program is effective. The YAEC procedures for implementation of the program are contained in the Seabrook Station Quality Assurance Manual.

At least annually, ~~the YAEC Vice President and PSNH~~ <sup>NHY</sup> management performs, or ~~has~~ <sup>has</sup> performed, an audit of the activities of ~~the~~ YAEC Construction Quality Assurance

~~The audit team is comprised of representatives from the applicant's Nuclear Quality Group and other personnel, as requested.~~ <sup>activities</sup>

j. Advance Planning

Planning for the control of management and technical interfaces between the UE&C, WRD, YAEC and ~~PSNH~~ <sup>NHY</sup> during all phases, including the phaseout of design, construction and preoperational testing phases and plant turnover will be developed by the ~~YAEC Project Manager~~. The details of the program will be developed as soon as practicable, but will be completed prior to the performance of the activities.

k. Program Update

The Seabrook Station Quality Assurance Program is reviewed by YAEC QAD at least annually to assure that it is kept current. YAEC perform audits on WRD and UE&C to assure that their programs are kept up to date and effective.

The YAEC program for quality assurance normally involves three control levels;

Level 1 - Quality control by ~~vendors~~ <sup>vendors</sup> and constructors <sup>and UE&C</sup> on the activities they perform, by YAEC on startup activities, ~~and by UE&C on site receiving inspection and storage.~~ This includes reviews, inspections and tests.

Level 2 - Surveillance of design, fabrication and construction activities, including Level 1 Quality Control. Contractors provide this level for the design and procurement phases. <sup>activities.</sup> UE&C provides additional surveillance on site construction ~~structures.~~ <sup>and YNSD</sup> ~~YAEC provides a surveillance level on all other site activities under this program.~~

a. Inspection Program Implementation

The programs require that design specifications, drawings, purchase orders, procedures or instructions include the necessary inspection requirements with acceptance and rejection criteria. These inspection requirements are translated into inspection programs, procedures, and check lists, by manufacturing, construction, installation and test activities in order to specify, control and provide documented evidence of inspection activities. Inspection procedures, instruction and check lists contain the following:

1. Identification of characteristics to be inspected.
2. Identification of individuals or groups responsible for performing the inspection operation.
3. Acceptance and rejection criteria.
4. Define the method of inspection.
5. Verification of completion and certification of inspection.
6. A record of the results of the inspection operation.

Inspections are performed for each work operation as necessary to verify quality.

Qualified inspectors, independent from the individual or group performing the activity being inspected, perform inspections using equipment that has been calibrated in accordance with the requirements of Section 17.1.1.12. Inspectors are qualified in accordance with appropriate codes, standards, and regulatory guides and their qualifications and certifications are kept current and on file. Inspection procedures, plans, instructions or check lists are maintained where the activity is to be performed prior to the start of work. Rework, repair, or modifications are inspected in accordance with the original design and inspection requirements or acceptable alternatives. Where direct inspection is not possible, provisions are established for indirect control by monitoring process methods, equipment and personnel. Both inspection and process monitoring are used when control is inadequate without both. Inspection results are evaluated to determine that the requirements have been satisfied. Personnel performing receiving inspection, tests and verification processes are required to be qualified to the requirements of Regulatory Guide 1.58, ANSI N45.2.6 and N45.2. YAEQ QA personnel review the ~~Construction Manager's~~ QA Manuals, Procedures and Procurement Documents to assure that

Constructors



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the required commitments are imposed upon all site personnel and organizations. YAEQ QA personnel perform surveillance and audit activity over the ~~Construction Manager and his~~ *Constructor and Construction* subcontractors.

b. Inspection Holdpoints

When UE&C, WRD or YAEQ notification or hold points are established by the procurement document, or internally by the fabricator, the inspection program or plan provides that work does not progress beyond the inspection point until released by the designated authority.

UE&C performs receiving, construction and installation process verification inspections at the construction site.

c. Requirements for Suppliers

WRD and UE&C are responsible for imposing these requirements on their internal operations and those of their vendors and subcontractors. They perform audits or surveillance to assure the adequacy of the implementation of these requirements. In general, inspections are the responsibility of the manufacturing or construction organizations, with WRD, UE&C and YAEQ performing the audits or surveillance.

d. Audits

YAEQ performs audits of WRD and UE&C and participates in inspections at selected vendor facilities to verify implementation with specifications, applicable codes, standards, and regulatory guides. YAEQ also performs surveillance of site constructor activities in accordance with this Program.

17.1.1.11 Test Control

a. Test Control Implementation

YAEQ has assigned to WRD and UE&C the control of testing of safety-related materials, equipment, and structures during all phases of manufacturing, construction and installation.

The UE&C test program for material, equipment, and structures within the balance of plant and for site activities is detailed in UEC-TR-001. The WRD test program for the nuclear steam supply system components is detailed in WCAP-8370.

c. Test Results

See Section 17.1.1.11b.

d. Requirements on Others

WRD and UE&C are responsible for imposing these requirements on their internal organization and on their vendors and subcontractors. Through auditing and surveillance, they assure the adequacy of the program implementation.

e. Audits

YAEC, through a program of planned audits of WRD, UE&C, selected audits of their vendors and subcontractors, and surveillance of site constructor activities assures their conformance to the program requirements.

17.1.1.12 Control of Measuring and Test Equipment

During manufacturing, responsibility for the control of measuring and test equipment for all phases of measurement, inspection and monitoring of safety-related materials, components, and structures is delegated to WRD and UE&C. UE&C is, in addition, responsible for specifying the requirements for the control of measuring and test equipment at the construction site.

The WRD program for control of measuring and test equipment is detailed in WCAP-8370 and the UE&C program is detailed in UEC-TR-001.

These programs require that all organizations performing measuring or testing operations on safety-related materials, components, systems and structures have written procedures describing the calibration technique and frequency, maintenance, and control of all measuring and test instruments, tools, gages, fixtures, reference and transfer standards, and nondestructive test equipment which are used. Reference and transfer standards are required to have traceability to nationally recognized standards, or, where national standards do not exist, provisions are established to document the basis for calibration.

All measuring and test equipment is identified and the calibration test data is identified as to the equipment to which it applies. The contractors (UE&C and WRD) ~~and the Construction Manager~~ are required to conform to a calibration requirement of marking, labeling or tagging of measuring and test equipment indicating date of next calibration. UE&C and WRD are presently committed to this requirement in their Topical Reports UEC-TR-001 and WCAP-8370. Suppliers and subcontractors are required to a similar provision in their QA programs which are approved by the Contractors and ~~the Construction Manager~~. The calibration frequency shall depend on the *Constructor*. required accuracy, purpose, degree of usage, stability characteristics

required to provide quality-related documents which indicate the acceptability of the inspections and other quality functions performed by their quality personnel during surveillance of safety-related equipment.

e. Audits

YAEC, through a program of planned audits of WRD, UE&C, selected vendors, and site constructors shall assure overall conformance to the program requirements.

17.1.1.18 Audits

WRD and UE&C have a comprehensive system of planned and periodic audits to determine the effectiveness and implementation of their respective programs and those of their vendors. The WRD audit program is described in WCAP-8370 and the UE&C program is described in UEC-TR-001.

The Seabrook Station Quality Assurance Program includes a comprehensive system of planned and periodic audits carried out by the YAEC quality organization as activities are performed to verify compliance with the program requirements. The system provides data for a continuing evaluation of the program effectiveness.

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~~PCNH~~, YAEC, WRD and UE&C have established audit programs which will comply with 10CFR50, Appendix B, and ANSI 45.2.12, "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants". The program includes the following requirements:

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1. Performance of the following types of audits by ~~PCNH~~, YAEC, WRD and UE&C:

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- (a) Management audits which provide verification and evaluation of the Quality Assurance Program procedures, and activities to assure that they effectively comply with corporate policy and with codes, standards and applicable regulatory guides.
- (b) Internal audits by the Quality Assurance organization to provide independent verification and evaluation of quality-related procedures and activities to assure that they effectively comply with the QA program.
- (c) External audits performed on suppliers. These audits include verification and evaluation of the supplier's QA program, procedures, and activities to assure that they effectively comply with all aspects of the QA program and procurement requirements.



5. When a systematic, independent assessment of program effectiveness is considered necessary.
6. When it is necessary to verify implementation of required corrective action.

Surveillance at the construction site is conducted by the YAEC Field <sup>QA Surveillance</sup> ~~Quality Assurance Manager~~ and his staff. Personnel from the YAEC headquarter's Quality Assurance staff audit the activities of the YAEC Field QA staff and perform additional audits on contractor activities. <sup>Supervisor</sup>

~~An annual audit of the activities of the YAEC Quality Assurance Department, to determine compliance with the program requirements, is performed for PSNH management and the YAEC Vice President. The YAEC Quality Assurance Department performs audits of the YAEC internal operation to assure compliance with the requirements of the Seabrook Station Quality Assurance Manual.~~

These audits are preplanned and in accordance with written check lists or procedures and are conducted by appropriately trained personnel not having direct responsibility in the areas being audited. The audit schedule is established, based on the project status, safety and importance of the activities being performed, and the quality history of the audited activity. Audits are initiated early enough to assure effective quality assurance for ongoing activities during the initial design and procurement phases.

The program requires audit results to be documented, reviewed by or with the management responsible for the area audited, and appropriate action initiated to correct any deficiencies. The organization conducting the audit is responsible for conducting follow-up actions, as necessary, to confirm that corrective action is accomplished as scheduled. Follow-up action may be accomplished through written communication, reaudit, or other appropriate means. The audit report distribution includes the YAEC ~~Vice President~~ and ~~PSNH~~ management.

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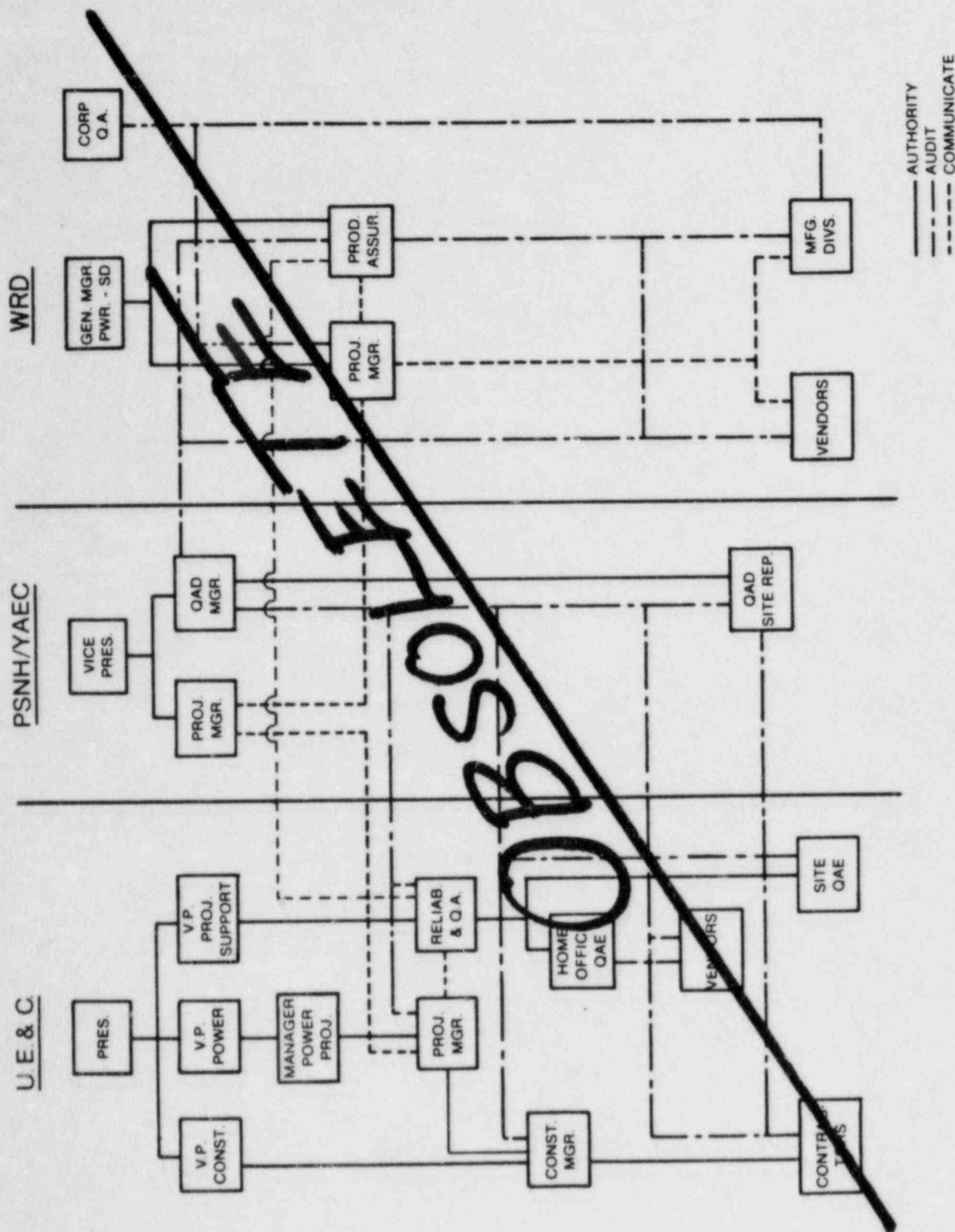
#### 17.1.2 Quality Assurance - United Engineers & Constructors Inc.

The Quality Assurance program for United Engineers and Constructors Inc. is described in Topical Report No. UEC-TR-001, "Quality Assurance Program" (latest revision), with the exception that field purchases are controlled via field purchasing procedures.

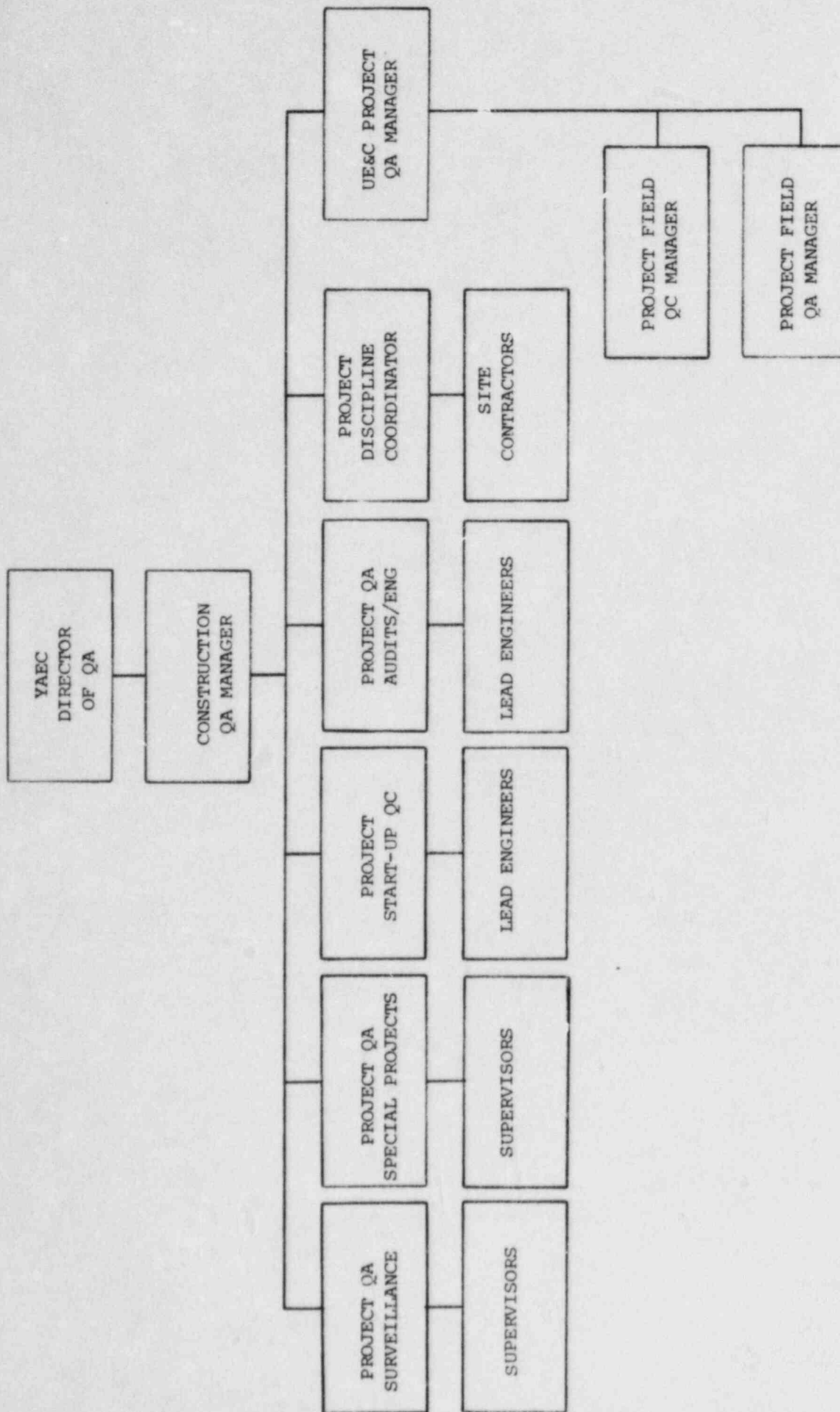
UEC-TR-001 has been reviewed by the NRC and evaluated as an acceptable reference for a license application.

#### 17.1.3 Westinghouse Quality Assurance Program

The original Quality Assurance Program implemented by Westinghouse for Seabrook was described in RESAR-3, Amendment 4, as referenced by PSAR Section 17.3. Over the course of performing the design and initial



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Figure 17.1-1