

INSTRUCTION SHEET
SUPPLEMENT NO. 9

ALVIN W. VOGTLE NUCLEAR PLANT
PRELIMINARY
SAFETY ANALYSIS REPORT

DO NOT REMOVE EXISTING WHITE PAGES

Replace Table of Contents pages S2 xxv thru S2 xxviii with pages S9 xxv thru S9 xxviii.

Replace Chapter 17 pages S2 17-1 thru S2 17-v with pages S9 17-1 thru S9 17-iii behind tab divider "17 Quality Assurance" and ahead of page 17-1.

Replace Chapter 17 pages S2 17.1-1 thru S2 17.1-39 and figures 17.1-1 thru 17.1-3 with pages S9 17.1-1 thru S9 17.1-39 and figures 17.1-1 thru 17.1-3 behind tab divider "17.1" and ahead of page 17.1-1.

Insert Chapter 17.3 pages S9 17.3-1 thru S9 17.3-29 behind tab divider "17.3" and ahead of page 17.3-1.

Replace Appendix 17A pages S2 17A-1 thru S2 17A-54 and figures 17A-1 thru 17A-7 with pages S9 17A-1 thru S9 17A-54 and figures 17A-1 thru 17A-7 behind tab divider "17A Quality Assurance - Bechtel Corporation" and ahead of page 17A-1.

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CHAPTER 17

QUALITY ASSURANCE

17.0 INTRODUCTION

This chapter describes the quality assurance program (QAP) developed by the applicant, Georgia Power Company (GPC), to provide assurance that the design, construction, preoperational testing, and operation of the Alvin W. Vogtle Nuclear Plant (VNP) conform with the applicable regulatory requirements, and with the design bases specified in the license application. This program represents a management control plan for the conduct of work by the major participating organizations, which are Georgia Power Company (GPC), Southern Company Services, Inc. (SCS), Bechtel Power Corporation (BPC), and Westinghouse Electric Corporation (W). The quality assurance programs for SCS, BPC, and W are described in separate appendices to this chapter.

The VNP quality assurance program described in Section 17.1 is the responsibility of GPC and shall be in force throughout design, construction, and preoperational testing of the plant. It shall be applicable to those structures, systems, and components identified as safety-related and listed in Section 17.3. The VNP quality assurance program for plant operation will be described in Section 17.2 and will be issued in the Final Safety Analysis Report (FSAR). The quality assurance program applies to the activities affecting the quality of safety-related items including designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, and testing. The VNP quality assurance program, as described in Section 17.1, complies with Appendix B of 10 CFR 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" (October 11, 1971), NRC Regulatory Guide 1.28, "Quality Assurance Program Requirements (Design and Construction)," and ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants."

The general duties and responsibilities of the primary organizations participating in the design, construction, and preoperational testing of the VNP are:

- A. Georgia Power Company - Applicant, plant co-owner, agents for other co-owners, construction manager, and operator of the VNP.
- B. Bechtel Power Corporation - Provides architect-engineering and supplier quality surveillance services. (See Appendix 17A.)

- S9
- C. Westinghouse Electric Corporation - Supplier of the nuclear steam supply system (NSSS) and selected design services. (See Appendix 17B.)
 - D. Southern Company Services, Inc. - The service and sister company of GPC is responsible for coordinating the licensing activity (Section 17.1.1.10) assuring through QA audits, the proper implementation and compliance of the quality program by the architect-engineer, and assuring the proper implementation and execution of the supplier surveillance program (Appendix 17C). SCS also participates in engineering and design activities of certain systems and structures under the direction of BPC. Safety-related interfaces of the design effort in which SCS is participating are the responsibility of BPC and are controlled by the BPC QA program (Appendix 17A).

A more detailed listing of the division of responsibility is contained in Sections 17.1 and 17.2.

DEFINITIONS

Definitions used in this section are in accordance with ANSI N45.2.10-1973, "Quality Assurance Terms and Definitions." The following additional terms and definitions also apply:

- A. Monitor: To watch over, observe, or examine a work operation. Results of the observations and examination may be recorded; however, sign-off responsibility is not included.
- B. Quality Assurance List (Q-List): A tabulation of those items in the VNP which are safety-related. (See definition below.) This tabulation is included in Section 17.3.
- C. Review: To examine any form of documentation for the purpose of establishing acceptability to the requirements of the function represented by the reviewer. Reviews may range from a thorough investigation to a spot check. Reviews are not generally hold points, but sign-off is required on the documents or records traceable to the documents.
- D. Safety-Related Item: Those items that contribute to the prevention or mitigation of the consequences of postulated accidents which could cause undue risk to the health and safety of the general public; generally, those items required to effect a safe shutdown; and

maintain the integrity of the nuclear process and containment barrier.

- E. Surveillance: A broad term pertaining to and including both monitoring and witnessing.

QUALITY ASSURANCE TITLES AND GENERAL RESPONSIBILITIES

This paragraph identifies and describes the titles and general responsibilities of QA functional assignments described in Section 17.1, and Appendices 17A and 17C. The title abbreviations given are used throughout the text of 17.1, 17A, and 17C.

GPC GMQA	Georgia Power Company General Manager of Quality Assurance and Radiological Health and Safety. Responsible for development and implementation of the GPC Corporate QA programs.	S2 S9 S2
VQAM	Vogtle Quality Assurance Manager. Reports to the Vice President and General Manager Vogtle Project for project direction and to the GPC GMQA for functional and administrative direction. Responsible for assuring the development and implementation of the Vogtle QA program.	S9 S2 S9
SCS MQA	Southern Company Services, Inc. Manager Quality Assurance. Responsible for verifying the development and implementation of QA programs for SCS.	S2 S9 S2
SCS PQAE	SCS Project Quality Assurance Engineer. Reports to the VQAM for project direction and to the SCS MQA for administrative and functional direction. Responsible to assure proper implementation of Bechtel VNP QA program and the supplier surveillance program.	S9 S2 S9
QASM	Quality Assurance Site Manager. Reports to the VQAM and is responsible for verifying the implementation of the quality assurance program at the construction site from commencement through preoperational testing.	S9 S2
BPC PQAE	Bechtel Power Corporation Project Quality Assurance Engineer. Receives project direction from the VQAM, project coordination from BPC Project Engineering Manager, functional and administrative direction from the BPC Division QA Manager. Responsible to assure implementation of the Bechtel VNP QA program.	S9 S2
PQAE	Georgia Power Company Project Quality Assurance Engineer. Reports to the VQAM and is responsible for the daily project interface. The PQAE is located with the project staff.	S9

SCS QAE Southern Company Services, Inc. Quality Assurance Engineer. Receives project and functional direction from the BPC PQAE, and project coordination from the SCS Project Engineering Manager. Administrative direction is received from the SCS MQA. Responsible to assure implementation of the Bechtel Quality Assurance Program for the SCS design participation activities.

17.1 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

17.1.1 ORGANIZATION

The VNP is designed, constructed and tested under the direction of a project organization as shown in Figure 17.1-1. The project organization reports to the VNP Project Management Board, composed of executives of GPC, SCS, BPC, Westinghouse and representatives of the Plant's co-owners. The Project Executive, who is a vice-president of GPC and vice-president of SCS, is a member of the Board. The vice-president and General Manager Vogtle Project (VPGM) is a joint employee of GPC and SCS and reports to the board. The Project Board Chairman is also the Chairman of the GPC Board of Directors and its Chief Executive Officer.

The VPGM heads the VNP project team consisting of functional group managers representing engineering/procurement, licensing, construction, startup, and quality assurance. He provides the necessary direction to the project team to ensure the satisfactory performance of program participants. The VPGM, in conjunction with the GPC VQAM, is responsible for the development of the quality assurance program by the team members, and for ensuring that the program is implemented in conformance with quality policies and procedures approved for the project.

The VQAM is assigned by and receives functional and administrative direction from the GPC GMQA. Project direction is provided by the VPGM.

Organization charts for GPC and the VNP project are shown in Figures 17.1-1, 17.1-2, and 17.1-3. Organization charts for BPC, W, and SCS are shown in separate appendices to this chapter.

17.1.1.1 Georgia Power Company

GPC, as the applicant, is responsible for the quality assurance program for the VNP. The GPC GMQA assures development and implementation of the GPC VNP quality assurance program. The GPC Executive Vice-President - Power Supply has specific responsibility for the quality assurance program for the VNP, and has the final authority on decisions affecting the program. The signature of the GPC Executive Vice-President - Power Supply on the authority page of the Quality Assurance Manual indicates program policy approval.

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17.1.1.2 Quality Assurance Committee

A Quality Assurance Committee (QAC) has been organized utilizing management of GPC and SCS, and acts as the advisory group to the GPC Executive Vice-President - Power Supply. The primary purposes of this committee are to gauge the effectiveness of the VNP quality assurance program and to recommend corrective measures to the GPC Executive Vice-President - Power Supply where necessary. The Committee is composed of the following GPC and SCS executives:

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- A. Executive Vice-President Power Supply - GPC - Chairman
- B. Senior Vice-President - Power Generation - GPC
- C. Senior Vice-President - Engineering, Construction, and Project Management - GPC
- D. Vice-President and Chief Engineer - GPC
- E. Vice-President and General Manager - Generating Plant Construction - GPC
- F. Vice-President and General Manager-Nuclear Generation - GPC
- G. Vice-President - Generating Plant Projects
- H. General Manager Quality Assurance and Radiological Health and Safety - GPC
- I. Executive Vice-President Engineering - SCS
- J. Vice-President - Nuclear - SCS

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The specific duties and responsibilities of the Quality Assurance Committee are:

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- A. Schedule four meetings a year or meet on call of any member.

- S9| B. Be informed of VNP quality assurance activities
S2| through their respective organizational channels, and
through various correspondence from the GPC GMQA such
as: NRC Directorate of Inspection and Enforcement
(DOIE) Inspection Reports; results of site audit
reports; results of design audit reports; and reports
of special problems.
- S9| C. Review* the major problems identified by the QA audit
reports of major contractors such as BPC, W, and
major construction contractors.
- D. Suggest agenda items for each meeting based on find-
ings from B and C above.
- E. Review* and concur with required corrective actions.
- F. Assure that all open items are corrected in a timely,
effective manner.
- G. Evaluate* the performance of the VNP quality assur-
ance program.
- H. Record the proceedings of each meeting.
- I. Maintain open-items listed for accountability of
unresolved business.
- J. Make recommendations for quality assurance program
improvement to the Chairman.

S2| 17.1.1.3 Georgia Power Company Quality Assurance Department

S9| The GPC GMQA, who heads the Quality Assurance Department, reports
directly to the Executive Vice-President - Power Supply of GPC,
who has authorized him to manage the Quality Assurance Department
and to assure the quality assurance program implementation in
S9| accordance with policies approved by the Executive Vice-President -
Power Supply, and to advise him of the program's effectiveness.
S9| The GMQA has been given authority by the Executive Vice-President -
Power Supply to stop, in a timely manner, work on the VNP side
S2| which is not being performed in accordance with the provisions of
the quality assurance program.

S9| The GMQA has a general office staff participating in the
administration of the quality assurance programs for the Hatch
and Vogtle nuclear plants. The GMQA staff includes an engi-
neering support section responsible for providing participation
in solving quality-related problems, oversight of suppliers,
regulatory and associated document review, assessment of trends,
and procurement QA activities.

*Review, as applied to the QAC, does not require a signature
from each member. Review, and evaluation, are evidenced by
QAC member input to meeting agendas and by the meeting minutes.

Specific duties and responsibilities of the GPC GMQA:

- A. Manages the GPC Quality Assurance Department. |S9
- B. Assures the development of the GPC quality assurance program to conform to approved policies. |S9
- C. Approves the GPC VNP Quality Assurance Manual and changes thereto. |S2
- D. Maintains close liaison with the VPGM staff through the VQAM to ensure that program policies and procedures are being implemented and enforced. |S2
|S9
|S2
|S9
- E. Keeps the Executive Vice-President informed verbally on routine matters, but reports significant items immediately, both verbally and in writing. In addition, major audit reports are forwarded to the Executive Vice-President, including summaries of audits by major contractors. |S2
|S9
|S9
- F. Informs management of quality assurance activities through distribution of audit reports and other correspondence. |S2

Qualifications for the GPC QA Department personnel meet the requirements of Regulatory Guide 1.146. |S9

S9| 17.1.1.4 VNP Project Management Board

S2| The project organization reports to the Project Management
 S9| Board, which is composed of senior executives of GPC, SCS,
 S9| BPC, Westinghouse, and representatives of the Plant's co-owners.
 S9| The Board reports to the Chairman of the GPC Board of Directors
 and Chief Executive Officer.

S2| 17.1.1.5 VNP Project Executive

S9| The Project Executive, who is the GPC Vice-President - Generating
 S9| Plant Projects and also a vice-president of SCS, is a member of
 S9| the Project Management Board and is the day-to-day contact between
 the Board and the VPGM.

S9| 17.1.1.6 VNP Vice President and General Manager
Vogtle Project (VPGM)

S9| The VPGM, jointly employed by GPC and SCS, is the overall Project
 S2| Manager, and is administrator of the architectural-engineering
 S9| contract. He has comprehensive line responsibility for design,
 S2| construction, licensing, procurement, startup, and other project
 S9| activities. The VPGM reports to the Project Management Board.

17.1.1.7 Vogtle Quality Assurance Manager (VQAM)

S9| The VQAM is responsible to assure that the approved quality
 S9| assurance programs are implemented by all project participants.
 S9| The VQAM will coordinate QA program activities among the mem-
 S9| bers of the VPGM staff and the QA personnel of participating
 S9| organizations responsible to assure implementation and fulfill-
 S9| ment of QA program requirements. He is assigned by, and receives
 functional and administrative direction and stop-work authority
 from, the GPC GMQA. Project direction comes from the VPGM.

S9| Duties and responsibilities of the VQAM include but are not
 limited to:

- S9| A. Manages the Vogtle QA organization.
- S2| B. Assures that satisfactory QA programs are established
 and maintained by VNP project participants, and prop-
 erly coordinated between the GMQA and VPGM.
- S9| C. Reviews and concurs with quality assurance programs
 of contractors (BPC, SCS, W and construction contrac-
 tors) including changes thereto prior to the start of
 work governed by such programs.

- D. Audits or verifies accomplishment of delegated audits of the QA programs of GPC, BPC, W, SCS, and suppliers of materials, equipment, or services, to ensure compliance to approved QA programs and procedures.
- E. Processes correspondence from NRC Directorate of Inspection and Enforcement.
- F. Reports to NRC those significant deficiencies defined in 10 CFR 50.55 (e) and/or 10 CFR 21.
- G. Assures that site activities conform to QA program requirements and procedures during construction and preoperational testing of the facility.
- H. Assures that audit, surveillance, and monitoring requirements are carried out on project quality related functions.
- I. Maintains and controls the VNP Project Quality Assurance Manual.
- J. Assures the proper implementation of the supplier quality surveillance functions/activities and changes thereto.

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17.1.1.8 VNP PROJECT QUALITY ASSURANCE ENGINEER (PQAE)

The Project Quality Assurance Engineer (PQAE) reports to the VQAM, and coordinates routine project QA activities with the VQAM.

Specific duties and responsibilities of the PQAE:

- A. Maintains overall surveillance of the project QA and makes daily reports on status to the VQAM.
- B. Provides assurance to the VQAM that project procedures, deficiency trends, program nonconformances, NRC concerns and QA regulations, and interpretation of QA requirements are in accordance with QA program commitments.

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17.1.1.9 VNP Quality Assurance Site Manager (QASM)

Located at the plant site and reporting to the VQAM, the QASM provides an independent review and evaluation of the implementation of the quality assurance program at the construction site from the commencement of construction through the preoperational testing of the facility. The QASM reports to the GPC VQAM and has authority from the VQAM to stop, in a timely manner, work which is not in compliance with specifications or procedures. The QASM supervises the QA Field Group, which is assigned work in the civil, mechanical, and electrical engineering disciplines.

Specific duties and responsibilities of the Quality Assurance Field Group (headed by the QASM) are to:

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- A. Prepare annual schedule of audits to be performed on construction site organizations and activities (GPC and its construction contractors).

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- B. Perform planned and periodic audits of construction site organizations and activities (GPC and its construction contractors).
- C. Provide the VQAM with weekly written activity reports.
- D. Maintain open-items list from NRC inspections and Quality Assurance field group audits, and follow up until resolved and closed out.
- E. Act as construction site contact for NRC DOIE personnel.
- F. Prepare reports of all audits and other pertinent activities and provide them to the VQAM.
- G. Monitor site daily inspection reports.
- H. Reviews and concurs with site contractor QA programs prior to implementation of work.

17.1.1.10 VNP Manager, Project Engineering and Licensing (MPEL)

The MPEL manages the engineering and licensing activities of Vogtle Project in supporting the needs of the project. Reporting to Vogtle VPGM, the MPEL's functions include the following:

- A. Management of project engineering and licensing activities.
- B. Monitor and evaluate Bechtel's performance and work plans in providing the proper engineering support to the project, and, if and where appropriate, initiate and direct the required corrective actions.
- C. Monitor and assure effectiveness of Bechtel-Westinghouse and Bechtel-Southern Company Services Project Engineering interfaces.

Reporting to this position are Bechtel Project Engineering Manager, Project Licensing Manager, and other staff engineers.

17.1.1.11 VNP BPC Project Engineering Manager

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The BPC has responsibility for architect-engineering and support activities. A Project Engineering Manager has been assigned by BPC for this function and reports to the MPEL. The quality assurance program for this work is described in Appendix 17A. The scope of work includes architect-engineering services, including plant design, procurement services for plant equipment, support to MPEL for the preparation of the PSAR and ER and the publication of the PSAR, management of engineering cost and schedule control support functions, supplier quality surveillance activities, and startup planning assistance to GPC.

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17.1.1.12 VNP Project Licensing Manager (PLM)

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The VNP PLM is responsible for coordination of licensing and the safety analysis reports for the VNP. The PLM receives project direction from the MPEL and is provided functional direction by the SCS Safety and Licensing Department. The PLM leads the preparation of submittals to the NRC, and serves as the project contact with the NRC Nuclear Reactor Regulatory Staff. The SCS Safety and Licensing Department supports, advises, and assists the PLM.

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17.1.1.13 VNP Project Construction Manager (PCM)

The PCM is responsible for construction management of the VNP and receives project direction from the VPGM. The GPC Construction Department provides functional direction to the PCM for construction management and performs no physical construction activities except for surveying and certain QC related functions. Physical construction activities are performed by individual contractors.

The PCM is responsible for management of the various site contractors and for developing and implementing the GPC field quality control program to control and ensure quality compliance of field construction activities. This program is organized and implemented by the Quality Control Section. The PCM is responsible for conducting construction site activities in accordance with the GPC Vogtle Quality Assurance Manual and the GPC VNP Field Procedure Manual.

The Field Engineering Support Subgroup and the Quality Control Group reporting to the PCM develops and implements procedures and instructions, which are approved by the PCM and the VQAM or QASM, to ensure that field construction, erection, and installation conform to approved specifications, drawings, codes, and other requirements. These groups develop the forms, check-lists, and other quality control documents necessary to control activities, and to demonstrate compliance with specified requirements. The QC Group consists of the following: the QC inspection subgroup, the document review section and the QC program section. The QC inspection subgroup consists of Civil, Mechanical and Electrical QC Sections. The Field Operations Group consists of three subgroups: (1) Field Engineering Support, (2) Field Construction Operations, and (3) Schedule and Budget. The Field Engineering Support Subgroup consists of civil, mechanical and electrical Project Sections, a Construction Survey Section, and a Project Welding Section. The Project Section Supervisors have specific responsibility for the development of quality control procedures. The QC Section Supervisors are responsible for assigning and supervising inspection activities related to their respective disciplines.

The Field Engineering Support Subgroup ensures that the latest approved drawings, specifications, and procedures are available and being used for construction. The engineering section implements the quality control procedures that cover document change control (including design change notices and field change

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requests). They participate in corrective action procedures on deviations reported by the inspection section or other quality control personnel, such as those employed by site contractors. The engineering section also performs field surveillance of work in progress to ensure that established procedures are producing quality work.

The inspection section performs the inspection activities required by the VNP quality assurance program in accordance with established quality control procedures. This includes inspection of the actual work being performed by contractor craftsmen. It also includes, but is not limited to, activities being performed by contractor quality control personnel and the material receipt, storage, and installation inspection of materials and equipment. Inspectors document their findings through the use of written reports in accordance with established procedures. These reports are submitted by the inspectors to the Document Review Section through their respective inspection supervision, with copies to appropriate persons in the engineering section who must take action on any discrepant items noted. All inspectors have individual immediate stop-work authority which they may exercise any time that quality is not being maintained.

S9 The Administrative Operations Group consists of an administrative operations subgroup (warehouse, human resources and field office sections), a document control section, a construction performance section, a site environmental section, a construction safety section and a fire protection section. Essentially, this group provides administrative support to GPC and/or contractor personnel and activities.

The Quality Control Group is functionally responsible for quality control activities related to the receipt and storage of materials and equipment. They rely on the Document Review Section for checking and certifying the technical and quality compliance of material and equipment with procurement requirements.

The Site Document Supervisor is responsible for the control and distribution of approved drawings, specifications, and construction quality control procedures.

The Document Review Supervisor collects and verifies availability of documents, and selectively reviews the quality assurance documentation required by documentation check-lists. The Document Review Supervisor also verifies that documentation packages are complete and on file at the plant site prior to erection or installation of material or equipment.

The schedule and budget subgroup is responsible for the implementation and maintenance of construction project control activities (schedules, budgets, etc.). This information is used to inform

management of pertinent data relative to monitoring and construction budgets and schedules.

17.1.1.14 VNP Plant Manager (PM)

The PM is responsible for the development and implementation of the initial test program. This program includes system flushing, construction acceptance testing, startup testing and preoperational testing. The PM receives functional and administrative direction from the GPC Vice-President and General Manager of Nuclear Generation and project activity direction from the VPGM. He ensures that turnover of plant systems and equipment takes place in accordance with approved startup procedures. Once turnover is achieved, the PM ensures that the various testing programs are implemented as described in the Startup Manual and approved testing procedures. The BPC provides startup assistance to the PM (Appendix 17A.1.6.4).

Reporting to the PM is the Assistant Plant Manager (APM). Reporting to the APM are the Superintendent of Maintenance, Superintendent of Plant Engineering Services, Superintendent of Operations, Materials Supervisor, Superintendent of Health Physics, and Quality Control Supervisor, and Superintendent of Administration.

17.1.1.15 VNP Project Administrative Manager (PAM)

The PAM, who receives functional and project direction from the VPGM, provides major administrative support to the VPGM. The PAM is responsible for developing, recommending, and securing project review and approval, and maintaining administrative procedures in a Project Policy Manual that describes and controls administrative activities that occur between major project entities. The PAM also maintains a master file, for GPC, of correspondence on all major project decisions.

17.1.1.16 VNP Project Procurement Manager (PPM)

The PPM, who receives project direction from the VPGM and functional direction from the Procurement and Materials Department, is responsible for assuring the coordination of all procurement activities and has direct responsibility for the implementation of the jobsite procurement function. The PPM, supported by the GPC Procurement and Materials Department, has responsibilities that include:

1. Supervising and maintaining procedures for the field purchasing function.
2. Providing procedures that control the review and approval of bidders lists and purchase recommendations.
3. Monitoring of overall procurement activities for the project and assuring that proper procurement procedures exist, and are implemented between GPC, BPC, and SCS.

17.1.1.17 VNP Project Compliance Coordinator (PCC)

The PCC, who receives functional and project direction from the VPGM, serves as the single point of contact between audit groups and appropriate project groups to assist in resolution of all quality-related audit and/or evaluation findings and licensing problems.

17.1.2 QUALITY ASSURANCE PROGRAM

GPC and other companies participating in the design, construction, and preoperational testing of the VNP are committed to a quality assurance program that will result in a safe and reliable plant throughout its design life and which will comply with the quality assurance criteria of 10 CFR 50, Appendix B.

A Q-List has been prepared to identify items to which the quality assurance program applies. This Q-List, appearing in Section 17.3, may be revised during the design and construction of the VNP to meet the intent of regulatory requirements.

The quality assurance program is supported by written policies and procedures governing quality-related functions and activities. GPC has published a Quality Assurance Manual, which contains or references the general procedures and instructions governing the activities of the GPC and the interfacing procedures with participants in the design, construction, and preoperational testing of the VNP. In addition, each participant is required to develop and/or implement a quality assurance program commensurate with the activity to be performed.

For equipment, material, and/or services procured by GPC from BPC-prepared specifications, the qualified supplier's quality assurance programs must be reviewed and accepted by BPC or GPC after resolving any quality exceptions with BPC. For safety-related materials and/or services requiring onsite work by the supplier, the supplier's quality assurance programs must be reviewed and accepted by the VQAM or QASM prior to start of onsite work. (See Subsection 17.1.4.) The accepted quality assurance programs of site contractors become an integral part of the VNP quality assurance program by reference in the GPC VNP Quality Assurance Manual.

The GPC VNP Quality Assurance Manual sets forth the authority, organizational arrangement, and policies which govern the VNP quality assurance program. This manual contains or references general procedures for design, construction, and preoperational testing applicable to VNP. Detail procedures are referenced, where appropriate, in the GPC VNP Quality Assurance Manual, and

are prepared, approved, and controlled by the organization responsible for implementing them. The GPC VNP Quality Assurance Manual references applicable portions of the following documents:

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|----|---|----|
| A. | GPC Quality Assurance Department Procedures | S2 |
| B. | VNP Project Policy Manual | S2 |
| C. | GPC VNP Field Procedure Manual (General, Field Civil, Field Mechanical, and Field Electrical) | S9 |
| D. | SCS Engineering Policy and Procedures Manual (Section 7) | S2 |
| E. | BPC VNP Project Reference Manual | |
| F. | VNP Project Startup Manual (Preoperational Testing) | |

A tabulation of GPC procedures, presented in Tables 17.1-1 and 17.1-2, provides a cross-reference to the 10 CFR 50, Appendix B criteria which each procedure is intended to satisfy. These procedures are either contained or referenced in the GPC VNP Quality Assurance Manual. The GPC Quality Assurance Department Procedures and the GPC VNP Quality Assurance Manual have been released for use. The GPC VNP Field Procedures Manual contains those procedures which are needed at the commencement of construction activities and in establishing the site QC program. Additional procedures will be prepared and released as the need arises; however, no work governed by the above documents will be allowed to begin unless it is governed by a properly coordinated, approved procedure.

GPC QA program is designed to conform with the following Regulatory Guides and ANSI Standards.

Regulatory Guides

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|------|---|----|
| 1.28 | "Quality Assurance Program Requirements (Design and Construction) (formerly Safety Guide 28)" (6/7/72). | S9 |
| 1.30 | "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment (formerly Safety Guide 30)" (8/11/72) | |

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- 1.37 "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants" (3/16/73)
- 1.38 "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants" (3/16/73)
- S9| 1.39 "Housekeeping Requirements for Water-Cooled Nuclear Power Plants" Rev. 2, Sept. 1977.
- 1.58 "Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel" (8/73)
- S9| 1.144 Auditing of Quality Assurance Programs for Nuclear Power Plants (1/79)
- 1.146 Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (8/80)

ANSI Standards

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ANSI/ASME N45.2.5-1978, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations, during the Construction Phase of Nuclear Power Plants"

ANSI N45.2.9-1973, "Requirements for Collection, Storage and Maintenance of Quality Assurance Records for Nuclear Power Plants" (Draft 11, Rev. 0, March 1973)

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ANSI N45.2.11, "Quality Assurance Requirements for the Design of Nuclear Power Plants" (Draft 2, Rev. 2, May 1973)

AEC Extracts from ANSI N45.2.13, "Supplementary Quality Assurance Requirements for Control of Procurement of Equipment Materials, and Services for Nuclear Power Plants" (Draft dated May 31, 1973)

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While the above Regulatory Guides and ANSI Standards are used as guides and references for the development of GPC procedures, there are cases where full compliance will not be possible. In the case of Regulatory Guide 1.58 (ANSI N45.2.6), it is felt that there are not enough experienced personnel available to meet the requirements. This shortage of experienced people is due primarily to the relatively short history of our particular industry. The GPC Construction Department presently has under development and in partial operation a training program for field engineers and inspectors. This program has been developed based on our experience in the construction of

Edwin I. Hatch Nuclear Plant and the contents of the Regulatory Guide. It is felt that this effort is a reasonable approach to qualifying personnel and is in compliance with the intent of the guide.

In other areas where complete compliance with the guides or standards is impossible, a similar approach will be used.

17.1.2.1 Training and Indoctrination

Training of personnel directly involved in quality assurance activities is accomplished primarily by indoctrination on the VNP quality assurance program in specific areas relating to their assigned duties. QA personnel are given training in applicable quality assurance and technical areas and meet the requirements of Regulatory Guide 1.146. | S9

In addition, a training program for GPC site Quality Control personnel has been developed. This program ensures that personnel performing inspection are adequately trained in the performance of their assigned activities which are set forth in detail in the GPC VNP Field Procedure Manual. GPC construction personnel involved in the development of the training program are fully cognizant of the contents of the Regulatory Guides and all associated codes and standards. | S9

17.1.3 DESIGN CONTROL

The GPC assures that the design activities of BPC are performed in accordance with procedures which ensures a planned, controlled, and orderly accomplishment of work. (See Section 17A.3.) The VQAM verifies compliance to applicable procedures by observing the design audits of BPC, SCS, and W. (See Subsection 17.1.18.) | S9

Field change requests originated by the GPC Field Construction Group at the construction site are governed by an appropriate procedure. These changes are in the form of requests to BPC or SCS, as appropriate, for revisions to approved drawings or specifications, and require, as applicable, BPC or SCS approval. The procedure also provides control through these design changes to ensure that the work accomplished at the construction site conforms to the approved engineering drawings and specifications. The QASM audits this activity to verify compliance with the Field Procedure Manual. (See Subsection 17.1.18.) | S9

Table 17.1-1

GPC VNP QUALITY ASSURANCE MANUAL APPLYING THE
REQUIREMENTS OF 10 CFR 50, APPENDIX BINTRODUCTION

S2 | Discusses the purpose and scope of the manual; briefly outlines major participating organizations and associated responsibilities; lists definitions, abbreviations, and referenced documents.

I. ORGANIZATION

S2 | Discusses the organization for the design, construction, and testing of the facility; describes the relationships among the GPC, the VNP project, SCS, BPC, W; outlines general requirements for organizations participating in the VNP.

II. QUALITY ASSURANCE PROGRAM

S2 | Establishes the QA program for the GPC VNP; sets forth GPC QA program policy and requirements for VNP contractors; defines authority of GPC GMQA and VQAM, S9 | establishes effectivity and documentation; outlines QA program control, transfer to operational QA S2 | program, training and indoctrination, QA program review.

III. DESIGN CONTROL

S2 | Outlines GPC VNP policy and requirements for the control of design activities; defines responsibilities of the major participating organizations; lists the implementing procedures.

IV. PROCUREMENT DOCUMENT CONTROL

S2 | Outlines GPC VNP policy and requirements for the preparation, review, approval, issuance, and control of procurement documents; defines responsibilities of the major participating organizations; lists the implementing procedures.

V. INSTRUCTIONS, PROCEDURES, AND DRAWINGS

S2 | Outlines GPC VNP policy and requirements for instructions, procedures, and drawings which describe activities affecting quality; defines responsibilities of the major participating organizations; lists the implementing procedures.

Table 17.1-1 (Continued)

GPC VNP QUALITY ASSURANCE MANUAL APPLYING THE
REQUIREMENTS OF 10 CFR 50, APPENDIX B

VI. DOCUMENT CONTROL

Outlines GPC VNP policy and requirements for the control of documents affecting quality to ensure that latest approved information is available; defines responsibilities of the major participating organizations; lists the implementing procedures.

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VII. CONTROL OF PURCHASED MATERIALS, EQUIPMENT, AND SERVICES

Outlines GPC VNP policy and requirements for assuring that material, equipment, and services conform to approved procurement documents; defines responsibilities of the major participating organizations; lists the implementing procedures.

S2

VIII. IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Outlines GPC VNP policy and requirements for identification and traceability of materials, parts, and components throughout manufacture and use; defines responsibilities of the major participating organizations; lists the implementing procedures.

S2

IX. CONTROL OF SPECIAL PROCESSES

Outlines GPC VNP policy and requirements for control of welding, heat treating, nondestructive testing, and other special processes; defines responsibilities of the major participating organizations; lists the implementing procedures.

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X. INSPECTION

Outlines GPC VNP policy and requirements for an inspection program of activities affecting quality; defines responsibilities of the major participating organizations; lists the implementing procedures.

S2

Table 17.1-1 (Continued)

GPC VNP QUALITY ASSURANCE MANUAL APPLYING THE
REQUIREMENTS OF 10 CFR 50, APPENDIX B

S2 | XI. TEST CONTROL

Outlines GPC VNP policy and requirements for a testing program to verify that structures, systems, and components will perform satisfactorily in service; defines responsibilities of the major participating organizations; lists the implementing procedures.

S2 | XII. CONTROL OF MEASURING AND TEST EQUIPMENT

Outlines GPC VNP policy and requirements for a program to assure that measuring and test equipment conform to specified accuracy standards; defines responsibilities of the major participating organizations; lists the implementing procedures.

S2 | XIII. HANDLING, STORAGE, AND SHIPPING

Outlines GPC VNP policy and requirements for a program to control the handling, storage, shipping, cleaning, and preservation of materials and equipment to prevent damage or deterioration; defines responsibilities of the major participating organizations; lists the implementing procedures.

S2 | XIV. INSPECTION, TEST, AND OPERATING STATUS

Outlines GPC VNP policy and requirements for the identification, by use of suitable means, of the status of inspection and tests performed upon items in the plant; defines responsibilities of the major participating organizations; lists the implementing procedures.

S2 | XV. NONCONFORMING MATERIALS, PARTS OR COMPONENTS

Outlines GPC VNP policy and requirements for a program to control materials, parts, or components which do not conform to specified requirements; defines responsibilities of the major participating organizations; lists the implementing procedures.

Table 17.1-1 (Continued)

GPC VNP QUALITY ASSURANCE MANUAL APPLYING THE
REQUIREMENTS OF 10 CFR 50, APPENDIX B

XVI. CORRECTIVE ACTION

Outlines GPC VNP policy and requirements for a program to identify and correct conditions adverse to quality; defines responsibilities of the major participating organizations; lists the implementing procedures.

S2

XVII. QUALITY ASSURANCE RECORDS

Outlines GPC VNP policy and requirements for a program to furnish and maintain records of the evidence of activities affecting quality; defines responsibilities of the major participating organizations; lists the implementing of procedures.

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XVIII. AUDITS

Outlines GPC VNP policy and requirements for a program of planned and periodic audits to verify compliance with all aspects of the VNP QA program; defines responsibilities of the major participating organizations; lists the implementing procedures.

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NUCLEAR REGULATORY COMMISSION 10 CFR 50, APPENDIX B		RELATION TO NUCLEAR REGULATORY COMMISSION 10 CFR 50, APPENDIX B QUALITY ASSURANCE CRITERIA FOR NUCLEAR POWER PLANTS AND FUEL REPROCESSING PLANTS, OCTOBER 1971.	
NRC CRITERIA REMARKS	SUBJECT	QAM SEC	QA DEPARTMENT PROCEDURE MANUAL
I	ORGANIZATION	1	ORGANIZATION DIVISION QA-01-01 ORGANIZATION AND RESPONSIBILITIES OF THE QA DEPARTMENT
II	QUALITY ASSURANCE PROGRAM	2	QA-02-01 PLANNING AND SCHEDULING - QA OFFICE ACTIVITIES
III	DESIGN CONTROL	3	QA-02-02 TIMELY REPORTING TO NRC QA-02-03 PROCEDURE/DOC REVIEW
IV	PROCUREMENT DOCUMENT CONTROL	4	PERSONNEL & TRAINING DIVISION QA-03-01 PERSONNEL BACKUP PROCEDURE
V	INSTRUCTIONS, PROCEDURES & MP DRAWINGS	5	QA-03-02 TRAINING PROCEDURE - QA DEPARTMENT
VI	DOCUMENT CONTROL	6	QA-03-05 QUALIFICATION OF AUDITORS DOCUMENT HANDLING DIVISION
VII	CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	7	QA-04-01 QA MANUAL CONTROL/REVISION PROCEDURE
VIII	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	8	QA-04-02 SIGNIFICANT DEFICIENCY REPORTING
IX	CONTROL OF SPECIAL PROCESSES	9	QA-04-03 INQUIRY SPECIFICATION REVIEW APPROVAL PROCEDURE
X	INSPECTION	10	QA-04-04 PROPOSAL AND REQUESTION REVIEW APPROVAL PROCEDURE
XI	TEST CONTROL	11	QA-04-06 QA REVIEW APPROVAL PROCEDURE
XII	CONTROL OF MEASURING AND TEST EQUIPMENT	12	QA-04-09 NRC CORRESPONDENCE ROUTING
XIII	HANDLING, STORAGE AND SHIPPING	13	QA-04-11 MASTER FILE CHECKOUT PROCEDURE
XIV	INSPECTION, TEST AND OPERATING STATUS	14	QA-04-12 QA DEPARTMENT PROCEDURE MANUAL CONTROL
XV	NONCONFORMING MATERIAL, PARTS AND COMPONENTS	15	QA-04-13 PROCEDURE PREPARATION AND CONTROL
XVI	CORRECTIVE ACTION	16	QA-04-15 QA FILING
XVII	QUALITY ASSURANCE RECORDS	17	AUDIT INSPECTION DIVISION QA-05-01 FIELD AUDITS
XVIII	AUDITS	18	QA-05-02 CORPORATE AUDITS QA-05-12 NRC OPEN ITEM CONTROL (QA FIELD OFFICE) QA-05-16 STOP WORK ORDERS QA-05-17 SURVEILLANCE VMP FIELD CONSTRUCTION MANUAL ADMINISTRATIVE PROCEDURES QA-05-01 ORGANIZATION AND RESPONSIBILITIES QA-05-02 QUALIFICATION AND TRAINING OF PERSONNEL QA-05-03 PERSONNEL BACKUP QA-05-04 PROCEDURE PREPARATION AND CONTROL QA-05-05 SUPPLIER/CONTRACTOR QUALIFICATION

Table 17.1-2 (Continued)
GEORGIA POWER COMPANY VOGTLE NUCLEAR PLANT
QUALITY ASSURANCE/QUALITY CONTROL

NUCLEAR REGULATORY COMMISSION 10 CFR 50, APPENDIX B		RELATION TO	
NUC CRITERIA	STRUCT	QUALITY ASSURANCE	QUALITY CONTROL
I ORGANIZATION	1		
II QUALITY ASSURANCE PROGRAM	2		
III DESIGN CONTROL	3		
IV PROCUREMENT DOCUMENT CONTROL	4		
V INSTRUCTIONS, PROCEDURES AND DRAWINGS	5		
VI OUTGOING CONTROL	6		
VII CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	7		
VIII IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	8		
IX CONTROL OF SPECIAL PROCESSES	9		
X INSPECTION	10		
XI TEST "CONTROL"	11		
XII CONTROL OF MEASURING AND TEST EQUIPMENT	12		
XIII HANDLING, STORAGE AND SHIPPING	13		
XIV INSPECTION, TEST AND OPERATING STATUS	14		
XV NONCONFORMING MATERIAL, PARTS AND COMPONENTS	15		
XVI CORRECTIVE ACTION	16		
XVII QUALITY ASSURANCE RECORDS	17		
XVIII AUDITS	18		

GENERAL QUALITY CONTROL PROCEDURES	
NONCONFORMANCE REPORTING AND CORRECTIVE ACTION	
SUSPENSE CONTROL	
RECEIVING INSPECTION	
CLEANING	
HANDLING AND STORAGE	
MATERIAL IDENTIFICATION AND STATUS CONTROL	
SUPPLIER SURVEILLANCE	
SUBCONTRACTOR SURVEILLANCE	
INCIDENT REPORTING	
WORK STOPPAGE	
CALIBRATION AND CONTROL OF TEST AND MEASURING EQUIPMENT	
PREPARATION OF SURVEILLANCE INSPECTION PLANS	
DOCUMENTATION CONTROL PROCEDURES	
DRAWING AND DESIGN CHANGE REQUESTS CONTROL	
SUPPLIER DOCUMENT CONTROL	
RECORDS AND FILING	
DOCUMENT REPRODUCTION AND DISTRIBUTION	
TECHNICAL LIBRARY	
MAIL HANDLING	
CIVIL GROUP	
EARTHWORK, BACKFILL AND ROCK REMOVAL	
SURVEILLANCE AND CONTROL OF BLASTING	
CONCRETE	
REINFORCING STEEL	
INSPECTION, TESTING AND CONTROL OF CAWELDS FOR REINFORCING STEEL	
STRUCTURAL AND MISCELLANEOUS STEEL	
CONTAINMENT LINER SURVEILLANCE	
POST TENSIONING	
SPECIAL OPENINGS	
DISCHARGE WATER CONTROL	
DEEP WATER CONTROL	
AIR GAP FABRICATION AND INSPECTION	
MECHANICAL GROUP PROCEDURES	
PIPING INSTALLATION	
MECHANICAL EQUIPMENT INSTALLATION	
UNDERGROUND PIPING INSTALLATION	
FIELD FABRICATION OF PIPING	
ELECTRICAL GROUP PROCEDURES	
CABLE PULLING AND CABLE TERMINATION	
INSTALLATION AND INSPECTION OF ELECTRICAL EQUIPMENT	
INSTALLATION OF ELECTRICAL INSTRUMENTATION AND CONTROLS	
RACEWAY INSTALLATION	
CABLE TRAY AND CABLE TRAY SUPPORTS	
STARTUP MANUAL	
I DESCRIPTION	
II ORGANIZATION	
III CONDUCT OF TESTING	

17.1.4 PROCUREMENT DOCUMENT CONTROL

S9 The GPC assures that the procurement activities are performed in accordance with procedures which ensure preparation of complete, accurate procurement documents, and the evaluation and selection of suppliers. (See Section 17A.4.)

S9 The responsibilities of BPC in procurement document control encompass the preparation, review, approval, and control of the engineering requisition. At this point, the GPC receives the requisition from BPC, transfers the information unchanged to a GPC purchase order, and proceeds with the administrative actions of procurement. A copy of the GPC purchase order is forwarded to BPC for information and verification.

S2 The VQAM verifies compliance to BPC procedures by observing the design audits of BPC conducted by the SCS PQAE. (See Subsection 17.1.18.) He also verifies that the associated clerical and administrative actions performed by the GPC are such that requisitions from BPC are received and controlled, and that purchase orders are accurately prepared and issued. In certain identified instances the GPC General Office or Construction Field Office prepares procurement documents. For safety-related materials, the technical and QA requirements have been previously issued for the item by BPC. The QA requirements are established in accordance with the GPC QA program, and are included in the GPC bid package. GPC evaluates the bids, prepares the requisition, and awards the purchase order after resolving with BPC any technical and/or QA exceptions noted by the vendor.

S9 The QASM audits this activity to verify compliance with appropriate procedures of the GPC Field Construction Group. (See Subsection 17.1.18.)

17.1.5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

S9 The GPC VNP Quality Assurance Manual outlines the policies and general procedures governing the GPC General Office and field forces in the implementation of the VNP quality assurance program. In addition, the interfacing relationships among GPC, SCS, BPC, and W are defined. The specified GPC organizations performing work on the VNP program are required to prepare and approve their detailed office procedures describing their functions and duties.

S9 The VQAM assures that SCS, BPC, W, and construction contractors have procedures governing their activities on the VNP program. These procedures are required to comply with the applicable criteria in 10 CFR 50, Appendix B, and address the design and procurement phases of the VNP program.

The VQAM verifies through the audit program (see Subsection 17.1.18), the existence of instructions, procedures, and drawings which implement the 18 quality assurance criteria of Appendix B.

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At the VNP construction site, the GPC Field Construction Group and the various construction contractors are required to have appropriate procedures outlining the manner in which their work is conducted. The GPC Power Generation Department has the VNP Startup Manual and the preoperational test procedures for governing the initial test program for the VNP. The QASM audits the VNP site activities to verify the existence of procedures and instructions containing acceptance criteria which implement the 18 criteria of 10 CFR 50, Appendix B. (See Subsection 17.1.18.)

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The foregoing procedures are made part of the quality assurance program by appropriate reference in the GPC VNP Quality Assurance Manual.

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17.1.6 DOCUMENT CONTROL

The GPC QA Department Office Procedure Manual contains a procedure entitled, "Quality Assurance Manual Control/Revision Procedure," which is used to ensure that manual holders receive revisions. The procedure provides the following actions:

- A. New or revised drafts or sections of the GPC VNP Quality Assurance Manual are given by the originator to the VQAM for comment and coordination with affected organizations at GPC, SCS, and BPC.
- B. After resolution of comments, the change is given to the responsible organization by the VQAM for concurrence.
- C. The change is normally retained until the next scheduled manual revision. However, should the change be required for immediate implementation, a copy is marked, "DO NOT USE AFTER _____," and transmitted to the affected party with instructions to destroy it upon receipt of formal revision, or at the expiration date, whichever comes first.
- D. The GPC VNP Quality Assurance Manual contains an active page list which indicates the revision status of every page. The manual holder knows at any time whether he has a complete, current manual.

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- E. Each GPC VNP Quality Assurance Manual is numbered and assigned to a specific individual. The manual holder is required to return a receipt notice upon receiving a change.

S9| The VQAM assures that SCS, BPC, and W, and their contractors have an equally effective document system for controlling, as applicable, design specifications, engineering drawings, quality assurance manuals, office procedures, requisitions, and purchase orders.

S9| The VQAM verifies compliance to SCS, BPC, and W procedures by observing the design audits. (See Subsection 17.1.18)

S9| During the construction phase of the VNP, engineering drawings, specifications, and Quality Assurance Manual revisions are received at the VNP construction site by the GPC Document Control Supervisor. The Document Control Supervisor has a procedure, approved by the PCM, which governs the control of these documents, and which requires as a minimum:

- A. Prompt and positive notification of applicable site contractors upon receipt of documents.
- S9| B. Signed record by applicable site contractors indicating receipt of documents.
- S9| C. Record indicating destruction of voided documents.
- D. Periodic checks against a master drawing list or other sources for assurance that the latest data is being used.

S9| Construction site contractors are required to have document control procedures, which will ensure that current data is being used at all times. During the initial test program of the VNP, three documents govern:

- A. The Startup Manual, approved and controlled by the PM, sets forth the general policies and procedures for the initial test program. This manual references the detailed procedures for checkout and acceptance of specific systems and equipment. Procedures relating to the Construction Department are also approved by the PCM.
- S9| B. The Plant Procedures Manuals contains procedures for plant operation and maintenance. Procedures from these manuals may be used during the initial test program as referenced in the Startup Manual. These manuals are controlled by the PM.

- C. The Preoperational Test Procedures set forth the detailed procedures for the preoperational testing of specific systems and equipment. These procedures are reviewed and approved by the APM and test review board (composed of key members of the plant staff and site contractor representatives, as applicable).

The Startup Manual contains a procedure for the control of the initial test program documents, including a method for ensuring that out-of-date documents are destroyed. The QASM audits the construction site activities to verify that adequate procedures are available for control of documents, and to verify adherence to these procedures.

17.1.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

The GPC requires BPC to furnish a list of suppliers which have been determined by BPC to be capable of providing acceptable, quality products. The list of suppliers is submitted by BPC to the GPC for approval. Review by GPC is based on experience with suppliers on previous contracts and on other information sources. Proposals, bid evaluations, and recommendations to purchase by BPC are approved by GPC, based on the same criteria. For procurements initiated by the GPC General Office and Construction Field Office, bid lists are prepared by GPC to the above criteria.

The VQAM verifies through audits (see Subsection 17.1.18) that GPC and BPC are following procedures which ensure that only qualified suppliers are selected to provide material, equipment, or services for the VNP. The VQAM receives copies of quality surveillance plans, schedules, and reports generated by the SCS QA Department or the BPC Procurement Supplier Quality Department. These documents are evaluated by the VQAM and questionable areas are resolved through the SCS PQAE. The VQAM, or his designee, audits the SCS quality assurance program (see Subsection 17.1.18) to verify compliance with procedures for the management of the supplier quality surveillance program. At the construction site, the QC Inspectors inspect procured materials for shipment damage and identification. Receiving, storing, and handling of materials and equipment at the plant site are performed in accordance with approved procedures to preclude acceptance of material that does not conform to the purchase documents. QC and warehouse personnel ensure that correctly identified, acceptable materials are properly stored and controlled to prevent damage or deterioration. The GPC QC Inspectors complete the receiving inspection forms for material or equipment receipt. It is the responsibility of the Engineering Supervisors to initiate corrective action. QC Inspectors control damaged or nonconforming materials or equipment according to approved procedures. The Document

Review Supervisor onsite verifies that documentation is complete and on file at the plant site prior to erection or installation of material or equipment.

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The QASM audits the construction site activities to ensure that adequate procedures exist for control of incoming material and equipment, and that these procedures are being followed.

|S9

17.1.8 IDENTIFICATION AND CONTROL OF MATERIAL, PARTS, AND COMPONENTS

S9| The GPC requires that BPC design documents outline identification and control requirements for materials, parts, and components. BPC ensures that supplier's quality assurance programs and procedures incorporate identification and control requirements. The VQAM, through monitoring of reports and participating in selected audits of suppliers, verifies that required identification and control requirements are implemented during manufacture.

S9| The VQAM, by observing selected audits, verifies compliance to BPC, SCS, and W procedures for item identification and control. (See Subsection 17.1.18.)

S9| Control of materials, parts, and components at the construction site is governed by approved procedures. The QC Inspectors, while receiving materials, parts, or components, are required by their internal procedures to determine that these items are properly identified, and to verify that supporting documentation conforms to item identification.

S9| The QASM audits the GPC Field Construction Group and site contractors to verify that adequate procedures are available for item identification and control, and to verify adherence to these procedures.

17.1.9 CONTROL OF SPECIAL PROCESSES

S9| The VQAM assures, through audits, that BPC design documents outline requirements for the control of special processes such as welding, nondestructive examination, heat treating, and cleaning. In addition, BPC ensures that supplier's quality assurance programs and procedures incorporate requirements for the control of special processes. The VQAM, through monitoring of reports and participating in selected audits of suppliers, verifies that required control of special processes is implemented during manufacture.

S9| During plant construction, control of special processes are governed by site contractor's procedures approved by BPC. The GPC QC Group monitors special process activity to ensure that approved procedures are followed. Internal procedures of the GPC Field Construction Group require that the following areas are checked for compliance:

- A. Training, testing, and certification of operator and inspection personnel involved with special processes.

- B. Certification of equipment used in performing special process operations.
- C. Documentation of Non-Destructive Examination (NDE) and other test results as applicable.

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The QASM audits the construction site activities to verify that adequate procedures are available to site contractors and the GPC Field Construction Group for the control of special processes and to verify adherence to these procedures.

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17.1.10 INSPECTION

The GPC requires that BPC procurement documents outline inspection requirements for procured items. BPC ensures that supplier's quality assurance programs and procedures incorporate inspection requirements. The VQAM, through monitoring of reports and participating in selected audits of suppliers, verifies that inspection requirements are implemented during manufacture.

S9

As described in Section 17.1.7, suppliers' programs are subject to quality surveillance by the SCS QA Department or the BPC Procurement Supplier Quality Department.

The GPC Construction Department is responsible for the inspection of work performed at the construction site to ensure that it complies with the applicable contracts, purchase orders, specifications, and drawings. The effort is carried out by the GPC Field Construction Group as set forth above and under Subsection 17.1.1.11.

The GPC Field QC Inspectors are required by the PCM to have inspection procedures that outline the manner in which the inspections are conducted. These include checklists, instructions for performing the inspection, acceptance and rejection criteria where applicable, appropriate sign-off requirements, and reporting instructions. These procedures are prepared by the QC and Engineering Supervisors and approved by the PCM and the VQAM or QASM prior to start of any work.

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Inspection activities, as required, may be performed by independent testing laboratories. This work is also under the surveillance of the GPC Field Construction Group. The QASM audits inspection and testing activities on a preplanned, VQAM-approved schedule to ensure that approved procedures are being utilized, and that the field quality control organization is effectively performing its assigned functions.

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17.1.11 TEST CONTROL

The VNP testing program is organized into the following categories:

- S9|
- S2|
- S9|
- A. Contractor Tests - GPC contracts and the specifications prepared and approved by BPC require, as necessary, that performance or prototype tests be performed by contractors on specific materials and equipment purchased from them.
- B. Construction Proof Tests - The procedures manuals of the GPC Field Construction Group and site contractors require that specific testing be performed onsite during construction of the plant. Such tests include rebar splice tests, concrete tests, and other special tests as may be required. The Field QC Group performs surveillance of these tests.
- C. Construction Acceptance Tests - Construction acceptance tests are the responsibility of the PM. They are conducted as part of the initial test program. Specific areas checked during the inspection/test phase include:
- S9|
1. Testing as required to verify that equipment and components are ready for preoperational testing.
 2. Verify that component performance and setpoints are in accordance with design.

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If problems are exposed during construction acceptance testing, the Power Generation Department may return the systems to the PCM, to initiate the proper corrective action.

- D. Preoperational Testing - The basic responsibility for preoperational testing, and the preparation of written procedures covering these tests, has been assigned to qualified personnel reporting to the PM. Procedures are developed to document acceptance of a component, system, or structure from construction, as well as the status of inspections and tests performed. Preoperational testing is conducted by using procedures approved by the APM. Each written test procedure delineates the prerequisites that must be satisfied before the test is begun, the instrument calibration and cleanliness status, a step-by-step sequence for conducting the test, the criteria for determining the acceptability of the test results, and the means for documenting and retaining the results of the tests, which become a part of the permanent record of the VNP Project. A tagging procedure is developed which indicates the operating status of systems and components of the VNP to prevent inadvertent operation.

The VNP operating staff, under the direction of the PM, a member of the GPC Power Generation Department, is responsible for the final operational testing and adjusting of equipment, systems, and controls. This group is advised and assisted by the equipment vendor's startup engineer and specialists and, where necessary, by BPC and consultants. The procedures developed by these individuals ensures that the safety-related components and structures are inspected, tested, and operated in accordance with Appendix B of 10 CFR 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."

The VQAM participates in audits of BPC as necessary to verify that design documents specify the necessary tests to demonstrate that structures, systems, and components perform satisfactorily in service. The VQAM verifies through audits that suppliers are satisfactorily performing tests in accordance with design requirements. (See Subsection 17.1.18.)

The QASM audits the GPC Field Construction Group, site contractors, and the Power Generation organization selectively to verify that adequate procedures are available for construction and preoperational testing, and to verify adherence to these procedures. The VQAM audits the QASM activities to assure that problem areas are being resolved.

17.1.12 CONTROL OF MEASURING AND TEST EQUIPMENT

S9| The GPC requires that suppliers of material or equipment
 S9| for the VNP have procedures for the control of test and measur-
 S2| ing equipment. The VQAM verifies through the audit program
 that VNP suppliers are complying with these procedures.

S9| During construction of the VNP, the GPC Field Construction
 Group and site contractors have procedures for the control
 of measuring and test equipment. These procedures are
 required to address the following:

- A. Identification of types of test and measurement equipment controlled by each procedure.
- B. Calibration procedures used for each type of test or measurement equipment.
- C. Frequency with which the test and measurement equipment is calibrated.
- D. Means by which the calibration status and results of the tests and measurement equipment are recorded.
- E. Method for indicating the calibration status on each piece of test and measurement equipment.
- F. Methods by which measuring and test equipment is tracked.

S9| During the initial test program of the VNP, control of measuring
 and test equipment is the responsibility of the PM, and is
 governed by appropriate procedures in the VNP Plant Procedures
 Manual or Startup Manual. These procedures also address the
 foregoing points.

The QASM audits construction site activities during construc-
 tion and preoperational testing, to verify that adequate proce-
 dures are in existence for the control of measuring and test
 equipment, and that these procedures are being followed.

17.1.13 HANDLING, STORAGE, AND SHIPPING

S9| The VQAM ensures through the audit program that satisfactory
 surveillance of the activities of contractors is being exercised
 with regard to handling, storage, and shipping. These audits
 also verify that approved procedures are being followed for
 special handling, storage, shipping, cleaning, and preservation
 of materials and equipment.

S9| The GPC Field Construction Group have procedures for the
 control, identification, protection, and handling of material

and equipment until accepted for preoperational testing. Storage control is under the direction of the Construction Warehouse Supervisor, who is assisted by members of the Field Operations and QC Groups in identifying and inspecting equipment and materials, and for storage recommendations. Specific internal site procedures and instructions governing storage control are prepared by the GPC Field Construction Group, and approved by the PCM. These procedures require:

- A. Adherence to supplier's instructions for storage and handling of equipment.
- B. Identification and marking of critical material.
- C. Environmental controls of appropriate storage areas.
- D. Issuance of controls to ensure that material and equipment are used to their intended purpose.
- E. Tagging for storage and status control.
- F. Recording, tracking, and closing out material and equipment nonconformities.
- G. Records of receipt and storage inspections.

Special handling, storage, shipping, cleaning, and preservation of procured material and equipment are governed by BPC- and W-approved contractor procedures. The GPC Field Construction Group performs surveillance of contractor-storage of materials and equipment, and the QASM audits site contractors and the GPC to ensure compliance with approved procedures.

17.1.14 INSPECTION, TEST, AND OPERATING STATUS

The VQAM assures through the audit program that adequate procedures exist at selected contractor facilities for status control of tests and inspections. During construction of the VNP, the responsible inspector in the GPC Field Construction QC Group, or the designated site contractor, maintains the inspection and test status of material and equipment. He is additionally responsible for identifying inspection and test status of each item, or group of items, by tagging or other methods specified in the procedures of the GPC VNP Field Procedure Manual.

During preoperational testing of the VNP, the inspection, test, and operating status of systems and components are the responsibility of the PM. Construction Acceptance Test Data Sheets and Preoperational Test Data Sheets are signed by the respective

Test Supervisors, thereby indicating inspection, test, and operating status, and ensuring that the specified activities are performed in the sequence without omission.

S9| The QASM audits the construction site activities to ensure that adequate procedures are available, and that they are being followed.

17.1.15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

S9| The VQAM assures through the audit program that contractors control nonconforming materials, parts, and components. Contractors are required to develop procedures to govern nonconforming items, and to abide by these procedures.

S9| During construction of the VNP, the GPC Field Construction Group and site contractors have procedures for the control of nonconforming items. These procedures require that nonconforming items be identified and segregated, where practicable, from accepted items. A disposition form is completed by the appropriate GPC Engineering Supervisor. Dispositions of "use as is" or "repair" are submitted to the cognizant engineering group for approval. GPC QC conducts inspection to verify that nonconformances have been completed in accordance with the disposition. The GPC Engineering Supervisor ensures that nonconformances are resolved prior to release of the affected items.

S9| During the initial test program, the PM may return the system to the PCM upon identification of nonconforming items. The PCM will obtain a resolution as noted above.

S9| The QASM audits the GPC Field Construction Group and site contractors to verify that satisfactory procedures exist for control of nonconforming items, and that the procedures are being followed.

17.1.16 CORRECTIVE ACTION

S9| The VQAM observes audits of the GPC Field Construction Group, SCS, BPC, and W to ensure that adequate procedures are in effect that govern the identification and disposition of conditions adverse to quality. These procedures are expected to provide for the following:

- A. Identification of the condition.
- B. Determination of the cause.

- C. Corrective action.
- D. Documentation of the foregoing and reporting to appropriate levels of management.
- E. Evaluation of reported conditions which may require reporting to the NRC, in accordance with the requirements of 10 CFR 50.55 (e) or 10 CFR 21.

Identification of conditions adverse to quality will result from the following activities:

- A. Audits.
- B. Inspections (supplier's shops and construction site).
- C. Information sources, such as NRC publications and other utilities.

The GPC VNP Quality Assurance Manual references the necessary procedures for identifying, reporting, resolving, recording, and analyzing construction site conditions adverse to quality. In summary, the procedures include the following:

- A. A method to appropriately mark or identify nonconforming items so that, before related work continues, a course of corrective action is established.
- B. The means for reporting nonconformances and the action taken to resolve them.
- C. Identification of the persons or group having authority to approve the resolution of nonconformances.
- D. Identification of the groups and persons who shall be made aware, for information purposes, of the nonconformances.
- E. The means by which nonconformances are resolved.
- F. A system for keeping adequate records of nonconformances and for periodically reporting on the status to appropriate management and the affected organizations.
- G. A method for analyzing nonconformances to determine appropriate corrective actions based on trend, rate, and occurrence.

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The GPC Field Construction Group and the QASM monitor and audit site contractors for compliance with approved procedures for identification and correction of conditions adverse to quality.

17.1.17 QUALITY ASSURANCE RECORDS

S9| The GPC requires that specifications prepared by BPC and W identify the various types of records which suppliers must prepare, maintain, and supply to GPC to provide documentary evidence of the quality of items, and of activities affecting quality. The records are forwarded to the construction site, or a document verifying the existence and acceptance of the records and their location must be provided. SCS, as manager of the supplier shop inspection program, ensures through audits that suppliers are adhering to BPC- and W-approved procedures for the generation and maintenance of records.

S9| The VQAM will verify, through audits, that adequate records are being generated for quality verification, and that suppliers are being required to provide specified records. (See Subsection 17.1.18.)

S9| During the construction phase of VNP, the GPC Field Construction Group on-site generates records of activities in accordance with procedures approved by the PCM. These records include field inspection reports, concrete test reports, rebar test reports, nonconformance reports, reports of tests, and receiving inspection reports. The Document Review Supervisor receives quality assurance records, checks them for completeness, and files them for ready retrieval. Construction site contractors generate records as specified in their procedures. These records are turned over to the Document Review Supervisor.

S2| During preoperational testing of the VNP, the Superintendent of
S9| Administration will be responsible to the APM for the collection
S2| and filing of quality assurance records. The Superintendent of
S9| Administration will accept the records collected by the Document Review Supervisor during construction, and will receive and file those records generated during initial test program. These records will consist primarily of completed preoperational test results in the form of completed data sheets, test records, recorder traces, and photographs.

S9| Record storage files are located in a fireproof, environmentally controlled building. Access to the files, and removal of the files, is controlled, so that files can not be lost, stolen, or misplaced.

The QASM audits the GPC Field Construction Group, construction site contractors, and the Power Generation organization to verify that required records during construction and preoperational testing are generated, collected, and filed in accordance with established procedures.

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17.1.18 AUDITS

The VQAM has established an audit program for the VNP which encompasses, as applicable, design, procurement, construction, and preoperational testing activities of GPC, SCS, BPC, W and site contractors. This program is under the direct supervision of the VQAM who personally conducts certain audits, delegates to others the work of performing certain audits, and observes selected audits performed by others. The VQAM has responsibility for the audits conducted on VNP activities and has final authority on any matters relating to the conduct of any audit.

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The GPC VNP Quality Assurance Manual and the internal procedures of the VQAM office outline the way in which the various audits are conducted. The audit procedures require that the following be accomplished for all audits conducted or observed by the VQAM.

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- A. Preparation of audit agendas or checklists.
- B. VQAM approval of audit agendas or checklists.
- C. Preparation of audit report with suitable means for identifying open items.
- D. VQAM approval and appropriate distribution of audit reports.

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The specific audits applicable to the VNP program are described in Subsection 17.1.18.1.

17.1.18.1 Quality Assurance Program Audits

The GPC VNP quality assurance program and the activities of the VQAM are audited by the Quality Assurance Committee during its scheduled meetings. These audits, described in Paragraph 17.1.1.2, evaluate VNP QA program policies, activities, and procedures. Such audits are not a part of the audit program of the VQAM.

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The following audits performed or observed by the VQAM provide a comprehensive verification and evaluation of all phases of the VNP QA program activities.

Design Audits

S2 The design audits are intended to evaluate BPC and W on the effectiveness with which they implement and comply with the quality programs presented in Appendices 17A and 17B. These audits are conducted annually as a minimum. The SCS PQAE is responsible for auditing BPC, and these audits may be observed by the VQAM; the audit plan is coordinated with and approved by the VQAM. The BPC PQAE is responsible for auditing W, and the audit plan is coordinated with and approved by the SCS PQAE. The audits of W may be observed by the SCS PQAE and/or the VQAM. Audit plans include as agenda items a review of the status of findings from previous audits. Distribution of the VQAM-approved audit reports includes, as a minimum, the members of the Quality Assurance Committee and the VPGM. Audit reports of BPC conducted by the SCS PQAE are approved and distributed by the VQAM.

Construction Site Audits

S9 The QASM, who is resident at the construction site, audits safety-related construction and preoperational testing activities based on a preplanned schedule approved by the VQAM. Random, unscheduled audits are conducted to provide a well-rounded program. Reports of these audits are directed to the PCM, with copies to the VQAM, who uses them to prepare portions of his audit agendas and to distribute to interested parties. Open items are closely monitored by the QASM until resolved.

S9 Construction site audits are ended with an oral presentation to affected supervision of the audit findings, conclusions, and recommendations.

S9 The VQAM conducts an annual audit of the QASM activities. Audit agendas are prepared in advance by VQAM and the audit reports are forwarded as a minimum to members of the quality assurance committee, project executive, VPGM, PCM, and QASM. In addition to these audits, QASM activities are continually monitored by the VQAM through frequent site visits and review of QASM audit reports, weekly reports, and open items summaries.

Vendor Audits

S9 In conjunction with their surveillance activities, the BPC Procurement Supplier Quality Department and the SCS Quality Assurance Department conduct planned audits of selected suppliers. Checklists, as referenced in their respective department manuals are used during these audits.

The VQAM receives from the SCS PQAE the schedule of planned audits, and for selected audits the VQAM or his representative accompanies the audit team. A preaudit meeting is held prior to each audit, and any specific questions of GPC or SCS are given to the audit team leader. The VQAM participation is to assure the adequacy of the supplier's quality assurance program and to assure the effectiveness of the BPC audit.

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An exit interview is held at the conclusion of each audit, and recommendations or discrepancies are presented to the supplier's management. Open items are listed in the audit report and are reaudited. The VQAM receives copies of audit and reaudit reports. Any GPC questions or comments on the audit or reaudit reports are resolved through the SCS PQAE.

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The VQAM assures that SCS, BPC, and W implement an audit program for their assigned work scope. This includes internal audits of activities on VNP and audits of subcontractors or suppliers.

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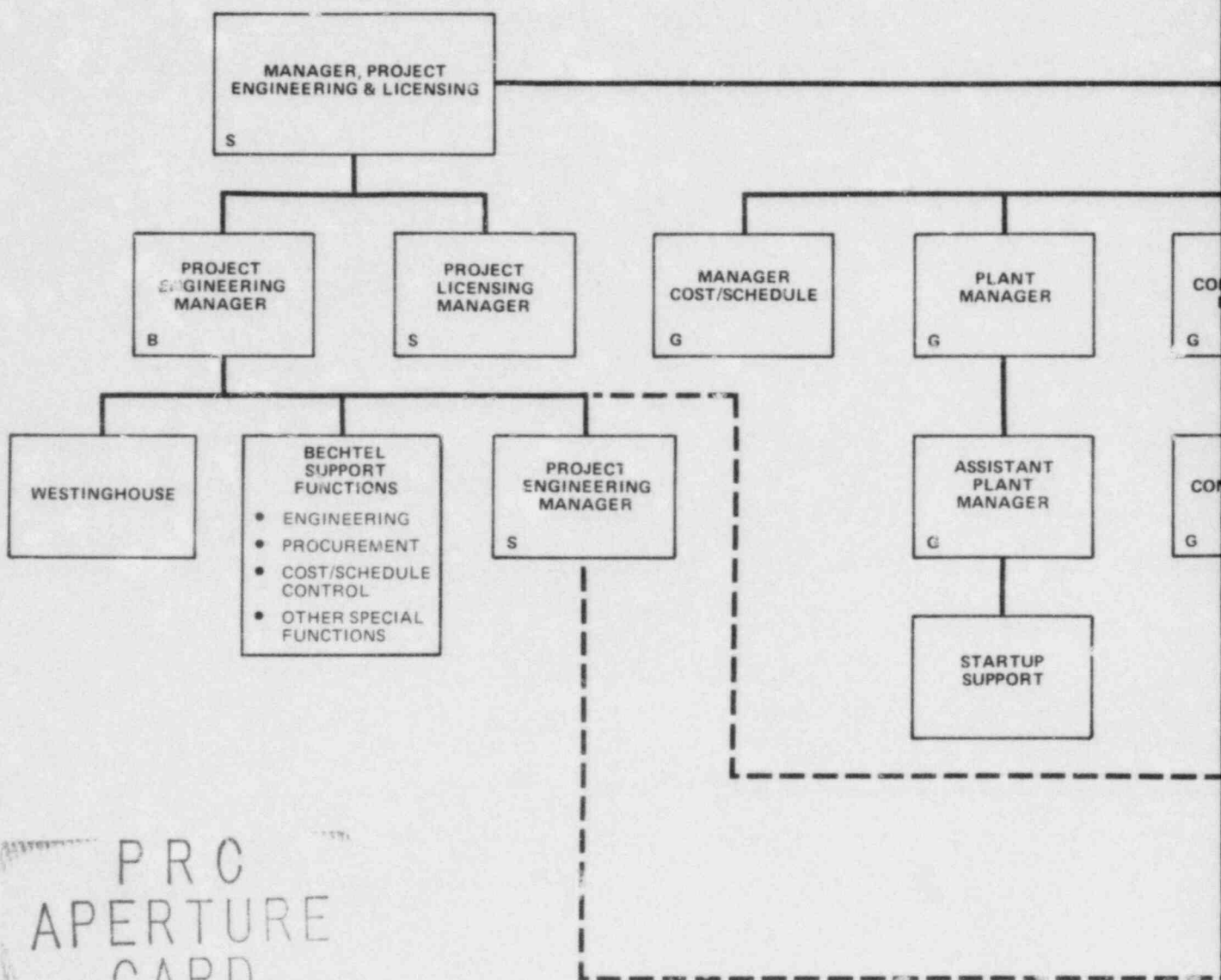
THIS CHART IS INTENDED TO REFLECT REPORTING
RELATIONSHIPS AND NOT NECESSARILY LEVELS
OF RESPONSIBILITY, SENIORITY OF POSITIONS, OR
WORKING RELATIONSHIPS.

RESPONSIBILITY ENTITY

G GEORGIA POWER CO.
S SOUTHERN COMPANY SERVICES, INC.
B BECHTEL POWER CORPORATION
C CO-OWNERS
W WESTINGHOUSE

LEGEND

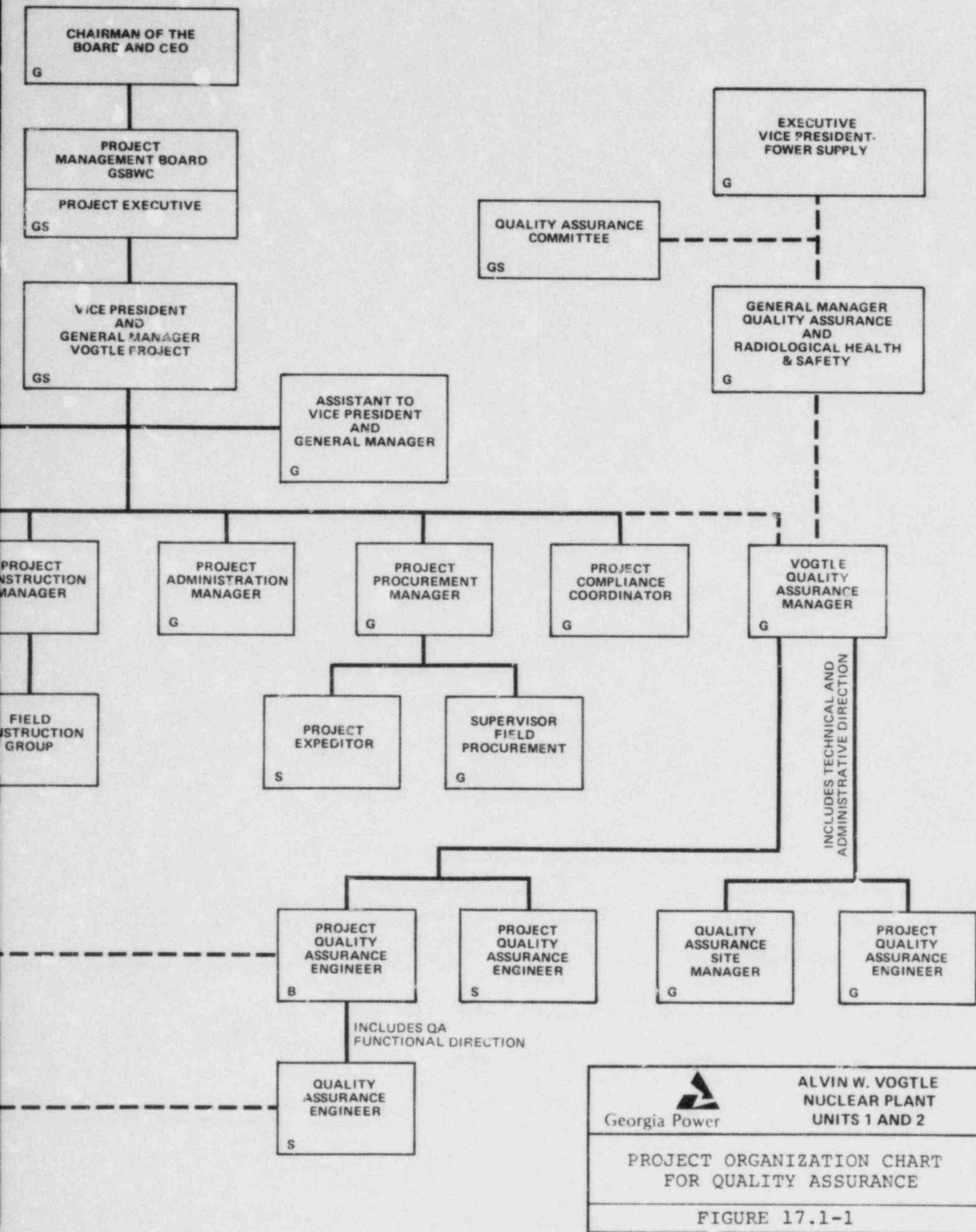
— VOGTLE PROJECT DIRECTION
..... VOGTLE PROJEC: COORDINATION
- - - TECHNICAL AND ADMINISTRATIVE (FUNCTIONAL) DIRECTION



PRC
APERTURE
CARD

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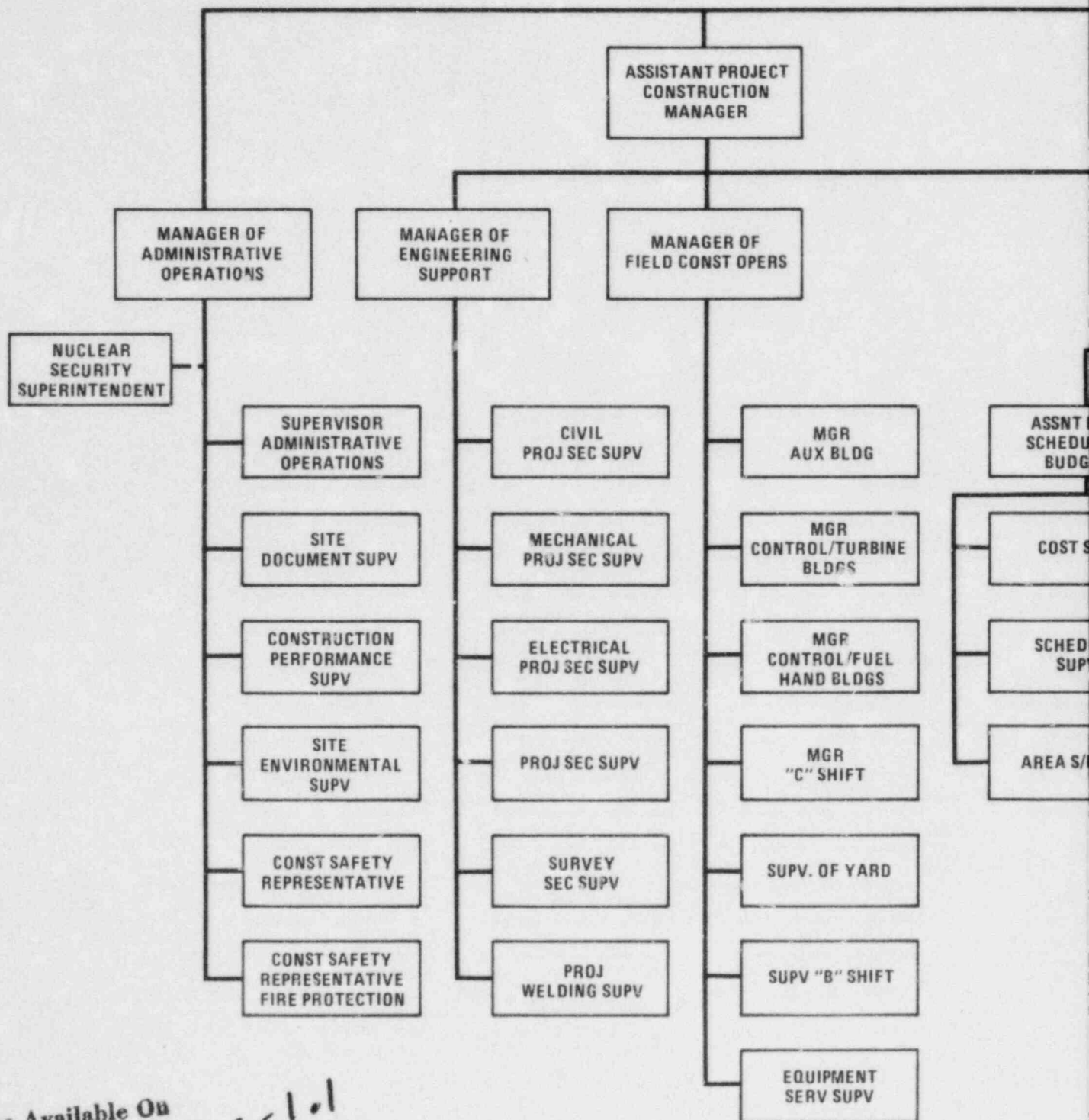
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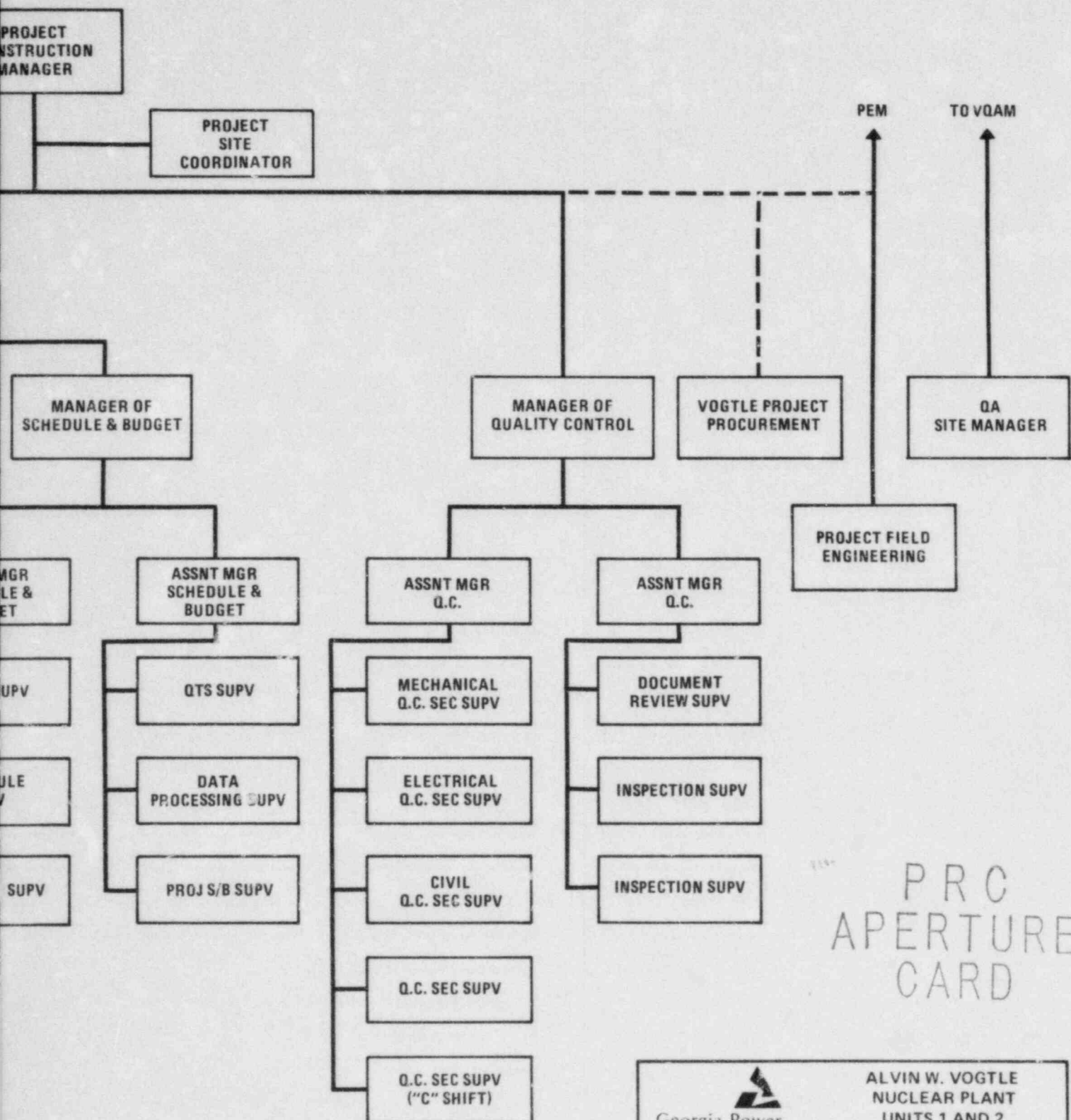
LEGEND

- VOGTLE PROJECT DIRECTION
- VOGTLE PROJECT COORDINATION




Also Available On
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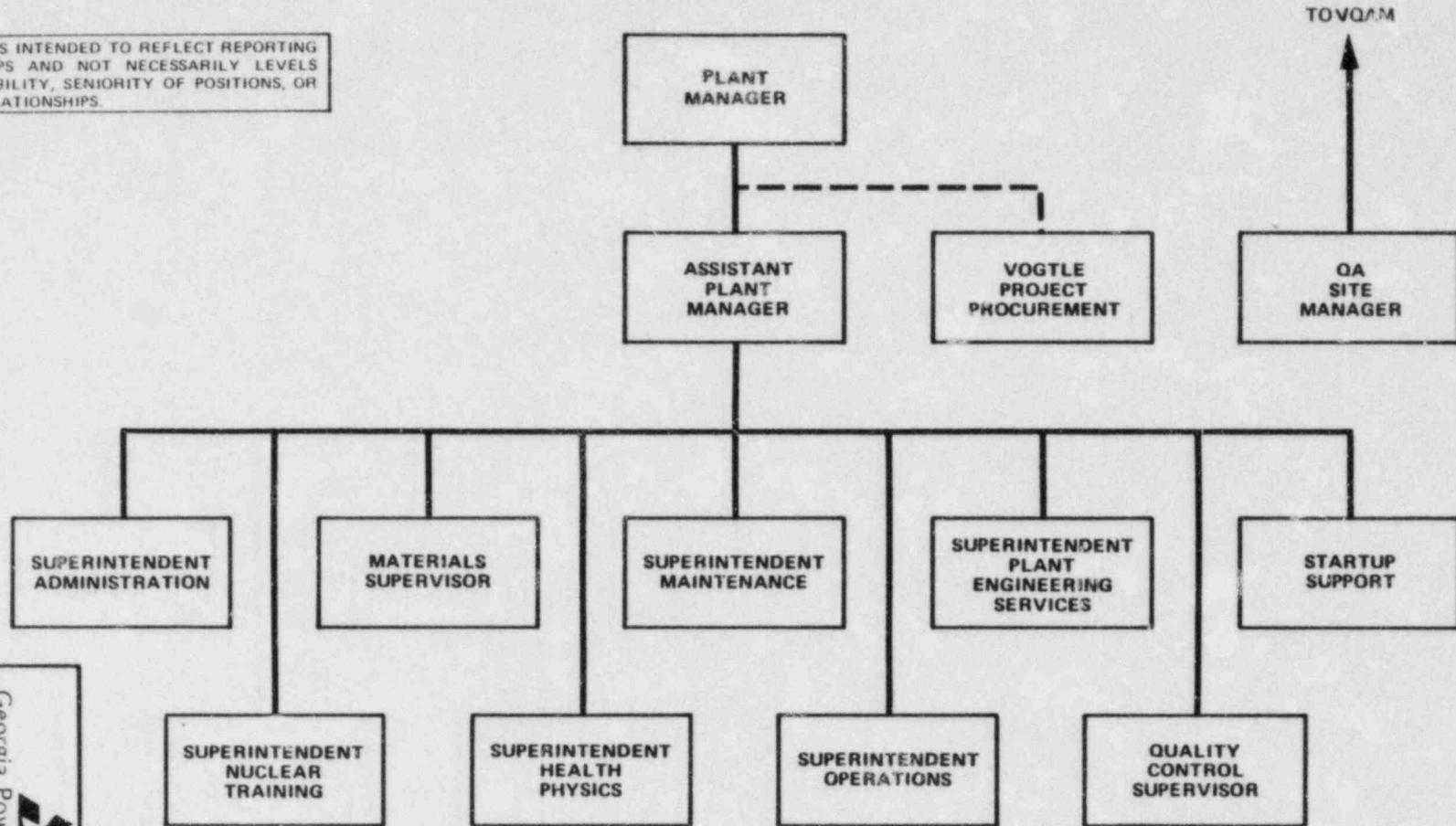


PRC
APERTURE
CARD

 Georgia Power	ALVIN W. VOGTLE NUCLEAR PLANT UNITS 1 AND 2
GEORGIA POWER COMPANY FIELD ORGANIZATION FOR CONSTRUCTION	
FIGURE 17.1-2	


POWER GENERATION

THIS CHART IS INTENDED TO REFLECT REPORTING RELATIONSHIPS AND NOT NECESSARILY LEVELS OF RESPONSIBILITY, SENIORITY OF POSITIONS, OR WORKING RELATIONSHIPS.



LEGEND:

- SOLID LINE:** VOGTLE PROJECT DIRECTION
- DASHED LINE:** PRODUCTION FUNCTIONAL DIRECTION

 GEORGIA POWER COMPANY ORGANIZATION FOR PREOPERATIONAL TESTING	ALVIN W. VOGTLE NUCLEAR PLANT UNITS 1 AND 2
	FIGURE 17.1-3

PROC
APERTURE
CARD

17.3 Q-LIST

The basic purpose of the Q-list (table 17.3-1) is to identify those items within the scope of the Nuclear Quality Assurance Program, which is the program established to meet 10 CFR 50 Appendix B requirements. Items listed require special consideration during designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, and testing. Sections 17.1, 17.2, and Appendices 17A, B and C of the PSAR define the Quality Assurance Program.

The Q-List is a compilation of components, equipment and structures which are related to nuclear safety and satisfy one or more of the following:

- Maintain the integrity of the reactor coolant pressure boundary.
- Shut down the reactor and maintain it in a safe shutdown condition.
- Prevent accidents or mitigate the consequences of accidents which could result in calculated potential exposures to radioactive material as defined in Regulatory Guide 1.26.

Items on the Q-List under the various system headings are designed to Seismic Category I requirements unless specifically noted otherwise; however, this does not imply that the entire system is a Seismic Category I system. The seismic category of piping, valves and fittings in each system is indicated on the applicable piping and instrumentation diagram (P&ID).

Table 17.3-2 identifies those radioactive waste management system components that, while not within the scope of the quality assurance program established to meet 10 CFR 50, Appendix B, are within the scope of the quality assurance program established to meet Regulatory Guide 1.143.

Table 17.3-3 identifies those fire protection system components that, while not within the scope of the quality assurance program established to meet 10 CFR 50, Appendix B, are within the scope of the quality assurance program established to meet Branch Technical Position APCSB 9.5-1, appendix A.

Additionally, tables 17.3-1, 2, and 3 identify the scope of supply for each component, the system numbers, and PSAR cross-references to assist in retrieving technical information from the respective PSAR section.

Table 17.3-1

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
REACTOR COOLANT SYSTEM		1201	4.2, 5.2-5.5
Reactor Vessel and Head	W		
Vessel Internals	W		
Fuel Assemblies and Appurtenances	W		
CRDM Housing	W		
CRDM Head Adapter Plug	W		
Steam Generator	W		
Pressurizer	W		
Pressurizer Surge Line	W		
Pressurizer Relief Lines (Upstream of Relief Valves)	W		
Safety and Relief Valves	W		
Reactor Coolant Pump Casing	W		
#1 Seal Housing	W		
Thermal Barrier	W		
Pressure Retaining Bolts	W		
Main Flange	W		
Shaft Coupling	W		
Spool Piece	W		
Armature	W		
Flywheel	W		
Motor Bolting	W		
Upper Oil Cooler (Shell Side-Oil)	W		
Lower Oil Cooling Coil	W		
RTD Bypass Manifold	W		
RTD Thermowells	W		
RCS Loop Piping	W		

S9

VNP

Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>	
All Valves > 2 in.	W			
All Other Piping and Valves < 2 in.	B			
Safety-Related Valve Operators	W			
Reactor Vessel Supports	W			
Steam Generator Supports	W			
Pressurizer Supports	W			
Reactor Coolant Pump Supports	W&B			
Other Safety-Related Supports and Hangers		1201, 1208	NA	VNP
REACTOR HEAD VENT SYSTEM				S9
Piping and Valves	W&B			
Instrumentation	W&B	1204	6.3	
SAFETY INJECTION SYSTEM				
Accumulators	W			
Boron Injection Tanks	W			
Boron Injection Recirculation Pumps	W			
Boron Recirc. Pump Motors	W			
Boron Injection Surge Tank	W			
Boron Injection Surge Tank Agitator	W			
Safety Injection Pumps	W			
Safety Injection Pump Motors	W&B			
Safety-Related Piping and Valves	W			
Safety-Related Instrumentation	W			
Safety-Related Valve Operators				

Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Safety Injection Pump Lube Oil Coolers	W		
Mini Flow Orifices	W		
RESIDUAL HEAT REMOVAL SYSTEM (RHR)		1205	6.3
RHR Pumps	W		
RHR Pump Motors	W		
RHR HXs	W		
Safety-Related Piping and Valves	W&B		
Safety-Related Instrumentation	W		
Safety-Related Valve Operators	W		
RHR Pump Seal Coolers	B		
Emergency Sump Screen	B		
Encapsulation Vessels	B		
CONTAINMENT SPRAY SYSTEM		1206	6.2
Containment Spray Pumps	W		
Containment Spray Pump Motors	W		
Spray Nozzles	W		
Spray Additive Tank	W		
Spray Eductors	W		
Safety-Related Piping and Valves	W&B		
Safety-Related Instrumentation	W		
Safety-Related Valve Operators	W		
Encapsulation Vessels	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
CHEMICAL AND VOLUME CONTROL SYSTEM (CVCS)		1208	9.3
Volume Control Tank	W		
Boric Acid Storage Tank	B		
Boric Acid Transfer Pumps	W		
Boric Acid Transfer Pump Motors	W		
Centrifugal Charging Pumps	W		
Centrifugal Charging Pump Motors	W		
Positive Displacement Charging Pump	W		
Regenerative HX	W		
Letdown HX	W		
Excess Letdown HX	W		
Seal Water HX	W		
Letdown Reheat HX	W		
Moderating HX	W		
Letdown Chiller HX			
Reactor Coolant Backflushable Filter	B		
Housing			
Seal Water Return Backflushable Filter	B		
Housing			
Boric Acid Filter	W		
Seal Injection Backflushable Filter	B		
Housing			
Letdown Orifices	W		
Boric Acid Transfer Pump Orifices	B		
RCP Seal Bypass Orifice	W		
Centrifugal Charging Pump Mini Flow Orifice	W		
Positive Displacement Pump Coolers	W		

Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Thermal Regenerative Demineralizers	W		
CVCS Cation Bed Demineralizers	W		
Mixed Bed Demineralizers	W		
Boric Acid Tank Heater	W		
Boric Acid Blender	W		
Safety-Related CVCS Instrumentation	W&B		
Safety-Related Piping and Valves	W&B		
Safety-Related Valve Operators	W		
Centrifugal Charging Pump Lube Oil Coolers	W		
Suction and Discharge Dampeners	B		
BORON RECYCLE SYSTEM		1210	9.3
Boron Recycle Holdup Tanks	B		
CONTAINMENT ISOLATION SYSTEM		2415	6.2
Valves and Piping	W&B		
Valve Operators	W&B		
Instrumentation and Controls	W&B		
NUCLEAR SERVICE COOLING WATER SYSTEM (NSCW)		1202	6.4
NSCW Pumps	B		
NSCW Pump Motors	B		
NSCW Transfer Pumps	B		
NSCW Transfer Pump Motors	B		
Tower Fans	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Fan Motors	B		
Safety-Related Valves and Piping	B		
Safety-Related Valve Operators	B		
Safety-Related Instrumentation	B		
Containment Auxiliary Air Coolers (Tube Side)	B		
Containment Cavity Coolers (Tube Side)	B		
Piping Penetration Area Coolers (Tube Side)	B		
Containment Spray Pump Motor Coolers	W		
Safety Injection Pump Motor Coolers	W		
RHR Pump Motor Coolers	W		
CCW Pump Motor Coolers	B		
Centrifugal Charging Pump Motor Coolers	W		
Containment Air Coolers (Tube Side)	B		
NSCW Pump Motor Coolers	B		
COMPONENT COOLING WATER SYSTEM (CCW)		1203	6.4
CCW Surge Tanks	B		
CCW Pumps	B		
CCW HXs	B		
CCW Pump Motors	B		
Safety-Related Valves and Piping	B		
Safety-Related Instrumentation	B		
Safety-Related Valves Operators	B		

Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
AUXILIARY COMPONENT COOLING WATER SYSTEM (ACCW)		1217	6.4
ACCW HXs	B		
Safety-Related Valves and Piping	B		
Safety-Related Valve Operators	B		
Safety-Related Instrumentation	B		
SPENT FUEL COOLING AND PURIFICATION SYSTEM (SFCPS)		1213	9.1
SFCPS HXs	W		
SFCPS Pumps	W		
SFCPS Pump Motors	W		
Safety-Related Valves and Piping	W&B		
Safety-Related Instrumentation	W&B		
Safety-Related Valve Operators	W		
WASTE PROCESSING SYSTEM-GASEOUS		1902	11.3
Gas Decay Tanks	W		
Waste Gas Compressor Package	W		
Catalytic H ₂ Recombiner and Gas Analyzer Package	W		
Waste Gas Decay Shutdown Tank	W		
Safety-Related Piping and Valves	W&B		
Safety-Related Valve Operators	W		
Safety-Related Instrumentation	W		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
MAIN STEAM SYSTEM		1301, 1320	10.3
Steam Generators (Shell Side)	W		
Steam Diffuser	W		
Piping from SG to 1st Weld After 5-Way Restraint	B		
Safety Valves	B		
Atmospheric Relief Valves	B		
Atmospheric Relief Valve Operators	B		
Main Steam Isolation Valves	B		
Main Steam Isolation Valve Actuators	B		
Safety-Related Valve Operators	B		
Drain and Test Valves and Piping Upstream of Forged Section	B		
Mechanical Pressure Flow and Level Instruments	W		
Safety-Related Instrumentation	W		
Steam Flow Limiters	W		
AUXILIARY FEEDWATER SYSTEM (AFW)		1302	10.4
Auxiliary Feed Pump Turbine	B		
Auxiliary Feed Pumps	B		
Auxiliary Feed Pump Motors	B		
Safety-Related Piping and Valves	B		
Safety-Related Valve Operators	B		
Safety-Related Instrumentation	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Flow Limiting Orifices	B		
AFW Turbine Lube Oil Cooler	B		
CONDENSATE AND FEEDWATER SYSTEM		1305, 1306 and 1320	10.4
Main Feed Line Isolation Valves	B		
Main Feed Line Isolation Valve Motors	B		
Main and Auxiliary Feed Inlet Check Valves	B		
Piping from Forged Section to SG	B		
Main Feed Regulating Valves	W		
Main Feed Regulating Bypass Valves	B		
Feed Isolation Instrumentation and Controls	B		
Safety-Related Valve Operators	B		
DIESEL GENERATOR SYSTEMS		2403	9.5
Day Tanks	B		
Fuel Transfer Pumps	B		
Fuel Transfer Pump Motors	B		
Duplex Fuel Filters	B		
Duplex Fuel Strainers	B		
Engine Driven Fuel Pump	B		
Engine Driven Lube Oil Pump	B		
Lube Oil HX	B		
Lube Oil Heater	B		
Lube Oil Keep Warm Pump	F		
Lube Oil Keep Warm Pump Motor	B		
Lube Oil Strainers	B		
Lube Oil Filters	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Cooling Jacket Water Heater	B		
Engine Driven Jacket Water Pump	B		
Jacket Water Keep Warm Pump	B		
Jacket Water HX	B		
Jacket Water Standpipe	B		
Air Receivers	B		
Intake and Exhaust Silencers	B		
Intake Air Filter	B		
Safety-Related Instrumentation	B		
Diesel Generators	B		
Fuel Oil Pressure Regulating Valve	B		
Engine Boundary Piping and Valves	B		
Engine Auxiliaries Piping and Valves	B		
Lube Oil Sump	B		
Exhaust Piping	B		
Fuel Oil Storage Tanks	B		
FIRE PROTECTION SYSTEMS - SEISMIC CATEGORY 1		2303	NA
Valves and Piping	B		
NSS LIQUID SAMPLING SYSTEM		1212	9.3
RCS Sample Valves and Piping Through Outside Containment Isolation Valve	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
AUXILIARY BUILDING FLOOD RETAINING ROOMS ALARMS & DRAINS		1218	9.3
ESF Pump Room Alarm Units	B		
INSTRUMENT AND SERVICE AIR SYSTEM		2401, 2420	9.3
Safety-Related Piping and Valves	B		
CONTAINMENT AIR COOLING SYSTEM		1501	6.2
Cooling Fans	B		
Fan Motors	B		
Coolers	B		
Ductwork	B		
Dampers	B		
Damper Motors	B		
Safety-Related Instrumentation	B		
H ₂ RECOMBINER AND MONITORING SYSTEM		1513	6.2
Penetration Piping and Valves	B		
Other Piping and Valves	B		
H ₂ Monitors	B		
H ₂ Recombiners	W		
Recombiner Instrumentation	W&B		

Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
CONTAINMENT AUXILIARY COOLING SYSTEM		1515	6.2
Cooling Coils	B		
CONTAINMENT POST-LOCA CAVITY PURGE SYSTEM		1516	NA
Fans	B		
Fan Motors	B		
Safety-Related Ductwork and Dampers	B		
Safety-Related Instrumentation	B		
CONTROL ROOM HVAC SYSTEM (ESSENTIAL PORTION)		1513	9.4
Filter Unit Fans	B		
Filter Unit Fan Motors	B		
Return Air Fans	B		
Return Air Fans Motor	B		
Heaters	B		
HEPA Filters	B		
Charcoal Filters	B		
Cooling Coils	B		
Dampers	B		
Damper Motors	B		
Ductwork	B		
Safety-Related Instrumentation	B		
ESF Chiller Room Exhaust Fans	B		
ESF Chiller Room Exhaust Fan Motors	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
CONTROL ROOM HVAC SYSTEM (NORMAL PORTION)		1531	9.4
Suction and Discharge Ductwork Including Isolation Dampers	B		
SAFETY FEATURE ELECTRICAL EQUIPMENT ROOM HVAC SYSTEM		1532	9.4
Battery Room Exhaust Fans	B		
Battery Room Exhaust Fan Motors	B		
A/C Unit Fans	B		
A/C Unit Fan Motors	B		
Cooling Coils	B		
Prefilters	B		
Ductwork	B		
Dampers	B		
Damper Motors	B		
Safety-Related Instrumentation	B		
CONTROL BUILDING CABLE SPREADING ROOM HVAC SYSTEM		1539	9.4
Auxiliary Relay Room ESF A/C Fans	B		
Auxiliary Relay Room ESF A/C Fan Motors	B		
Auxiliary Relay Room ESF A/C Fan Coolers	B		
Auxiliary Relay Room Ductwork and Dampers	B		
Auxiliary Relay Room ESF A/C Instrumentation	B		

Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
ELECTRICAL TUNNEL VENTILATION SYSTEM		1540	NA
Turbine and Auxiliary Building Tunnel Supply Fan	B		
Turbine and Auxiliary Building Tunnel Supply Fan Motor	B		
Diesel Power Cable Tunnel Exhaust Fans	B		
Diesel Power Cable Tunnel Exhaust Fan Motors	B		
NSCW Tower Cable Tunnel Fans	B		
NSCW Tower Cable Tunnel Fan Motors	B		
Safety-Related Prefilters	B		
Safety-Related Ductwork	B		
Safety-Related Instrumentation	B		
FUEL HANDLING BUILDING POST-ACCIDENT EXHAUST SYSTEM		1542	9.4
Fans	B		
Fan Motors	B		
Moisture Eliminators	B		
Heaters	B		
HEPA Filters	B		
Charcoal Filters	B		
Ductwork	B		
Dampers	B		
Dampers Motors	B		
Safety-Related Instrumentation	B		

Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
AUXILIARY BUILDING ESF ROOM COOLERS		1555	9.4
Fans	B		
Fan Motors	B		
Cooling Coils	B		
Ductwork	B		
PIPE PENETRATION FILTER EXHAUST SYSTEM		1561	6.5
Fans	B		
Fan Motors	B		
Moisture Eliminators	B		
Electrical Heaters	B		
HEPA Filters	B		
Charcoal Filters	B		
Dampers	B		
Damper Motors	B		
Ductwork	B		
Area Coolers	B		
Safety-Related Instrumentation	B		
ELECTRICAL PENETRATION FILTER EXHAUST SYSTEM		1562	6.5
Fans	B		
Fan Motors	B		
Moisture Eliminators	B		
Heaters	B		
HEPA Filters	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Charcoal Filters	B		
Ductwork	B		
Dampers	B		
Damper Motors	B		
Safety-Related Instrumentation	B		
DIESEL GENERATOR BUILDING HVAC SYSTEM		1566	9.4
ESF Exhaust Fans	B		
ESF Exhaust Fan Motors	B		
ESF Ductwork	B		
ESF Dampers	B		
ESF Damper Motors	B		
ESF Instrumentation	B		
ESSENTIAL CHILLED WATER SYSTEM		1592	NA
Expansion Tanks	B		
ESF Chilled Water Pumps	B		
ESF Chilled Water Pump Motors	B		
Valves, Piping and Cooling Coils	B		
Chillers	B		
Safety-Related Instrumentation	B		
AUXILIARY FEEDWATER PUMP HOUSE HVAC SYSTEM		1593	NA
ESF Supply Fan	B		
ESF Supply Fan Motors	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Dampers	B		
ESF Instrumentation	B		
MAIN CONTROL BOARD		1601	7
PAMS Instrumentation	W		
Hand Switches and Controls for Safety- Related Equipment	W		
NUCLEAR INSTRUMENTATION SYSTEM		1602	7.2
All Instruments Inputting to Reactor Protection System	W		
PROCESS CONTROL SYSTEM		1604	7
NSSS Safety-Related Instrumentation and Controls	W		
BOP Safety-Related Instrumentation and Controls	W		
PROTECTION SYSTEM NSS		1605	7.2
Protection Instrumentation and Controls	W		
ROD CONTROL POWER SYSTEM		1606	7.7
Reactor Trip Switchgear	W		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
RADIATION MONITORING SYSTEM		1609	11.4
Safety-Related Portions	W		
ESF ACTUATION SYSTEM		1620	7.3
All Portions	W		
REACTOR INSTRUMENTATION		1621	7.2
All Portions Inputting to Reactor Protection	W		
REACTOR CONTROL SYSTEM		1622	7.7
Protection Related Portions	W		
POST-ACCIDENT MONITORING SYSTEM		1623	7.5
Safety-Related Portions	W&B		
PLANT AUXILIARY CONTROL BOARDS		1624	7.4
Safety-Related Portions	W&B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
SAFETY-RELATED SYSTEMS BYPASS/INOPERABLE STATUS AND TRIP/MONITORING INDICATING LIGHTS		1625	7.5
All Portions Except Trip Monitoring Lights	W&B		
AC SYSTEM, 480 V		1805	8.3
4160/480 V Transformers	B		
Load Centers	B		
Motor Control Centers	B		
Instrumentation and Control	B		
AC SYSTEM, 4160 V		1804	8.3
4.16 kV Buses and Switchgear	B		
Instrumentation and Controls	B		
DC SYSTEM-CLASS 1E		1806	8.3
Batteries	B		
Chargers	B		
Breakers, Buswork and Switchgear	B		
Instrumentation and Controls	B		
Motor Control Center	B		
Distribution Panels	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
120 VAC POWER SYSTEM - CLASS 1E		1807	8.3
Transformers	B		
Breakers, Buswork and Switchgear			
DC-AC Inverters	B,W		
Instrumentation and Control	B		
LIGHTING SYSTEM		1808	9.5
Emergency Lighting Isolation Transformers	B		
CABLE SYSTEM		1809	8.3
Safety-Related Power, Control and Instrument Cables	B		
ELECTRICAL PENETRATION SYSTEM		1818	8.3
Penetration Assemblies	B		
STANDBY POWER SYSTEM		1821	8.3
Diesel Generator Package	B		
Instrumentation and Controls	B		
MULTISYSTEM PANELS AND BOARDS		1816	8.3
Safety-Related Portions	B		

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
AC SYSTEM, 13.8 KV		1825	8.3
13.8 kv RCP 1E Breakers	B		
STRUCTURES AND BUILDINGS			3.8, 6.3, 9.2
Containment Building	B	2101	
Equipment Hatch and Personnel Locks	B	2101	
Containment Liner Plate	B	2101	
Containment Penetration Sleeve Assemblies	B	2101	
Fuel Transfer Tube Housing & Bellows Assembly	B	2101	
NSCW Cooling Towers	B	2105	
Diesel Generator Building	B	2107	
Auxiliary Building	B	2108	
Fuel Handling Building	B	2109	
Control Building	B	2111	
Refueling Water Storage Tank	B	2129	
Condensate Storage Tank	B	2130	
Diesel Fuel Oil Storage Tank Pump House	B	2131	
Category 1 Tunnels	B	2144-A	
Category 1 Buried Piping	B	2144-B	
Auxiliary Feedwater Pump House	B	2159	
Spent Fuel Pool and Refueling Canal Liner Plate	B	2109	
Fuel Pool Gate	B	2109	
Reactor Makeup Water Storage Tank	B	2128	
Containment Internal Structures	B	2148	
NSCW Tower Valve House	B	2105	
Electrical Cable Trays and Supports	B	2166	
HVAC Duct Supports	B	2167	
Pipe Supports	B	1017	

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Table 17.3-1 (Continued)

Q-LIST

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>	
Pipe Whip Restraints	W&B	2169		
Water Tight Doors and Seals	B	2505		
Category 1 Backfill	B	2146		
FUEL HANDLING SYSTEM		2202	9.1	S9
New and Spent Fuel Fuel Storage Racks	W			
Integrated Head Lift Rods	W			
Integrated Head Missile Shield	W			
Fuel Handling Machine	W			
Spent Fuel Handling Tool	W			
Fuel Transfer Tube	W			
Spent Fuel Cask Bridge Crane	B	2109		

KEY:

B - Bechtel Power Corp.
W - Westinghouse

VNP

Table 17.3-2

RADIOACTIVE WASTE MANAGEMENT SYSTEM COMPONENTS

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
WASTE PROCESSING SYSTEM-LIQUID		1901	11.2
Waste Holdup Tank	W		
Waste Evaporator Feed Pump	W		
Waste Evaporator Feed Backflushable Filter Housing	B		
Waste Evaporator	W		
Waste Evaporator Concentrates Holdup Tank	B		
Waste Evaporator Concentrates Holdup Tank Pump	B		
Waste Evaporator Reagent Tank	W		
Waste Evaporator Condensate Demineralizer	W		
Waste Evaporator Condensate Filter	W		
Waste Evaporator Condensate Pump	W		
Waste Evaporator Condensate Tank	W		
Chemical Drain Tank	W		
Chemical Drain Tank Pump	W		
Spent Resin Storage Tank	W		
Spent Resin Sluice Pump	W		
Sample Vessels	B		
Solidification Strainer	W		
Spent Resin Sluice Backflushable Filter Housing	B		
Floor Drain Tank	W		
Floor Drain Tank Pump	W		
Floor Drain Tank Strainer	W		
Floor Drain Tank Backflushable Filter Housing	B		

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Table 17.3-2 (Continued)

RADIOACTIVE WASTE MANAGEMENT SYSTEM COMPONENTS

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Waste Monitor Tank	W		
Waste Monitor Tank Pump	W		
Waste Monitor Tank Backflushable Filter Housing	B		
Waste Monitor Tank Demineralizer	W		
Laundry and Hot Shower Tank	W		
Laundry and Hot Shower Tank Pump	W		
Laundry and Hot Shower Tank Strainer	W		
Laundry and Hot Shower Tank Filter	W		
Reactor Coolant Drain Tank	W		
Reactor Coolant Drain Tank Pump	W		
Reactor Coolant Drain Tank HX (Tube Side)	W		
Piping and Valves	W&B		
Waste Evaporator Package Coolers	W		
RADWASTE VOLUME REDUCTION AND SOLIDIFICATION SYSTEM		1903	11.5
Evaporator Concentrates Waste Feed Tanks	B		
Evaporator Concentrates Waste Recirculating Pumps	B		
Feed Pump Skid	B		
Spent Resin Waste Feed Tanks	B		
Spent Resin Waste Feed Pumps	B		
Solids Feed Skid	B		
Contaminated Oil Skid	B		
Fluid Bed Dryer	B		
Dryer Bed Storage Hopper	B		

Table 17.3-2 (Continued)

RADIOACTIVE WASTE MANAGEMENT SYSTEM COMPONENTS

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
Incinerator	B		
Incinerator Bed Storage Hopper	B		
Product Hopper	B		
Gas/Solids Separator	B		
Scrubber Preconcentrator	B		
Secondary Scrubber	B		
Condenser	B		
Gas Filter Assemblies	B		
Decanting Tank	B		
Crud Transfer Pump	B		
Spent Resin Transfer Pump	B		
Crud Transfer Tank	B		
Spent Resin Transfer Tanks	B		
Radwaste Piping and Valves	B		
STEAM GENERATOR BLOWDOWN SYSTEM		1407	10.4
Blowdown HXs	W		
Steam Generator Drain Pump	W		
Blowdown Backflushable Filters	B		
Demineralizers	W		
Spent Resin Storage Tank	W		
Spent Resin Sluice Pump	W		
Spent Resin Sluice Filter	W		
Process Valves and Piping	W&B		
Blowdown Trim HX	W		
Blowdown Outlet Filters	B		

Table 17.3-2 (Continued)
 RADIOACTIVE WASTE MANAGEMENT SYSTEM COMPONENTS

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>	
BACKFLUSHABLE FILTER SYSTEM		1224	11.5	S9
Crud Tank	B			
Crud Tank Pumps	B			

KEY:

B - Bechtel Power Corporation
 W - westinghouse

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Table 17.3-3

FIRE PROTECTION SYSTEM COMPONENTS

<u>PRINCIPAL SYSTEM AND COMPONENTS</u>	<u>SCOPE OF SUPPLY</u>	<u>SYSTEM NUMBER</u>	<u>PSAR SECTION</u>
FIRE PROTECTION SYSTEMS		2301 and 2304	9.5
Diesel Fire Pumps	B		
Diesel Engines	B		
Motor Driven Fire Pump	B		
Pump Motors	B		
Jockey Pumps	B		
Diesel Fuel Oil Tanks	B		
Water Storage Tanks	B		
Water System Piping and Valves	B/S		
Halon System Piping, Valves and Components	B		

KEY:

- B - Bechtel Power Corporation
- S - Southern Company Services, Inc.

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APPENDIX 17A

BECHTEL QUALITY PROGRAM

17A.0 INTRODUCTION

The Bechtel Power Corporation (BPC) Vogtle Nuclear Plant (VNP) scope of work is assigned to the Los Angeles Power Division (LAPD) under contract with Southern Company Services, Inc. (SCS). The scope of work is for the following: architect-engineering services; development of purchase recommendations for balance-of-plant equipment and materials; administration of purchase orders (including the nuclear steam supply system (NSSS) and other purchase orders resulting from SCS-developed purchase recommendations); management of the SCS-detailed design assistance to BPC for specifically designated systems; and support of SCS supplier surveillance functions (by providing Procurement Supplier Quality Department services for selected Q-List items). In addition, as an aid to Georgia Power Company (GPC), BPC is preparing plans, schedules, and specifications for the preoperational testing function.

The quality program described herein is applied by BPC to those safety-related structures, systems, and components (Q-List items) identified in Section 17.3, for which BPC has the responsibility.

The term "quality assurance" has been defined as, "those planned or systematic actions necessary to provide adequate confidence that an item or facility will perform satisfactorily in service." Quality assurance is recognized as an interdisciplinary function, and is not the sole responsibility of the Quality Assurance group. It is BPC policy that the responsibility for the quality of work is assigned to the organization directly responsible for performing the work (i.e., Engineering, etc.); these organizations have the responsibility for quality control and verification of their work. Quality verification is accomplished by individuals other than those directly responsible for the work operation.

In addition, it is BPC policy that a quality assurance function, consisting of review, surveillance, and audit, is assigned to the Quality Assurance group, which is independent of the organizations responsible for work. The Quality Assurance group is responsible for formulating general quality policies, coordination of quality assurance, control and verification activities, monitoring and auditing program activities to verify compliance with established requirements, and measuring program effectiveness. When the term quality assurance is applied to personnel

titles or procedures, it refers to the personnel and practices of the Quality Assurance group. The overall BPC quality program, which includes the activities of organizations performing work as well as quality control and quality assurance, is referred to as the Bechtel Quality Program.

The organization, responsibilities, and practices described in this appendix are consistent with overall BPC quality policy, and shall govern for the BPC VNP project work.

The Bechtel Quality Program is designed to comply with the requirements of NRC regulations, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," 10 CFR 50, Appendix B, "Licensing of Production and Utilization Facilities", effective October 11, 1971. The program is also designed to comply with the quality assurance requirements of the ASME Boiler and Pressure Vessel Code, Section III, for items covered by the Code.

In general, and within the BPC scope of work, the program is consistent with NRC guidance contained in the following Regulatory Guides:

- 1.28 "Quality Assurance Program Requirements (Design and Construction) (formerly Safety Guide 28)" (6/7/72)
- 1.30 "Quality Assurance Requirements for Installation, Inspection, and Testing of Instrumentation and Electric Equipment (formerly Safety Guide 30)" (8/11/72)
- 1.37 "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants" (3/16/73)
- 1.38 "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water-Cooled Nuclear Power Plants" (3/16/73)
- 1.39 "Housekeeping Requirements for Water-Cooled Nuclear Power Plants" (Revision 2 September 1977)
- 1.144 "Auditing of Quality Assurance Programs for Nuclear Power Plants" (1/79)

By virtue of responding to the preceding Regulatory Guides, the Bechtel Quality Program is consistent with the following approved ANSI standards:

ANSI N45.2-1971 "Quality Assurance Program Requirements for Nuclear Power Plants"*

ANSI N45.2.1-1973 "Cleaning of Fluid Systems and Associated Components During the Construction Phase of Nuclear Power Plants"*

ANSI N45.2.2-1972 "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants (During the Construction Phase)"*

ANSI N45.2.3-1973 "Housekeeping During the Construction Phase of Nuclear Power Plants"

ANSI N45.2.4-1971 "Installation, Inspection, and Testing Requirements for Instrumentation and Electrical Equipment During the Construction of Nuclear Power Generating Stations" (IEEE Std. 336, September 16, 1971)

The program is responsive to the intent of the following draft ANSI standards as issued for information by AEC in July 1973:

ANSI N45.2.9-1973 "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants" (Draft 11, Rev. 0 - March 1973)

ANSI N45.2.11 "Quality Assurance Requirements for the Design of Nuclear Power Plants" (Draft 2, Rev. 2 - May 1973)

AEC Extracts from ANSI N45.2.13 - "Supplementary Quality Assurance Requirements for Control of Procurement of Equipment, Materials and Services for Nuclear Power Plants" (Draft dated May 31, 1973)

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*NOTE: Exception is taken to the requirements for use of non-halogenated wrappings.

The terms used in this appendix follow the definitions provided in ANSI N45.2.10-1973, "Quality Assurance Terms and Definitions," supplemented by the following additional terms:

- A. Administrative Direction (Administrative Responsibility): Responsible for hiring, salary review, and assignment of an individual.
- B. Coordination: Responsibility for identification of interface problems, reconciling a position, and arriving at agreement.
- C. Function: The acts or operations expected of a group, person, or item.
- D. Functional Direction: The positive mandatory instructions and directions given to a functional activity.
- E. Functional Guidance: Instructions and directions representing a preferred method or approach to a functional activity. May include establishment of general requirements or policy, but not specific procedures or instructions.
- F. Formulate: Responsibility for coordination of effort by affected organizations, and preparation of documentation describing or defining a policy or procedure.
- G. Monitor: To watch over, observe, or examine a work operation. Results of the observations and examination may be recorded; however, sign-off responsibility is not included.
- H. Overall Direction: Same as administrative and technical direction.
- I. Project Direction: Direction or instructions from SCS and GPC or the BPC Project Engineering Manager concerned with project operations.
- J. Q-List Items: Safety-related systems, components, and structures to which this quality assurance program applies.
- K. Review: To examine any form of documentation for the purpose of establishing acceptability to the requirements of the function represented by the reviewer. Reviews may range from a thorough investigation to a spot check. Reviews are not generally hold points, but sign-off is required on the documents or records traceable to the documents.

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- L. Surveillance: A broad term pertaining to and including both monitoring and witnessing.
- M. Technical Direction: Specific mandatory directions on how an act is to be done, with a connotation of special knowledge or expertise.
- N. Technical Guidance: Providing advice or furnishing a preferred method of applying special knowledge to a problem.
- O. Technically Responsible To: The individual to whom one reports for technical direction or guidance.
- P. Witness: To watch over, observe, or examine a specific test or work operation with sign-off responsibility included.
- Q. Home Office: Los Angeles Power Division, Bechtel Power Corporation.

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17A.1 ORGANIZATION

This section identifies the Bechtel organizations responsible for establishing, managing, and executing the Bechtel Quality Program. Organizations external to the LAPD and the VNP project are described in Subsections 17A.1.1 through 17A.1.4. References to construction activities in these subsections are not applicable to the VNP BPC scope of work. Division and project activities relative to the VNP project quality program are described in 17A.1.5 and subsequent subsections.

17A.1.1 BECHTEL GROUP

Figure 17A-1 provides an organization chart for the Bechtel Group. Nuclear power plant work is performed by BPC and associated companies in each of the four power divisions which comprise the BPC.

17A.1.2 BECHTEL POWER CORPORATION ORGANIZATION

The major organizational elements of the Bechtel Power Corporation are the Bechtel Power Management (BPM), the four Power Divisions, and the Houston Area Office. These organizational elements are supported by the Bechtel Service Organizations of Procurement, and Materials and Quality Services.

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Bechtel Power Management (BPM) consists of a Vice President and Manager and a staff of managers of Engineering, Construction and Services, Procurement, Controller and Quality Assurance.

Figure 17A-2 illustrates the functional relationship of these groups.

Bechtel Power Management of the Bechtel Power Corporation shall establish policy and be responsible for providing effective and close communication among the Power Divisions.

The BPM Manager of Engineering formulates engineering policy and assists the Divisions in developing and implementing procedures, standards, and guides which shall be in compliance with these policies.

The BPM Manager of Construction and Services provides Construction and Services with policy guidance and assists the Divisions in developing and implementing procedures, standards, and guides which shall be in compliance with these policies.

The BPM Manager of Procurement provides policy and guidance to the Procurement service organizations responsible for procurement and procurement supplier quality of equipment, materials and services.

The BPM Manager of Quality Assurance has access to other members of the Bechtel Power Corporation to review and resolve Quality Program problems. Figure 17A-3 illustrates this relationship. On behalf of the President of BPC, the Manager of Quality Assurance has the responsibility and authority to:

1. Formulate Quality Policies for use in the Power Divisions.
2. Provide guidance on quality policy across the Divisions, including external quality organizations.
3. Review and approve quality related BPM (engineering, procurement, construction) policies for compliance with BPC-Quality Program Policies.
4. Review and approve quality assurance policy that deviates from BPC-Quality Program Policy.

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5. Review and approve quality related manuals and procedures for Bechtel support organizations performing centralized functions for BPC for compliance with BPC Quality Program Policies.
 6. Provide periodic reports to the Management of Bechtel Power Corporation on the status and adequacy of the quality assurance program.

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Each power division retains full responsibility for projects assigned to it, and each division has the basic capabilities required to carry out their projects. Support services are provided to the divisions by centralized functions such as Procurement, and Materials and Quality Services. Bechtel Procurement provides purchasing, expediting, and supplier quality services to all divisions. M&QS provides design consultation, procedure review, development and qualification, and training and audit

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services for special processes, such as welding, nondestructive examination, and protective coatings.

17A.1.3 PROCUREMENT

Bechtel Procurement provides services to the divisions for both home office and field-procured items. Figure 17A-4 identifies the organization of Procurement. Procurement does not establish technical or quality requirements contained in procurement documents, nor does it approve changes thereto; these functions are the responsibility of the Engineering Department.

The primary quality functions of Procurement are: supplier surveys, quality surveillance, and audit of manufacturer's (supplier) activities. These functions are the responsibility of the Division Supplier Quality Manager. The Procurement supplier quality function is independent of purchasing and expediting functions. The Supplier Quality Department program applied to power projects is established by the Division Supplier Quality Manager, and coordinated by the Manager of Quality Assurance - BPM. Procurement Supplier Quality is responsible for assuring that BPC-purchased items, and associated quality verification records subject to quality surveillance comply with requirements contained in procurement specifications.

Procurement Supplier Quality:

- A. Prepares and maintains the Procurement Supplier Quality Manual.
- B. Trains and qualifies BPC Procurement Supplier Quality personnel.
- C. Performs inplant surveys of suppliers.
- D. Performs inplant audits of supplier's QA activities.
- E. Prepares quality surveillance plans.
- F. Performs surveillance of items and documentation in accordance with the Procurement Supplier Quality Manual (PSQM) procedures, instructions and engineering requirements, and releases equipment for shipment.
- G. Evaluate supplier QA program and bidder QA plan.
- H. Evaluate supplier performance annually.

17A.1.4 MATERIALS AND QUALITY SERVICES (M&QS)

Materials and Quality Services is responsible for furnishing specialized metallurgical, quality control, and auditing services

S9| to Bechtel Divisions. Their quality functions for power projects
 S2| are coordinated by the Manager of Quality Assurance - BPM.
 Figure 17A-5 illustrates the organization of the Materials and
 Quality Services Department.

Materials and Quality Services:

- A. Develops and qualifies welding and nondestructive examination procedures.
- B. Trains and qualifies Bechtel nondestructive examination personnel.
- C. Supports Engineering and Construction in the preparation of special process procedures.
- D. Provides technical direction to field welding engineers.
- E. Reviews supplier and contractor welding and non-destructive examination and protective coating procedures, and quality assurance manuals for ASME materials and metal structures applications.
- S9| F. Prepares and maintains the Bechtel Quality Assurance Manual for ASME Nuclear Components (BQAM-ASME), and provides liaison with the ASME and authorized inspection agencies in matters associated with compliance with the ASME B&PV Code, BQAM-ASME, and the control of the ASME code symbol stamps.
- S9| G. Participates in audits of Bechtel field construction, which include compliance with the Quality Assurance Manual for ASME, Section III, "Nuclear Components," and perform audits of Bechtel and subcontractor field welding and nondestructive examination, and protective coatings programs.
- S9| H. Participates as specialists in surveys and audits of material and component suppliers and subcontractors.
- I. Consults with Engineering, Procurement, Construction, and Quality Assurance on quality control and failure analysis problems involving materials, welding, protective coatings, and nondestructive examination.
- J. Supports Engineering in the preparation of specifications for components, piping, metal structures, and protective coatings, and in the selection of materials.

17A.1.5 LOS ANGELES POWER DIVISION (LAPD)

Figure 17A-6 illustrates the organization of the LAPD, which has responsibility for the VNP project. The Vice President and General Manager is responsible for Bechtel Quality Program functions implemented within the LAPD.

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17A.1.5.1 Division Management Team

The division management team, under the Vice-President and General Manager, consists of the Vice-President Deputy General Manager and Manager of Domestic Operations, Division Quality Assurance Manager, Division Startup Manager, Manager of Division Engineering, and Division Procurement Manager.

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17A.1.5.2 Division Quality Assurance

The Division Quality Assurance Manager, assisted by the Quality Assurance Manager Projects, is responsible for providing overall direction to the project for quality assurance functions.

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The division quality assurance management team includes the Division Quality Assurance Manager, Quality Assurance Manager Projects, and the QA staff, and is responsible for:

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- A. Formulating and recommending for approval by the Division Manager, quality assurance policies for use in his division to implement basic quality assurance policy prescribed by the BPM.
- B. Approving quality assurance procedures and instructions which define responsibilities and functions of Quality Assurance personnel within his division.
- C. Reviewing quality-related procedures and manuals prepared by departments and projects within his division, and approving for conformance to Quality Assurance policies.
- D. Formulating audit programs and conducting audits and reviews to assure BPC management and clients that the quality assurance programs of the division and its projects conform with policies and requirements of BPC, SCS, and GPC. Identifies the need for corrective action and assures follow-up.
- E. Providing periodic reports to the General Manager and the Manager of Quality Assurance - BPM, evaluating the effectiveness of the division's quality program, and advising of any problems requiring special attention.

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- F. Providing and maintaining a qualified and suitably trained staff of Quality Assurance Engineers to carry out required project and staff functions.
- G. Formulating programs for maintaining the professional competence of personnel within his organization, and providing assistance in training and indoctrination programs for division management and engineering personnel whose activities affect quality.
- H. Participating in quality coordination meetings with responsible managers of Quality Assurance and Quality Control from other divisions and centralized Bechtel functions external to the BPC.
- I. The Division Quality Assurance Manager is responsible to conduct annual audits of division technical staff and services to evaluate compliance with BPC division quality program policies. Results of audits are transmitted to division managers and BPM Manager of Quality Assurance.

17A.1.5.3 Division Startup

The division startup management team, comprising the Manager Division Startup, Startup Manager, and the Startup engineering staff, is responsible for providing overall startup management, including technical direction to projects, assuring that the projects are provided with appropriate procedures and personnel, and are following division practices for conduct of Startup engineering activities. The BPC VNP startup activities are limited. (See Paragraph 17A.1.6.4 for scope of work.)

17A.1.5.4 Division Engineering

The Manager of Division Engineering provides functional direction to the Engineering Department, and is assisted by Engineering Managers and Chief Engineers. The cognizant Engineering Manager is responsible for providing management and functional direction to assigned projects, and for assuring that the projects are provided with adequate personnel, and are following prescribed division procedures for conduct of engineering activities. The Engineering Manager provides administrative direction to the Project Engineering Manager and the Project Engineers.

The Chief Engineers are responsible for the technical adequacy of engineering design performed within the division for their respective disciplines. They are responsible for providing the

engineers, designers, and draftsmen required to perform engineering functions on projects, for maintaining an adequate staff of specialists and other support personnel to provide technical guidance to the projects, and to perform independent reviews of selected engineering design work. Chief Engineers provide administrative and technical direction to the engineers in their respective discipline.

17A.1.5.5 Division Procurement

The Division Manager of Procurement provides overall direction to the Project Procurement Manager, and administrative and functional direction to the Division Supplier Quality Manager. The Division Supplier Quality Manager receives technical direction from the Bechtel Manager of Procurement Supplier Quality.

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17A.1.5.6 Domestic Operations

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To assure consistent and coordinated application of BPC policies and skills for the benefit of the project, the management responsibility is assigned to the Domestic Operations Manager. He, in turn, is assisted by Project Managers and Project Engineering Managers. The Project Managers and Project Engineering Managers are delegated authority for the direct management of the project.

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17A.1.6 PROJECT ORGANIZATION AND FUNCTIONS

Figure 17A-7 illustrates the organization of the BPC VNP project. The VNP Project Engineering Manager is responsible for overall direction of the project, based on the BPC scope of work, GPC and SCS requirements, and BPC LAPD policies and project procedures. The Project Engineering Manager is the leader of the BPC project team, consisting of functional group heads that include the Project Engineers, Project Quality Assurance Engineer, Project Procurement Manager, Project Field Engineer, Project Startup Engineer, representatives from other BPC groups as required, and the SCS Project Engineering Manager. The Project Engineering Manager provides the necessary direction to the project team to assure satisfactory performance.

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The Project Engineering Manager is responsible for the application of quality programs by the team members, and for ensuring that the quality program is implemented in conformance with the quality policies and procedures approved for his project.

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The Project Engineering Manager is the primary interface with GPC, SCS, and Westinghouse and other major suppliers. The interface at the project management level concerns matters of establishing, maintaining, and changing: (1) BPC scope of work, (2) project schedule, (3) project costs, and (4) quality program. Authority is delegated by the Project Engineering Manager to

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S9| project group heads for interface at the project function level, which concerns technical and quality program matters related to the performance of project functions.

Table 17A-1 identifies, by project participant, the interfaces between the BPC VNP project functions and the overall VNP project functions. For example, the BPC VNP project Engineering group responsible for the BPC VNP project function, "Engineering," interfaces with the BPC VNP project Procurement group on matters relating to the overall VNP project function, "Purchasing."

Table 17A-2 identifies, by project participant, the responsibility for salient quality program activities related to the BPC VNP project functions. As an example, for the BPC project function "Engineering," BPC is responsible for: "Originate", which includes the design activities from preparation of design bases through detailed design; "Verification" of the design activities by persons or groups other than those who originated the design; and "Approval" of the engineering designs, in the form of drawings, specifications, instructions, etc., released for fabrication, construction, test, etc. The responsibility for the audit function is multiple, and includes GPC, SCS, and BPC.

17A.1.6.1 Project Quality Assurance

S2| The project quality program is implemented through the BPC
S9| Project Quality Assurance Engineer (BPC PQAE), who is assigned by, and receives functional direction from, the Quality Assurance Manager Projects. Project direction is provided by the VQAM. The project quality assurance functions include:

- A. Coordinating the establishment and functions of the project quality program.
- B. Overall surveillance of the project quality program, and coordination of quality activities of Engineering and Procurement.
- C. Monitoring and auditing of project quality-related functions, and advising management of the status of program implementation.
- S9| D. Reviewing and providing quality program compliance sign-off on selected project documents, including supplier quality assurance programs.
- E. Initiating stop-work action when warranted.
- S9| F. Quality assurance coordination interfaces with VQAM, SCS PQAE, and SCS.

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Table 17A-1
VNP PROJECT QUALITY PROGRAM INTERFACES

BPC VNP Project Functions	OVERALL PROJECT FUNCTIONS					
	Engineering	Purchasing	Procurement Supplier Quality	Construction	Preoper- ational Testing	Quality Assurance
Engineer- ing:						
BOP	-	B,G	B	G	B,G	B
NSSS	W	B	B	G	B,G	B
Purchas- ing:						
BOP	B,G	G	B	-	B	B
NSSS	B,G	W,G	B	-	B	B
Procure- ment Supplier Quality:						
	B,S	B,G	S,B,W	-	-	B,S
Preoper- ational Testing						
	B	B	-	-	G	B
Quality Assurance						
	B	B	B	-	B	G,S,B,W

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Table 17A-2
VNP QUALITY PROGRAM ACTIVITY RESPONSIBILITIES

BPC VNP Project Functions	SALIENT QUALITY PROGRAM ACTIVITIES			
	Originate	Verification	Approval	Audit
Engineering	B,S	B,S	B	G,S,B
Purchasing	B,S	B,S	B,G	G,S,B
Procurement Supplier Quality	B	B	B	G,S,B
Preop. Test Procedures	B	B	G	G,S,B
Quality Assurance	B	B	G,S,B	G,S,B

S2

LEGEND:

G - Georgia Power Company
S - Southern Company Services, Inc.
B - Bechtel LAPD
W - Westinghouse WNES

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- S2 | G. Assuring proper implementation and compliance with BPC VNP project procedures for the SCS design scope of work.

17A.1.6.2 Project Engineering

S9 | The Project Engineering Manager through assigned Project Engineers provides project direction to the discipline groups and is responsible for the conduct of engineering on the project, including the SCS design activities. The Project Engineers may be assisted by one or more Assistant Project Engineers. The Project Engineering Manager, Project Engineers, Assistant Project Engineers, Engineering (discipline) Group Supervisor, SCS Project Engineering Manager, engineers, designers, and draftsmen comprise the project engineering team.

S9 | The Project Field Engineer (PFE) is the jobsite representative of the Project Engineering Manager.

S9 | The Project Engineering Manager is responsible for assuring that drawings, specifications, procedures, and instructions conform to SCS and GPC requirements, BPC standards, applicable industry standards, regulatory agency requirements, and the design bases as defined in Safety Analysis Reports.

S9 | The Project Engineering Manager is assigned Project Engineers by Division Engineering Management, and engineers, designers, and draftsmen from the various disciplines by the Chief Engineers. This project engineering team is responsible for BPC engineering design work performed by the project, and for checking and verification functions performed on the project. Special design support is furnished to the project by specialty groups. The Project Engineering Manager is responsible for assuring that special design work, conducted off the project, is subjected to the same degree of checking and control as that conducted on the project.

The project engineering team is responsible for:

- S9 | A. Preparing calculations, drawings, and specifications that constitute the engineering design.
- B. Conducting their work in accordance with established engineering procedures and project quality program procedures.
- C. Coordinating selected design reviews and checking with Chief Engineers and their staffs.

- D. Preparing purchase recommendations for GPC approval, including preparation of procurement specifications, and analyzing bids.
- E. Evaluating proposed supplier's quality assurance programs.

- F. Identifying the need for quality surveillance and audit of suppliers.
- G. Reviewing selected quality surveillance and audit reports.
- H. Reviewing and approving design changes, and approving disposition of those nonconformances with "repair" or "use as is" recommendations.
- I. Reviewing selected contractor drawings, procedures, test data, manuals, and reports.
- J. Interfacing (including control of technical information), reviewing and accepting supplier-developed stress reports and seismic calculations, tests, etc.

The PFE and supporting staff are assigned to the jobsite. The PFE reports directly to the Project Engineering Manager for technical and project direction. The PFE also receives direction from the Project Engineering Manager for Bechtel's jobsite "N" - Certificate Holder responsibilities. The PFE coordinates with the Owner's construction supervision for activities and scheduling requirements. The PFE provides project direction to the project field engineering personnel assigned by the division engineering disciplines to originate, review or authorize design changes in the field in coordination with home office engineering and as required by construction.

17A.1.6.3 Project Procurement

The Project Procurement Manager provides coordination, and is responsible for the conduct of project procurement activities. The Project Procurement Manager, supported by the Project Contracts/Purchase Supervisor and Project Supplier Quality Supervisor, is responsible for:

A. PURCHASING:

- 1. Developing bid lists for GPC approval.
- 2. When required, acting as primary interface with prospective vendors for performing vendor prequalification.
- 3. Acting as primary interface with bidders prior to award, and after award, with the vendor concerning matters resulting in purchase order and contract changes.
- 4. Purchasing functional interfaces.

5. Bidding activities, including preparation of the commercial evaluation of bid proposals.
6. Preparing engineering requisitions, based on BPC-approved purchase recommendations and technical instructions from Project Engineering, in support of GPC-preparation of purchase orders and contracts. |S9

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B. PROCUREMENT SUPPLIER QUALITY:

1. Defining Procurement Supplier Quality scope of work for SCS approval.
2. Providing Procurement Supplier Quality functional interfaces.
3. Coordinating BPC Procurement Supplier Quality service with project requirements.
4. Coordinating supplier quality assurance audits with BPC Procurement Supplier Quality service.
5. Evaluating Supplier's Quality Assurance Programs and Plans.

17A.1.6.4 Preoperational Testing

The VNP project function of preoperational and post-construction testing is the responsibility of GPC. The BPC Project Startup Engineer supervises the home office startup activities, providing Startup engineering assistance to GPC. He is supported by functional Startup engineers, which comprise the home office Project Startup group.

The home office Project Startup group is responsible for:

- A. Coordinating test specifications for preoperational tests.
- B. Preoperational testing functional interfaces.

17A.1.7 SCS DESIGN TEAM PARTICIPATION

SCS participates in the design of the VNP by providing detailed design services for specifically designated systems and facilities. Certain of these activities may be safety-related. Design participation by SCS is done under the direction of BPC, and in accordance with the BPC VNP Project Reference Manual (PRM) procedures, as modified with procedure supplements incorporated in the VNP PRM to account for differences in organization. The presently assigned scope of work for SCS includes the turbine building, and structures and utilities separate from the power block.

SCS performs design and engineering functions, including analyses under SSE and tornado wind loadings, etc., in accordance with the methods specified in the PSAR, and in accordance with the supplemental design criteria issued by BPC. Work is performed in accordance with BPC VNP quality assurance program, as reviewed and approved by BPC and GPC.

17A.1.7.1 SCS Project Engineering Manager

The SCS Project Engineering Manager is responsible for the VNP engineering work scope assigned to SCS. He assures implementation of BPC VNP procedures through the SCS organization for the VNP design scope of work. Where the SCS organization is not consistent with BPC VNP procedures, he assures identification and/or development of SCS procedures to supplement and assure fulfillment of BPC quality assurance/procedural requirements.

Figure 17.1-1 illustrates the organization relationship between BPC and the SCS Project Engineering Manager. Project direction and technical direction is provided by the BPC Project Engineering Manager.

17A.1.7.2 Technical Control

BPC maintains overall responsibility for the design and engineering of the VNP, including that portion of the design and engineering that is executed by SCS. Measures have been taken to assure that SCS VNP design and engineering is accomplished in accordance with the requirements specified in the PSAR and other established and approved design criteria. These measures include, but are not limited to, provisions for BPC to maintain control of, and be responsible for, design criteria, general arrangement drawings, P&ID's, electrical singlelines, and equipment location drawings. A technical control program initiated by BPC is described below.

BPC initiates the majority of the control documents and approves all control documents. Documents maintained by SCS bear evidence of approval on the control document. Any safety-related document are approved by BPC before issue. Non-safety-related documents need not bear evidence of approval, and the technical control is exercised by periodic design reviews and audits of drawings, calculations, and other documents as deemed necessary by BPC.

Specifications generated by SCS bear SCS approval on the document, and are submitted to BPC for approval, and bear evidence of BPC approval on the document.

SCS uses the BPC VNP PRM design control procedures, with appropriate supplements approved by BPC, to incorporate organizational differences required for operation. BPC makes periodic audits to assure conformance.

S9| SCS is responsible for the technical adequacy of the assigned scope of work, including design, specifications, documentation, procedure implementation, design reviews, and adherence to the VNP PRM design control procedures.

S2| 17A.1.7.3 SCS Procurement Participation

S9| SCS purchases equipment, materials, and services associated
S2| with the specifically designated and assigned scope of work.
S9| SCS performs this work in accordance with VNP PRM procedures, as modified to account for organizational differences.

BPC reviews and approves evaluations, purchase recommendations, and requisitions prepared by SCS for safety-related items prior to GPC final acceptance and award, to ensure that these purchase orders are prepared in a manner consistent with VNP PRM procedures and quality requirements.

S2| 17A.1.7.4 SCS Design Team Quality Assurance

SCS performs engineering and design functions under the direction of BPC, and in accordance with the VNP Bechtel Quality Assurance Program. A Quality Assurance Engineer (SCS QAE) is assigned to the SCS project team to assure proper implementation of the BPC PRM. The SCS QAE receives administrative direction from the SCS Manager, Quality Assurance; project coordination from the SCS Project Engineering Manager; and functional and project direction from the BPC PQAE.

S9| The SCS QAE developed an audit plan for review and approval
S2| by the BPC PQAE. The plan provides for auditing the SCS
S9| VNP-related engineering and procurement activities to ensure
S2| compliance with the BPC PRM procedures, as modified by supplements to account for organization differences. The BPC PQAE audits the SCS QAE activities to assure that the quality program is properly implemented. Figure 17.1-1 illustrates the organization relationship with the SCS QAE.

The SCS QAE functions include:

- S2|
- A. Preparing a master audit plan to cover SCS project design team activities, and obtaining BPC PQAE approval before use.
 - B. Overall surveillance of the SCS project design team quality program, and coordinating quality activities within the SCS project design team and with BPC PQAE.

- C. Monitoring and auditing quality-related functions of the SCS design team, and advising management of the status of program implementation.
- D. Initiating stop-work action when warranted.

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17A.2 QUALITY PROGRAM

17A.2.1 BECHTEL PROGRAM

17A.2.1.1 General

The program described in this appendix is applied to those structures, systems, and components (items) whose satisfactory performance is required to prevent accidents that may cause undue risk to the health and safety of the public, or to mitigate the consequences of such accidents, if they were to occur. These items are defined as safety-related, and are identified in Section 17.3.

17A.2.1.2 Policy

The Bechtel Quality Program is designed to comply, as described in this appendix, with the requirements of the NRC regulations, and the practices prescribed by ANSI, SCS and GPC requirements, and BPC policies and procedures established through extensive experience. The program assigns the responsibility for quality to the organization responsible for performing the work, and includes as a basic requirement that individuals responsible for verifying and checking are independent of the individual responsible for performing the work.

Additionally, independent reviews, audits, and surveillance are provided to ensure conformance with the VNP project quality program by assigned Quality Assurance Engineers who are independent of the organizations responsible for performing work.

Overall quality policy of the BPC is formulated by the Manager of Quality Assurance, who is independent of individuals responsible for direction or coordination of engineering and procurement activities, and who reports to management of the BPC. Quality assurance policies and quality assurance procedures of the LAPD are formulated by the Division Quality Assurance Manager, who receives functional guidance from the BPM Manager of Quality Assurance, and reports directly to management of the division. Quality assurance procedures for individual projects are implemented through the BPC PQAE, who receives project coordination from the Project Engineering Manager, and receives functional and administrative direction from the Division Quality Assurance Manager and the Quality Assurance Manager Projects. Project direction is provided by the VQAM.

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Project, department, and division quality procedures are subject to audit by Quality Assurance at various levels. Quality Assurance has the authority to identify quality problems, initiate, recommend, or provide solutions to quality problems, verify implementation of solutions, and control further processing or installation of nonconforming items, deficiencies, or unsatisfactory conditions until proper disposition has occurred.

Design verification includes checking within the project by individuals other than those who perform the original design; and surveillance, review, and verification of technical adequacy of designs selected by the Chief Engineers for their review, or the review of the respective technical staffs who are independent of the project.

Supplier and contractor quality control includes requirements for suppliers and contractors to execute quality programs in accordance with procurement document requirements. Verification of compliance is accomplished, as appropriate, by supplier quality surveillance of suppliers by the Procurement Supplier Quality Department, and review and checking by Engineering.

17A.2.1.3 Program Documentation

Quality program policy, procedures, and instructions are contained in the documents listed in Table 17A-3. (Copies of BPC standard documents are available for review by regulatory authorities, GPC, and SCS.)

Division and department standard procedures form the basis for the quality assurance program on each nuclear project. The procedures and instructions contained in these standard manuals, modified to meet specific project requirements, are supplemented, where necessary, by specific inspection plans, work instructions, and checklists. The Project Reference Manual (PRM) either contains or references the procedures and manuals which comprise the project quality program. The PRM is controlled and maintained by the project.

Detailed procedures that provide direction for the conduct of work for the VNP project are contained in the PRM. The PRM identifies the present scope and content of procedures and project compliance, with regulatory requirements and BPC policies and procedures. Table 17A-4 provides a cross-reference of PRM procedural responses to the 18 criteria of 10 CFR 50, Appendix B, and ANSI N45.2. Table 17A-5 provides a listing of individual procedure titles, and a brief description of subjects covered by each procedure. Changes or revisions to the PRM contents described herein will be consistent with established requirements of this appendix. The VNP project has the responsibility for preparing and maintaining documentation defining

Table 17-3
BECHTEL QUALITY PROGRAM DOCUMENTS

Document (Note 1)	Originating Authority	Review For QA Policy and Program Compliance	Authorizing Approval	Contents
Bechtel Power Management Quality Policies*	Manager QA-BPM	NA	President	Basic BPM policies to be used by all divisions and services
Bechtel Quality Assurance Manual-ASME Section III, Div. 1, Vogtle Project	Manager-M&QS	Division Quality Assurance Manager-LAPD	President and appropriate authorized Code Inspection Agency	Policies and procedures for overall Bechtel program applicable to ASME work
Procurement Supplier Quality Manual*	Manager Procurement Supplier Quality	Manager QA-BPM* *	Manager Procurement Supplier Quality	Procurement supplier quality department policy
Division QA Policies (Division QA Manual)*	Division QA Manager	Manager QA-BPM	Division Manager	Division policy supplementing and implementing BPM quality policy
Construction Quality Control Manual (Field Inspection Manual)*	Division Chief Constr QC Engineer	Division QA Manager	Manager Division Construction	Definition of responsibilities and procedures for construction quality control activities
Engineering Department Procedures and Instructions	Designated Individuals	Division QA Manager***	Manager Division Engineering***	Definition of responsibilities and procedures for design, design review, and document control in the engineering departments

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Table 17A-3 (Continued)
BECHTEL QUALITY PROGRAM DOCUMENTS

Document (Note 1)	Originating Authority	Review For QA Policy and Program Compliance	Authorizing Approval	Contents
Division QA Procedures	Division QA Manager	NA	Division QA Mgr	Procedures for conducting division QA activities
Construction Work Plan/ Procedures (Quality Program-related)	Division Chief Construction Engineers	Division QA Manager***	Manager Division Construction	Responsibilities and practice for construction site activities, including standard work plans
Procurement Procedures (Quality Program-related)	Procurement	Manager QA-BPM**	Cognizant Procurement Managers	Procedures for home office and field procurement necessary to follow BPM Quality Policy
M&QS Procedures and Policy Guide (Quality Program-related)	Manager M&QS	Manager QA-BPM**	Manager M&QS	Policies and procedures for performing M&QS functions
Project Manuals/ Procedures (Quality Program-related)	Cognizant Project Team Member	PQAE	Cognizant Manager	(Note 2)

* Available on request to appropriate regulatory agencies.

** Includes review by Division QA Managers

*** Area office EDP's are reviewed and approved by the area office QA Manager and Area Office Manager of Engineering.

Note: 1 Revisions to these documents require the same review and approval as the original.

2 There are provisions for project unique modifications to the documents in this category to delineate specific project requirements but not depart from the program requirements of the report governing documents. Review and approval authority for such modifications are defined within the governing procedures.

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Table 17A-4
BECHTEL POWER CORPORATION
QUALITY PROGRAM COMPLIANCE WITH NRC AND ANSI REQUIREMENTS

NUCLEAR REGULATORY COMMISSION 10 CFR 50, APPENDIX B		PROJECT REFERENCE MANUAL	
NRC SECTION NUMBERS	SUBJECT	ANSI SECTION NUMBERS	RELATION TO
I	ORGANIZATION	3	NUCLEAR REGULATORY COMMISSION 10 CFR 50, APPENDIX B
II	QUALITY ASSURANCE PROGRAM	2	QUALITY ASSURANCE CRITERIA FOR NUCLEAR POWER PLANTS AND FUEL REPROCESSING PLANTS, OCT. 1971
III	DESIGN CONTROL	4	AND
IV	PROCUREMENT DOCUMENT CONTROL	5	AMERICAN NATIONAL STANDARD ANSI N45.2-1971
V	INSTRUCTIONS, PROCEDURES, AND DRAWINGS	6	QUALITY ASSURANCE REQUIREMENTS FOR NUCLEAR POWER PLANTS
VI	DOCUMENT CONTROL	7	
VII	CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	8	
VIII	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	9	
IX	CONTROL OF SPECIAL PROCESSES	10	
X	INSPECTION	11	
XI	TEST CONTROL	12	
XII	CONTROL OF MEASURING AND TEST EQUIPMENT	13	
XIII	HANDLING, STORAGE AND SHIPPING	14	
XIV	INSPECTION, TEST AND OPERATING STATUS	15	
XV	NONCONFORMING MATERIAL, PARTS OR COMPONENTS	16	
XVI	CORRECTIVE ACTION	17	
XVII	QUALITY ASSURANCE RECORDS	18	
XVIII	AUDITS	19	

AMERICAN NATIONAL STANDARDS ANSI N45.2-1971		PROJECT REFERENCE MANUAL	
	PREFACE		
	SECTION 1 SCOPE AND RESPONSIBILITY		
	SECTION 2 ORGANIZATION OF THE MANUAL		
	SECTION 3 PREPARATION AND CONTROL OF THE MANUAL		
	PART A MANAGEMENT		
	SECTION 1 PURPOSE AND SCOPE		
	SECTION 2 MANAGEMENT CONTROL		
	SECTION 3 PROJECT ORGANIZATION AND RESPONSIBILITIES		
	SECTION 4		
	SECTION 5 HOME OFFICE COST CONTROL		
	SECTION 6 TRAINING PROGRAM		
	SECTION 7 MEETINGS		
	SECTION 8 QUALITY ASSURANCE AUDITS		
	SECTION 9 BECHTEL INTERENTITY/OUTSIDE CONSULTANT SERVICES		
	SECTION 10 REPORTING OF SUBSTANTIAL SAFETY HAZARD DEFECTS, NONCOMPLIANCES, & SIGNIFICANT DEFICIENCIES		
	SECTION 11 HEAVY RIGGING PROGRAM DESIGN CALCULATIONS AND DRAWINGS		
	PART B ADMINISTRATION		
	SECTION 1 SCOPE		
	SECTION 2 CORRESPONDENCE		
	SECTION 3 NUMBERING AND FILING SYSTEMS		
	SECTION 4 RECORD RETENTION		
	SECTION 5 INDEX OF PROJECT RECORDS		
	SECTION 6 CONTROL OF SECURITY DOCUMENTATION		
	PART C ENGINEERING		
	SECTION 1 SCOPE AND INTENT		
	SECTION 2 NSSS DESIGN INTERFACE CONTROL		
	SECTION 3 PROJECT REVIEW DRN/DRN PROCESS		
	SECTION 4 BECHTEL DRAWINGS		
	SECTION 5 SUPPLIER DATA		
	SECTION 6 ACTIVITY PACKAGES		
	SECTION 7 PLANT TAG NUMBERING SYSTEM		
	SECTION 8 PROCUREMENT		
	SECTION 9 DESIGN CALCULATIONS		
	SECTION 10 DESIGN CONTROL		
	SECTION 11 ENGINEERING COST CONTROL		
	SECTION 12 ENGINEERING STUDIES		
	SECTION 13 PROJECT CLASSIFICATION SYSTEM		
	SECTION 14 PROJECT CLASSIFICATION LIST CONTROL		
	SECTION 15 MATERIAL CONTROL		
	SECTION 16 FAILURE MODES AND EFFECTS ANALYSES (FMEA)		
	SECTION 17 FIELD CHANGE REQUESTS AND FIELD CHANGE NOTICES		
	SECTION 18 NONCONFORMANCE REPORTS		
	SECTION 19 LICENSING DOCUMENT DEVIATION		
	SECTION 20 DESIGN REVIEW		
	SECTION 21 ENGINEERING PLANNING AND SCHEDULING		
	SECTION 22 STARTUP COORDINATION (FUTURE PROCEDURE)		
	SECTION 23 SDR's		
	SECTION 24		
	SECTION 25 NRC & BPC PROBLEM REPORTS		
	SECTION 26 CONSTRUCTION SPECIFICATIONS		
	SECTION 27 POTENTIAL CHANGE CONTROL		
	SECTION 28 REPORTING - SAFETY HAZARD - SIG. DEF -		
	SECTION 29 DESIGN SPECIFICATIONS ASME B&PVC SECTION III		
	SECTION 30 SAFETY ANALYSIS REPORT AND ENVIRONMENTAL REPORT PREPARATION		
	SECTION 31 CURRENT LICENSING/DESIGN DATA		
	SECTION 32 FINAL SAFETY ANALYSIS REPORT AND OPERATING LICENSE STAGE ENVIRONMENTAL REPORT PREPARATION AND CHANGE CONTROL		

Table 17A-4 (Continued)
BECHTEL POWER CORPORATION
QUALITY PROGRAM COMPLIANCE WITH NRC AND ANSI REQUIREMENTS

NUCLEAR REGULATORY COMMISSION 10 CFR 50, APPENDIX B		PROJECT REFERENCE MANUAL	
NRC SECTION NUMBERS	SUBJECT	ANSI SECTION NUMBERS	
I	ORGANIZATION	3	
II	QUALITY ASSURANCE PROGRAM	2	
III	DESIGN CONTROL	4	
IV	PROCUREMENT DOCUMENT CONTROL	5	
V	INSTRUCTIONS, PROCEDURES AND DRAWINGS	6	
VI	DOCUMENT CONTROL	7	
VII	CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	8	
VIII	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	9	
IX	CONTROL OF SPECIAL PROCESSES	10	
X	INSPECTION	11	
XI	TEST CONTROL	12	
XII	CONTROL OF MEASURING AND TEST EQUIPMENT	13	
XIII	HANDLING, STORAGE AND SHIPPING	14	
XIV	INSPECTION, TEST AND OPERATING STATUS	15	
XV	NONCONFORMING MATERIAL, PARTS OR COMPONENTS	16	
XVI	CORRECTIVE ACTION	17	
XVII	QUALITY ASSURANCE RECORDS	18	
XVIII	AUDITS	19	
AMERICAN NATIONAL STANDARDS ANSI N45.2-1971			
PART D PROCUREMENT			
SECTION 1	BID LIST		
SECTION 2	PURCHASING		
SECTION 3	SUPPLIER QUALITY		
SECTION 4	EXPEDITING		
SECTION 5	REPORTING - - - - - 10 CFR 21		
SECTION 6	SUPPLIER ANNUAL EVALUATION PERFORMANCE		
SECTION 7	EVALUATION OF SUPPLIER'S QUALITY PROGRAM BY PSQD		
PART E QUALITY ASSURANCE			
SECTION 1	PROJECT QUALITY AUDITS		
SECTION 2	SUPPLIER SYSTEM AUDITS		
SECTION 3	PROJECT SURVEILLANCE		
SECTION 4	BID EVALUATION		
SECTION 5	STOPWORK ACTION		
SECTION 6	CORRECTIVE ACTION REQUESTS		
SECTION 7	QUALITY ASSURANCE PERSONNEL TRAINING		
SECTION 8	AUDITS AT A SUPPLIER FACILITY		
SECTION 9	PROCUREMENT DOCUMENT REVIEW		
PART F COST, SCHEDULE, AND ESTIMATING			
SECTION 1	COST CONTROL, GENERAL		
SECTION 2	COST CONTROL, HOME OFFICE		
SECTION 3	COST CONTROL, MANAGEMENT		
SECTION 4	COST CONTROL, FIELD		
SECTION 5	PLANNING AND SCHEDULING, GENERAL		
SECTION 6	PLANNING AND SCHEDULING, HOME OFFICE		
SECTION 7	PLANNING AND SCHEDULING, MANAGEMENT		
SECTION 8	PLANNING AND SCHEDULING, FIELD		
SECTION 9	QUANTITY TRACKING AND TAKEOFF, GENERAL		
SECTION 10	QUANTITY TRACKING AND TAKEOFF, HOME OFFICE		
SECTION 11	QUANTITY TRACKING AND TAKEOFF, FIELD		
SECTION 12	QUANTITY TRACKING AND TAKEOFF, INTERFACES AND CONTROLS		
SECTION 13	PROJECT ESTIMATES		
SECTION 14	ESTIMATING SUPPORT		
PART G STARTUP			
SECTION 1	PURPOSE AND SCOPE		
SECTION 2	STARTUP SYSTEM SCOPING		
SECTION 3	STARTUP PLANNING & SCHEDULING		
SECTION 4	STARTUP MANUAL		
SECTION 5	PREOPERATIONAL TEST PROCEDURES		
APPENDIX 1	BOILER PLATE AND STANDARD APPENDICES		
APPENDIX 2	ENGINEERING FIELD PROCEDURES		
SECTION 1	DIVISION OF RESPONSIBILITY		
SECTION 2	CONTROL OF ASME SYMBOL STAMP		
SECTION 3	CODE AUTHORIZATION, INSPECTION & CODE STAMPING		
SECTION 4	ASME CODE DATA PLATE PLACEMENT		
SECTION 5	N-5 DATA REPORT PROCESSING		
SECTION 6	HYDRO TESTING		
SECTION 7	FIELD CONTROL OF PIPE ISO's - DRAWINGS		
SECTION 8	FIELD CONTROL OF PIPE SUPPORT DRAWINGS		
APPENDIX 3	MASTER MICROFILM CARTRIDGE INDEX		

Table 17A-5

VNP PROJECT REFERENCE MANUAL

PREFACE - Primary Responsibility of the Project Engineering Manager

S9

Section 1 - Scope and Responsibility

Identifies the scope and applicability of the PRM and identifies the responsibility for the preparation, control, and maintenance of the PRM.

Section 2 - Organization of the Manual

Describes the composition of the PRM.

S2

Section 3 - Preparation and Control of the Manual

Describes the initial preparation of the PRM, the review and approval steps, control and distribution of the manuals, and the procedure for incorporating changes and/or revisions.

PART A - Management - Primary Responsibility of the Project Engineering Manager

S9

Section 1 - Purpose and Scope

Defines the purpose and scope of Part A, which identifies the BPC management of the VNP project, and describes the BPC management policies and procedures for directing this project.

S2

Section 2 - Management Control

Establishes a general policy or rationale for the selection, prerequisites, and conceptual models of control functions implemented on the VNP project.

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 3 - Project Organization and Responsibilities

Documents the organizational structure, functional responsibilities, levels of authority, and lines of communication for the management, direction, and execution of the VNP project.

Section 4 - Deleted

Section 5 - Home Office Cost Control

Identifies costs attributable to functional groups other than Engineering, and establishes a method of controlling costs by the management of these groups through budgeting, accounting, and activity designation.

Section 6 - Training Program

Establishes the policy and requirements for indoctrination and training of BPC personnel assigned to the VNP project, including curriculum, instruction personnel, and documentation of training records.

Section 7 - Meetings

Provides the information necessary for scheduling, conducting, and reporting project-related meetings, and lists scheduled project meetings.

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 8 - Quality Assurance Audits	Defines the management policy and rationale for conducting quality assurance audits of VNP project activities and groups by BPC, GPC, SCS, and the NRC.	S2
Section 9 - Bechtel Interentity/Outside Consultant Services	Provides instructions for obtaining assistance from within the Bechtel group of companies or from outside consultants.	
Section 10 - Reporting of Substantial Safety Hazard Defects, Noncompliances and Significant Deficiencies	Limited to the establishment of project policy for reporting potentially reportable conditions, evaluation of conditions and reporting to the NRC.	S9
Section 11 - Heavy Rigging Program Design Calculations and Drawings	Defines the procedure applicable to design calculations and drawings prepared by the Bechtel division services group, as a consulting service to GPC	
PART B - Administration - Primary Responsibility of the Project Engineering Manager		S2
Section 1 - Scope	Identifies those areas of project administrative responsibility that relate to VNP project documentation, and defines the procedures for carrying out the activities associated with each area.	S9
		S2

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 2 - Correspondence

Furnishes the guidelines and procedures used in systematically controlling, preparing, distributing, recording, and follow-up responsibilities relating to incoming and outgoing project correspondence.

Section 3 - Numbering and Filing Systems

Provides the information necessary for assigning and maintaining a numbering and filing system used in identifying, filing, and retrieving documentation pertaining to the VNP project.

S2

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

S9 | Section 4 - Record Retention

S2 | Defines the requirements for the filing and retention of documents pertaining to the project, in accordance with ANSI N45.2.9, "Requirements for Collection Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants," and the Bechtel Group of Companies Office Management Services Instruction 100.14, "Records Management."

Section 5 - Index of Project Records

Provides the information for locating the indices of the record file systems used on the VNP project to enable retrieval of project records.

S9 | Section 6 - Control of Security Documentation

Delineates the methods used to control documents that describe the Vogtle Nuclear Plant security system and identifies the types of documents containing security information.

S9 | Part C - Engineering - Primary Responsibility of the Project Engineering Manager

S2 | Section 1 - Scope and Intent

Establishes the procedures for the conduct of engineering for the VNP project, and to ensure progress toward standardization for the project in the organization and practice of the engineering work.

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 2 - Nuclear Steam Supply System Design
Interface Control

Defines the control procedure for communicating design interface requirements between Bechtel and Westinghouse in the design phase of the development of the nuclear steam supply system (NSSS) for the Vogtle Nuclear Plant (VNP).

S9

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 3 - Project Review - Document Review Notice
Design Review Notice Process

Describes procedures for the project review of engineering documents on the Vogtle Nuclear Plant (VNP) project.

S9

Section 4 - Bechtel Drawings

Defines the methods used in the preparation, approval, identification, control, and distribution of project engineering drawings (sketches, preliminary, and construction). Also includes the issuing of drawing change notices and revisions, data sheets, and drawing number system.

S2

Section 5 - Vendor Data

Identifies design information definition, the processing and control of vendor data and documents, review and status assignment, duplication and distribution, and resubmittals.

S2

Section 6 - Activity Packages

Provides for assigning a package number to the collective materials necessary to the accomplishment of a specific construction schedule-based activity.

S2

Section 7 - Plant Tag Numbering System

Describes the tagging system used to functionally and physically identify the relationship of each plant component to the plant, which is used in scheduling engineering, procurement, construction, and startup activities, and also serves as a basis for a parts inventory and warehousing system.

S2

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 8 - Procurement

S2 | Defines the procurement cycle functions for which BPC VNP Project Engineering is responsible, including preparation and control of procurement document numbering, purchase memorandum procedure, specification control, bills of material, bid evaluations, and requisitions.

Section 9 - Design Calculations

S2 | Explains the preparing, checking, reviewing, approving, and numbering of engineering design calculations for the VNP project, and for maintaining control of such calculations.

Section 10 - Design Control

S2 | Establishes engineering and architectural design control for the VNP project, thus ensuring that the design simultaneously satisfies the functional and safety-related requirements of a system and its interfacing/adjacent systems and structures.

Section 11 - Engineering Cost Control

S2 | Identifies costs attributable to Engineering, and establishes a method of controlling costs by engineering management through budgeting, accounting, and activity designation.

Section 12 - Engineering Studies

S2 | Provides the format, editorial, review, and approval standards required in documenting reports of formal and informal studies conducted by Engineering, to ensure that the design and function of the VNP are consistent with maximum utility and minimum cost.

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 13 - Project Classification System

Describes the system that conforms to 10 CFR 50 and applicable NRC regulatory guides for classifying equipment, components, and structures of the VNP project that are categorized according to nuclear safety, seismic category, and codes and standards.

S2

Section 14 - Project Classification List Control

Establishes control of the project classification list included in the Design Manual as Design Criteria DC-1010.

S9

Section 15 - Material Control System

Describes the functions performed by engineering disciplines in providing detailed material and equipment descriptive data (takeoff data) from engineering drawings, sketches, and specifications, and applying it to applicable material control forms for use by the Data Management group in controlling VNP project material and equipment.

S2

Section 16 - Failure Modes and Effects Analyses (FMEA)

Provides the guidelines for conducting FMEA of safety-related redundant systems design for the VNP project.

Section 17 - Field Change Requests and Field Change Notices

S9

Provides the instructions for processing and approving field change requests and field change notices, and the follow-up and approval by home office Engineering.

S9

S2

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 18 - Nonconformance Reporting

Establishes the control and disposition of VNP project nonconformance reports received by BPC against VNP project nonconforming items at a supplier facility or at the field site.

S2

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 19 - Licensing Document Deviation and
Licensing Document Change Control

Defines the procedure to control and process design, procurement, or construction changes that potentially deviate from commitments made in the VNP Preliminary Safety Analysis Report or Environmental Report, and for changing these licensing documents in conformance with approved deviations.

Section 20 - Design Review

Establishes formal design verification reviews at the completion of each system and structures design phase activity, which provide a milestone for measurement of design adequacy and progress of engineering activities.

Section 21 - Engineering Planning and Scheduling

Provides for developing and maintaining engineering schedules and schedule control for the VNP project.

Section 22 - Startup Coordination

No procedure - Later

Section 23 - Supplier Deviation Disposition Requests

Provides for processing of SDDR's prepared by a supplier to identify and propose disposition of deviations from purchase orders, technical requirements, contracts, or subcontracts discovered in items at a supplier facility.

Section 24 - No procedure

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 25 - Nuclear Regulatory Commission and
Bechtel Power Corporation Problem
Reports

Describes the identity and origin of various problem report documents, details steps for complying with the requirements of each, or identifying nonapplicability, and defines methods for actions and control.

Section 26 - Construction Specifications

Defines the format and controls of construction specifications originated by BPC engineering group supervisors to give specific instructions for field construction and installation activities.

Section 27 - Potential Change Control

Defines the means for the controls of potential changes to the design and cost of the Vogtle Nuclear Plant and the identification of such changes and the methods of initiating, reviewing, evaluating and responding to these changes.

Section 28 - Reporting of Substantial Safety
Hazard Defects, Noncompliances,
and Significant Deficiencies

Describes the responsibilities of engineering to report defects, non-compliances, and significant deficiencies in accordance with the requirements of 10 CFR 21 and 10 CFR 50.55(e).

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Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 29 - Design Specifications, ASME Boiler and Pressure Vessel Code, Section III

Describes the processing of design specifications required by the ASME Boiler and Pressure Vessel Code, Section III, in subsection NA/NCA-3250, for use on the project.

Section 30 - Safety Analysis Report and Environmental Report Preparation

Describes the preparation and control of the portion of the FSAR and operating licensing stage environmental report (OLSER) which falls within the BPC scope of responsibility.

Section 31 - Current Licensing/Design Data

Describes the screening and follow-up methods used by BPC project personnel to identify licensing and design data that require special evaluation.

Section 32 - Final Safety Analysis Report and Operating License Stage Environmental Report Preparation and Change Control

Describes the procedure for preparing, reviewing and submitting changes to the FSAR and the OLSER. This procedure becomes operative following the four party review of the individual sections.

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

PART D - Procurement - Primary Responsibility of the
Project Procurement Manager

Section 1 - Bid List

Establishes the preparation, review, and approval of a master bid list for the VNP project, and for checking and revising the list of bidders prior to issuing each bid request.

Section 2 - Purchasing

Defines the methods and procedures used by BPC purchasing and subcontract departments to process procurements for equipment, material, and services for the VNP project; also includes coordination with GPC Procurement.

Section 3 - Supplier Quality

Describes the quality surveillance and auditing procedures used to implement the applicable requirements of the Bechtel Procurement Supplier Quality Manual, and to ensure compliance with the requirements of ANSI N45.2-1971, "Quality Insurance Program Requirements for Nuclear Power Plants."

Section 4 - Expediting

Provides for the expediting of vendor drawings and associated data, recording actions taken, status reports, and report distribution.

Section 5 - Reporting of Defects and Noncompliance
Nuclear Regulatory Commission 10 CFR 21

Provides instruction for the incorporation of provisions of 10 CFR 21 in project procurement documents for nuclear safety-related items.

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Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 6 - Supplier Annual Performance Evaluation

Evaluates supplier performance in maintaining the accepted quality program to determine if a supplemental audit is required to ensure conformance with Regulatory Guide 1.144.

Section 7 - Evaluation of Supplier's Quality Program
By Procurement Supplier Quality Department

Defines evaluations of supplier's quality programs to determine compliance and commitment to requirements identified in engineering and procurement documents.

S9

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

S9 | PART E - Quality Assurance - Primary Responsibility of the
Project Quality Assurance Engineer

S2 | Section 1 - Project Quality Audits

Provides for the audit of project functions and division support organizations involved to verify compliance with the established quality program.

Section 2 - Supplier System Audits

Conducts audits of the NSSS and supplier with participation by GPC and SCS.

S9 | Section 3 - Project Surveillance

Describes the program of surveys conducted of discrete subjects of limited scope when problems are identified or suspected to verify compliance with quality program commitments.

Section 4 - Bid Evaluation

Describes the incorporation of supplier quality program evaluation and verification of processing of information in the bid evaluation summary.

S2 | Section 5 - Stopwork Action

Identifies stopwork conditions, and incorporates the steps to evaluate such conditions for issuing and distributing Stopwork Notices, and for the approval and closeout of such notices.

S9 | Section 6 - Corrective Action Requests

S2 | Describes the implementation of corrective actions initiated to correct unacceptable conditions, and subsequent follow-up to verify implementation and effectiveness of corrective actions.

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 7 - Quality Assurance Personnel Training	S2
Defines the training of Quality Assurance Engineers assigned to the project to ensure knowledge of project requirements and the project quality program, which is verified in documents.	
Section 8 - Audits at a Supplier Facility	S9
Identifies the participation by Project Quality Assurance Engineers in PSQD audits of suppliers, and provides for QAE's to initiate, lead, and conduct audits at suppliers facilities when required.	
Section 9 - Procurement Document Review	S2
Identifies quality assurance review of procurement documents in the coordination and review cycle and the sign-off of purchase memoranda.	
PART F - Cost, Schedule, and Estimating - Primary Responsibility of the Project Cost/Schedule Supervisor	S9
Section 1 - Cost Control, General	S2
Identifies the overall responsibilities for cost control, defines terms used in cost control programs and procedures, and explains the flow of information within the cost control system.	
Section 2 - Cost Control, Home Office	
Provides for tracking the home office portion of the project plan, and identifies deviations for corrective action to minimize or eliminate cost increases by budgeting, trending, quantity forecasting, and procurement cost control.	

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 3 - Cost Control, Management

Establishes requirements for the accumulation of information into the total project forecast, client cash flow, and review of project billings.

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Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 4 - Cost Control, Field

Provides for tracking the field portion of the project plan, and identifies for corrective action to minimize or eliminate cost increases by trending, labor performance monitoring, contract cost control, and invoicing review.

Section 5 - Planning and Scheduling, General

Identifies overall responsibilities for planning and scheduling, defines terms used in programs and procedures, and explains the flow of information within the planning and scheduling system.

Section 6 - Planning and Scheduling, Home Office

Provides the Engineering and other home office operations the information for implementing and maintaining home office project schedules, schedule control, and reporting systems.

Section 7 - Planning and Scheduling, Management

Establishes the accumulation of all information for the implementation, status, and maintenance of the overall project schedules.

Section 8 - Planning and Scheduling, Field

Provides field operations with information to implement and maintain field schedules, schedule control, and reporting systems.

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 9 - Quantity Tracking and Take Off, General

Identifies the overall responsibilities for material takeoff and material control systems, defines terms used in programs and procedures, and explains the flow of information within the material control system.

Section 10 - Quantity Tracking and Take Off, Home Office

Explains the method of identifying, tagging, tracking, and providing the status for the design and procurement of permanent plant equipment and materials.

Section 11 - Quantity Tracking and Take Off, Field

Explains the status and method of reporting the receipt, installation, and release to Startup of permanent plant equipment and materials.

Section 12 - Quantity Tracking and Take Off, Interfaces and Control

Explains the coordinating of input data and its interface with the quantity forecast system, activity package system, and labor performance monitoring system.

Section 13 - Project Estimates

Defines the timing method and level of detail for the preparation of project estimates.

Section 14 - Estimating Support

Identifies the responsibilities of the Estimating Department in the support of the project control system and studies.

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Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

S9 | PART G - Startup - Primary Responsibility of the Project
Startup Engineer

S2 | Section 1 - Purpose and Scope

Defines the scope of work to be performed by the VNP Startup group. Activities defined shall support GFC, which will retain exclusive responsibility for VNP startup program.

S9 | Section 2 - Startup System Scoping

S2 | Describes the basic policy for scoping (rearranging) the VNP project-engineered systems into startup systems, and details the procedures for the preparation, use, and control of the documents and drawings that identify the startup system boundaries.

S9 | Section 3 - Startup Planning and Scheduling

Defines the basic startup planning and scheduling tools, and details the procedures for their preparation, use, and control.

S2 | Section 4 - Startup Manuals

Establishes the requirements for the development of a startup manual to be prepared for GPC Startup group which will include requirements for construction assurance testing, and flushing of the plant piping systems.

S9 | Section 5 - Preoperational Test Procedures

S2 | Details the requirements for the development of the various procedures to be prepared for the VNP project.
S9 |

Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

APPENDIX 1 - Boilerplate and Standard Appendices - Primary Responsibility of the Project Engineering Manager.

Describes the purpose of the appendix and provides the examples of standard sections and standard appendices (boilerplate) for specifications.

APPENDIX 2 - Engineering Field Procedures - Primary Responsibility of the Project Engineering Manager

Section 1 - Division of Responsibility

Defines organization and responsibilities for field activities conducted by Bechtel Power Corporation, Georgia Power Company, Pullman Power Products, and Westinghouse Electric Corporation.

Section 2 - Control of ASME Symbol Stamping

Establishes control of the ASME Code stamps granted for use to BPC, custodial responsibility at the jobsite, use of the stamp and documentation of applications.

Section 3 - Code Authorization, Inspection, and Code Stamping

Defines the responsibilities and requirements of the BPC field resident engineer for code authorization, inspection, and code stamping.

Section 4 - ASME III Code Data Plate Placement

Defines the physical standards, approved methods of installation, and documentation of the ASME N-Code nameplates.

Section 5 - N-5 Data Report Processing

Provides procedures for preparing the N-5 data report form for ASME code items.

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Table 17A-5 (Continued)

VNP PROJECT REFERENCE MANUAL

Section 6 - Hydro Testing

(Later)

Section 7 - Field Control of Piping Isometrics and Field-Generated Pipe and Hangar Drawings

Establishes design control of process piping and plumbing/drainage isometrics to the field; and pipe and instrumentation isometrics and hangar drawings generated by GPC and the piping contractor at the site.

Section 8 - Field Control of Pipe Support Drawings

Establishes design control of pipe support assembly drawings transferred to the field; and pipe support assembly drawings generated by GPC and the contractor at the jobsite.

APPENDIX 3 - Master Microfilm Cartridge Index - Primary Responsibility of the Project Engineering Manager

Provides the indices for the microfilmed records of the various project files that contain correspondence and documents.

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project design criteria and applicable codes, standards, and regulatory requirements. The project has the responsibility for preparing and maintaining organizational charts and documentation defining interface responsibilities. The principal interfaces are identified in Subsection 17A.1.6.

17A.2.1.4 Personnel

The responsibilities and the education and experience requirements of individuals involved in quality program-related activities are formally documented in job descriptions that are approved and periodically reviewed by BPC management. Requirements for education, experience, and proficiency levels are commensurate with the degree of importance of the job assignment. Documents describing the qualifications of individuals are on file in division offices and are available for review. Training and qualification programs include documented procedures.

EPC personnel participating in the program are provided with specific indoctrination and training covering the project procedures applicable to their work. This is accomplished by general discussions of specific procedures and individual training by proper supervision and staff specialists. Similar programs are employed for indoctrination of individuals assigned to staff and specialists group.

In addition to the basic indoctrination and training programs and performance reviews, certain minimum education and experience guidelines have been established for the various positions that incorporate responsibility for managing and directing program activities. While these guidelines are used in selecting candidates for such positions, they are not considered absolute requirements, when other factors, such as the individual's demonstrated capability and staff technical support available to him, provide assurance that the appropriate managerial and technical skill will be applied.

The basic qualification requirements for key management positions in the quality groups are an advanced degree with 5 or more years of appropriate management and quality assurance experience, or a bachelor's degree with 8 or more years of appropriate experience. Additional pertinent experience is considered in lieu of a bachelor's degree.

The basic qualification requirements for supervisory and project quality functions, such as Quality Assurance Engineer, are an advanced degree with 2 or more years' appropriate supervisory and quality related experience, or a bachelor's degree with 5 or more years of appropriate experience. Additional pertinent (technical) experience is considered in lieu of a bachelor's degree.

In addition to the normal group indoctrination and informal training, the following specific qualification requirements are applied:

- Audit Personnel - Personnel performing audits will be qualified in accordance with the appropriate requirements of Regulatory Guide 1.144.
- Procurement Supplier Quality Representatives (PSQR) - A formal training and certification program, developed by the Procurement Supplier Quality Department, is required for each PSQR. This program is defined in the Bechtel Procurement Supplier Quality Manual.

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17A.2.1.5 Management Review

Management reviews of the status and adequacy of the quality program are accomplished through regular reports and presentations by Quality Assurance management personnel to the Division Manager, and through reviews of audit reports. Management reports contain summary data on the status of outstanding audit and corrective action items, and identify the status of other significant quality program activities, which may include items such as training and qualification programs, progress toward development of standard procedures, work plans and other documents, status of industry standards, and other external issues of interest.

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17A.3 DESIGN CONTROL

The BPC design control program is based upon the requirements of ANSI N45.2-1971, Section 4, and is responsive to the intent of the proposed standard ANSI N45.2.11, Draft 2, Revision 2.

Engineering Department policies, design guides, standards, procedures, and instructions are employed for control of engineering design work to meet technical and regulatory requirements. These controls identify responsibilities and provide procedures to assure that design requirements are correctly translated into the final design. The controls also provide for preparation of appropriate documentation to permit review of the process used and the results obtained. The controls provide for the identification and specification of appropriate quality standards, and for control of changes and design interfaces. Project design criteria and departures from project design criteria require approval by the appropriate Chief Engineers.

Design criteria are assembled by the project on a discipline basis during the initial stages of design. These criteria include the criteria contained in Safety Analysis Reports and other project requirements. The design criteria are maintained current, and serve as a basis for preparation of the final design.

The design control program incorporates measures for identification and control of design interfaces among the various engineering disciplines on the project, between the project and technical support groups within BPC, and of such external interfaces as nuclear steam system supplier, other equipment suppliers, contractors performing design work, and GPC and SCS. These measures include: (a) identification of technical responsibilities of the various design groups and provisions for coordination of design documents among them, (b) description of responsibilities of, and provisions for, coordination with other design and engineering support groups within BPC; and (c) definition of interfaces and control of communication with organizations external to BPC.

Essentially, all engineering documents are prepared by project personnel, and include calculations, drawings, specifications, design analyses, functional descriptions, and technical reports. They are given on-project check or review, in accordance with project procedures, by personnel having technical capabilities comparable to those of the originating engineer or designer. Engineering Group Supervisors are responsible for approval of engineering documents prepared within their groups. Work of specialists external to the project is checked and reviewed by project personnel (in accordance with project procedures) or by members of the specialist group (in accordance with specialist group procedures), and must be accepted by responsible projects personnel.

For selected design documents, an additional level of review is required. This review is the responsibility of the cognizant Chief Engineer and his staff, and is performed by personnel independent of the project team in accordance with Engineering Department Procedures. Identification of work requiring this additional level of control is provided by means of checklists or matrices prepared by the project during the initial stages of the design phase, and approved by the cognizant Chief Engineers. Reviews may take the form of periodic in-process single or multi-disciplinary reviews, final review meetings, independent detailed checks, comparison of results with those of the alternate simplified analysis, or comparison with proven standard designs. The specific review approach employed in each case is determined by the Chief Engineer and his staff, based upon the nature and importance of the item to safety and the

specific attribute, and its similarity with previously proven designs. Verification of this checking and review program is obtained through appropriate signature on the documents, approval records, or where applicable, by review meeting minutes or reports.

In some instances, design verification may be obtained by tests. In such cases, test programs and results are thoroughly reviewed by project and technical staff personnel, and the procedures used meet the requirements of ANSI N45.2-1971, Section 4.3.

Design changes, including field changes, are subjected to design control measures commensurate to those applied to the original design. BPC policy requires that proposed changes to the design require review and approval by the design group that was responsible for the original design. Specifically, this requires that changes to design requirements, or completed designs produced by project engineering, which may be proposed by suppliers, contractors, GPC Construction, or others, must be reviewed and accepted by Project Engineering. Certain design work, such as small pipe details, may be completed by field engineering. This work is performed in accordance with requirements prescribed by design engineering, and important aspects, such as stress analysis, systems separation, and fire protection, are reviewed by Project Engineering or other designated design office specialists.

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Checking and review of significant design changes are performed to a level commensurate with that of the original design. Suppliers are not allowed to make changes from BPC design requirements or BPC-approved supplier design documents without obtaining approval from the BPC Project Engineering Manager. Construction site changes to engineering design are documented by means of change notices or change requests which require authorization by Project Engineering. Significant or unique changes are individually authorized by the Project Engineering Manager.

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17A.4 PROCUREMENT DOCUMENT CONTROL

17A.4.1 PROCUREMENT DOCUMENTS

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Procurement actions for Q-List items employ specifications and quality assurance requirements established by the project engineering team.

Project Engineering prepares (or provides) the technical and quality requirements appearing in procurement documents. Engineering applies similar policies and procedures to the preparation of procurement documents as those applied to design documents. Project Engineering is responsible for assuring

that applicable regulatory requirements, design bases, and other requirements, such as supplier quality program requirements that are necessary to obtain and verify quality, are included or referenced in the procurement documents.

Procurement specifications include specific technical requirements for the equipment and services to be furnished, which define specific codes, standards, tests, inspections, and records to be applied or furnished. The procurement documents also include quality assurance requirements, either in separate specifications that define requirements for the supplier's quality assurance program, or by incorporating the appropriate requirements in the technical specifications and associated documents. Quality assurance programs may be specified by invoking appropriate sections of ANSI N45.2-1971 and the ASME Pressure Vessel Code as applicable, or by incorporating requirements equivalent to these standards. The procurement documents also establish provisions for quality surveillance and audit, provide for extension of the applicable requirements to subtier procurements, include provisions for control and approval of supplier nonconformances, and establish requirements for preparation and delivery of documentation. Specific requirements are provided for documents that must be submitted for review, and/or verification.

17A.5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

The documented instructions and procedures governing the program are identified in Section 17A.2. These meet the requirements of ANSI N45.2-1971, Section 6.

Written, formal instruction from Project Engineering to GPC Construction is in the form of engineering specifications and addenda, or change notices thereto, and drawings and design change notices. These documents contain reference, or require procedures and instructions, as appropriate, and provide necessary acceptance criteria. These documents, when approved by Project Engineering, provide authorization for construction work.

BPC procurement documents require suppliers and contractors to submit specified drawings and procedures to BPC for acceptance prior to start of fabrication or construction. BPC reviews of these documents are performed to determine that interfacing design features are compatible with overall design and installation requirements, and that procedures are acceptable.

Verification that work is accomplished in accordance with approved instructions, procedures, and drawings is obtained through the various levels of surveillance, inspection, and audit described in other paragraphs of this appendix.

17A.6 DOCUMENT CONTROL

The program documents, identified in table 17A-3, provide means for document control. For the project functions of engineering, purchasing, procurement supplier quality, and preoperational testing, control procedures provide for the review, approval, and release of documents and changes thereto. Document control systems incorporate the requirements of ANSI N45.2-1971, Section 7.

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Document control centers for the project are set up in the home office. The home office Document Control Center is under the supervision of the Manager of Division Engineering. Controlled documents are released, received, controlled, and distributed through the center.

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Approved drawings and specifications prepared by Project Engineering are issued to organizations responsible for performing the work, and to those responsible for inspection. Control registers identifying the drawings and specifications, and their current status, are issued periodically. Transmittal forms are employed to forward drawings and specifications, and require signed receipts be returned from the addressee.

Changes made to approved design documents by Project Engineering, or proposed by suppliers and GPC Construction, are reviewed and approved by the Project Engineering Manager, in accordance with established procedures which provide that changes are reviewed in the same manner as the original issue.

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Vendor-submitted documents such as drawings, specifications, procedures, manuals, and other data are classified as vendor prints, and are controlled through the use of the control logs that provide identification and status of vendor documents. Transmittal forms are used to return and show approval status of evaluated vendor documents. BPC procurement supplier quality representatives are informed as to the current status of vendor documents, and copies of applicable vendor documents are formally transmitted to the construction site by transmittal forms which require signed receipts be returned from the addressee.

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Control of documents is regularly audited by project Quality Assurance Engineers.

17A.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

Files of currently capable suppliers and contractors are maintained by BPC Procurement. These files identify suppliers and contractors who have demonstrated their ability to provide quality material, equipment, or services, or have been

S9| established as capable by survey. Supplier's and contractor's quality history files contain information on scope of services and capability, identify projects currently employing the supplier or contractor, and include results of recent shop surveys and audits. Periodic reports identifying data contained in quality history files are issued by the Procurement Supplier Quality Department to interested groups within the divisions.

S2| Additionally, the Materials and Quality Services Department
S9| reviews and maintains controlled copies of supplier quality
S9| assurance/quality control manuals of material suppliers, and
S9| welding, nondestructive examination, and protective coating
procedures for work involving compliance with the ASME Boiler
and Pressure Vessel Code. M&QS reviews and evaluates these
documents with the assistance of Procurement Supplier Quality
and periodically issues summary listings of the approved vendor
information on file. This information is available to the VNP
project for assistance in identification and evaluation of
qualified sources.

S2| Procurement Supplier Quality Department procedures include
provisions for source surveys which may be used to supplement
data in a supplier's quality history file in cases where the
scope of services or quality requirements of new work exceeds
that for which the supplier was previously qualified, in cases
S9| where new sources are being considered for selection, or when
no work or report has been generated during the previous two
years.

S9| The VNP Procurement group prepares a draft bid list of
S9| safety-related items, identified in Section 17.3 for review and
S9| approval by GPC. The approved bid list is periodically
S9| reviewed, in light of current information available, to deter-
mine if a revision is necessary prior to release of a bid
package. GPC is contacted verbally for confirmation of
the selected bidder list for a particular item.

S2| Project Engineering and Procurement Supplier Quality Department
S9| develop a recommended scope of quality surveillance services
S2| for equipment for approval by SCS. The scope of procurement
S9| supplier quality services approved by SCS is identified in the
Supplier Quality Activity Log.

Prior to fabrication, the following technical and quality
requirements must be met:

- Determination by Project Engineering that the source is responsive to the technical requirements of the specification.

- Determination by Project Engineering and Procurement Supplier Quality that the supplier's or contractor's quality assurance program is capable of meeting the specified requirements.

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The quality assurance program evaluation may be achieved by review of: controlled program manuals previously submitted and evaluated by responsible BPC personnel; manuals and procedures submitted to BPC, or made available for BPC review in the bidder's facilities, in connection with the specific procurement; or summary descriptions submitted with the proposal. For supplier work covered entirely by ASME Boiler and Pressure Vessel Code, Section III requirements, possession of the appropriate "N" stamp, and review of the bidder's Certificate of Authorization constitutes an acceptable minimum requirement for source qualification.

Upon award of a purchase order for a Q-List item that includes procurement supplier quality services, the Procurement Supplier Quality Department coordinates with the contractor or supplier to prepare a quality surveillance plan for review and approval by Project Engineering. This plan, based on standard procedures from the Procurement Supplier Quality Manual, provides for the identification of witness and hold points, and identifies the examinations and tests that are selected to be witnessed by the BPC procurement supplier quality representative. Quality surveillance may be performed by resident or part-time (itinerant) PSQR. Reports documenting inspections performed, tests witnessed, and discrepancies observed are prepared by PSQR and distributed to appropriate Engineering, Procurement, and Quality Assurance personnel, and project participants in accordance with project procedures. BPC PSQRs are also responsible for reviewing and verifying specified supplier quality assurance records.

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Documentary evidence that the item conforms to procurement documents required to be available at the construction site prior to installation or use includes as follows:

- A. For equipment subject to surveillance and not covered by ASME Boiler and Pressure Vessel Code Requirements - An executed Certificate of Conformance* or receipt of the specified documentation package. In addition,

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*NOTE: Certificate of Conformance - a document identifying the specific technical requirements met by the item (by referencing the appropriate BPC specification and other important governing codes and standards) executed by an authorized representative of the supplier.

S9 | documentary evidence that the BPC PSQR has reviewed
 S2 | the documentation package and released the item. This
 S9 | may be accomplished by the BPC PSQR's signature on the
 S2 | Certificate of Conformance or the documentation package,
 or receipt of the BPC supplier quality representative's
 release TWX or report.

S9 | B. For equipment subject to quality surveillance and
 covered by ASME Boiler and Pressure Vessel Code
 requirements - The same requirements as in A, above,
 plus the appropriate Code Data Report forms and other
 documents required by BQCM-ASME III.

S9 | C. For equipment not subject to quality surveillance -
 Quality verification documentation required to be
 submitted by procurement specifications or material
 requisition. These are reviewed and verified by GPC
 personnel as a part of receiving inspection.

D. For nuclear steam system supplier-furnished items -
 Appropriate certification from the nuclear steam
 system supplier in accordance with his approved
 quality program.

Complete quality verification record packages are requested to
 be delivered prior to or with the shipment. Completed quality
 verification records packages are transmitted to GPC at the
 construction site. Project Engineering may elect to have
 selected quality verification documentation delivered to the
 design office for review by so specifying in procurement
 documents.

S9 | The selected supplier's control program provides for periodic
 audits of supplier's quality assurance programs. Audits of
 suppliers performing continuing work for the VNP are con-
 ducted as a minimum on a triennial basis; audits of selected
 suppliers performing limited-duration assignments are
 conducted at least once during the life of the contract.
 S9 | Selected suppliers of Q-List items, who are required to provide
 a quality assurance program, are subject to audits; audits are
 S9 | conducted on suppliers whose programs require BPC quality
 surveillance.

17A.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

S9 | For procured items, requirements for the identification and
 control of materials, parts, and components are incorporated
 into procurement specifications in accordance with Section 17A-4.

17A.9 CONTROL OF SPECIAL PROCESSES

The requirements of ANSI N45.2-1971, Section 10, and provisions of the ASME Boiler and Pressure Vessel Code are incorporated as applicable in procurement documents for Q-List items. Special processes requiring procedure and/or personnel qualification beyond those required by the code, are identified in specifications, by reference to appropriate industry codes and standards, where available, or by specific identification in the specification. The requirements for welding and non-destructive examination comply with applicable portions of the ASME Boiler and Pressure Vessel Code, AWS Standards, and SNT-TC-1A, and supplements as applicable. Cleaning and flushing procedures and personnel qualifications conform to the requirements of ANSI N45.2.1-1973. Special process qualification data are subject to review by BPC.

Implementation of these controls is verified by the Procurement Supplier Quality representative. |S9

Other unique special processes or work operations identified by the nuclear steam system supplier or Project Engineering are properly specified in engineering documents.

17A.10 INSPECTION

For procured items, requirements for quality surveillance are incorporated into procurement specifications in accordance with Section 17A.4. |S9

As described in Section 17A.7, supplier's and contractor's programs are subject to quality surveillance by BPC PSQR's. |S9

17A.11 TEST CONTROL

For procured items, requirements for test control are incorporated into procurement specifications in accordance with Section 17A.4. Preoperational and startup testing is under the control of GPC. BPC Startup Engineers provide assistance to GPC in the preparation of preoperational plans, schedules, and specifications that include, when required, provisions to collect, analyze, and evaluate test results in accordance with the criteria of ANSI N45.2-1971. |S9

17A.12 CONTROL OF MEASURING AND TEST EQUIPMENT

For procured items, requirements for the control of measuring and test equipment are incorporated into procurement specifications in accordance with Section 17A.4. |S9

17A.13 HANDLING, STORAGE, AND SHIPPING

S9| For procured items, requirements for handling, storage, and shipping are incorporated into procurement specifications in accordance with Section 17A.4.

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S9| For supplier or contractor work, special handling, storage, shipping, and preservation requirements are identified in procurement specifications which either provide, or require the supplier or contractor to provide, the required procedures and instructions. The packaging, handling, and shipping practices of the suppliers are subject to review by BPC PSQR at the source prior to shipment, to verify compliance with requirements defined in procurement documents.

S9| When required, special procedures and requirements for handling or storage are issued by Project Engineering to the construction site. These documents are reviewed as appropriate by BPC Engineering or specialists.

17A.14 INSPECTION, TEST, AND OPERATING STATUS

S9| For procured items, requirements for inspection, test, and operating status controls are incorporated into procurement specifications in accordance with Section 17A.4.

17A.15 NONCONFORMING ITEMS

S9| For procured items, requirements for the control of nonconforming items are incorporated into procurement specifications in accordance with Section 17A.4.

Nonconformances discovered during receiving inspection or construction activities are controlled and documented in accordance with GPC procedures. Procedures provide for submitting dispositions of "use as is" and "repair" to BPC Project Engineering for approval, and for GPC Inspection to verify that nonconformances have been completed in accordance with the disposition.

S2| Suppliers and subcontractors are required to advise BPC of all nonconformance from procurement documents or BPC-approved designs for which the recommendation disposition is "repair" or "use as is." BPC reserves the right to accept or reject the disposition. BPC also requires suppliers to submit proposed repair procedures for major nonconformances for approval by Project Engineering prior to their use. Reports of nonconformances identified by BPC personnel are prepared by the supplier, BPC Procurement supplier quality representatives, or Project Engineering to assure complete and adequate documentation.

Copies of completed nonconformance reports are forwarded to the jobsite prior to, or with, the release of the item, or identification of outstanding nonconformances will be included in the procurement supplier quality representative's release.

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17A.16 CORRECTIVE ACTION

The corrective action program provides procedures for prompt identification of conditions adverse to quality which may require corrective action.

Within the BPC program, the identification of situations which may need corrective action is accomplished through review of nonconformance reports, supplier quality surveillance activities, Quality Assurance surveillance and monitoring programs, and Quality Assurance audits. Corrective action is controlled and documented by means of corrective action reports and the associated procedure. These provide for: (a) The identification and reporting by any member of the project team of situations or occurrences that warrant corrective action. (b) Determination of the cause and identification of the corrective action to be taken by the responsible organization. (c) Reporting the cause and corrective action to proper level of management. (d) Final verification by the BPC PQAE that corrective action has been taken. (e) Review by Quality Assurance management for implication or effect on other work.

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In the design phase, corrective action involving design documents, and investigation of cause and actions taken to preclude recurrence, is applied to errors detected after the design verification process is completed. Errors detected after the verification process are formally documented and are reviewed for corrective action. These are documented by reports such as: supplier discrepancy reports, field nonconformance reports, startup reports, or feedback from utilities during operation of the plant. Significant problems are also reviewed for programmatic corrective action by Quality Assurance.

S2

This program also provides the evaluation of conditions reported, which may require reporting to the NRC by GPC in accordance with the requirements of 10 CFR 50.55 (e).

17A.17 QUALITY ASSURANCE RECORDS

The requirements of ANSI N45.2-1971, Section 18, are applied to BPC activities. Records produced as a result of the quality program are prepared and maintained by project groups, suppliers, and contractors as their work is being performed.

Project Engineering records are retained by the project engineering team as work is performed. Copies of released drawings, specifications, and similar documents are placed in engineering office files, transmitted to the GPC construction office, and submitted to SCS and GPC. At the completion of engineering, final copies of these records are provided to SCS and GPC. BPC Engineering retains control of design calculations and analyses. These are available for review by SCS and GPC and appropriate regulatory bodies as required.

Supplier records, which verify quality of their work, are requested from the supplier for transmittal to the construction site. In some instances, with the agreement of BPC, SCS, and GPC, suppliers are permitted to retain custody of certain records if retention procedures and storage facilities are adequate, and access is provided to SCS, GPC, and BPC.

ANSI N45.2.9 is used as a guideline for auditing records requirements.

17A.18 AUDITS

A comprehensive program of audits is conducted by BPC covering the various activities of the quality assurance program.

The requirements of ANSI N45.2-1971, Section 19, are incorporated into procurement specifications for suppliers and contractors who are required to have audit programs. The BPC audit program conforms with the requirements of ANSI N45.2-1971, Section 19, and conforms with the provisions of Regulatory Guide 1.144.

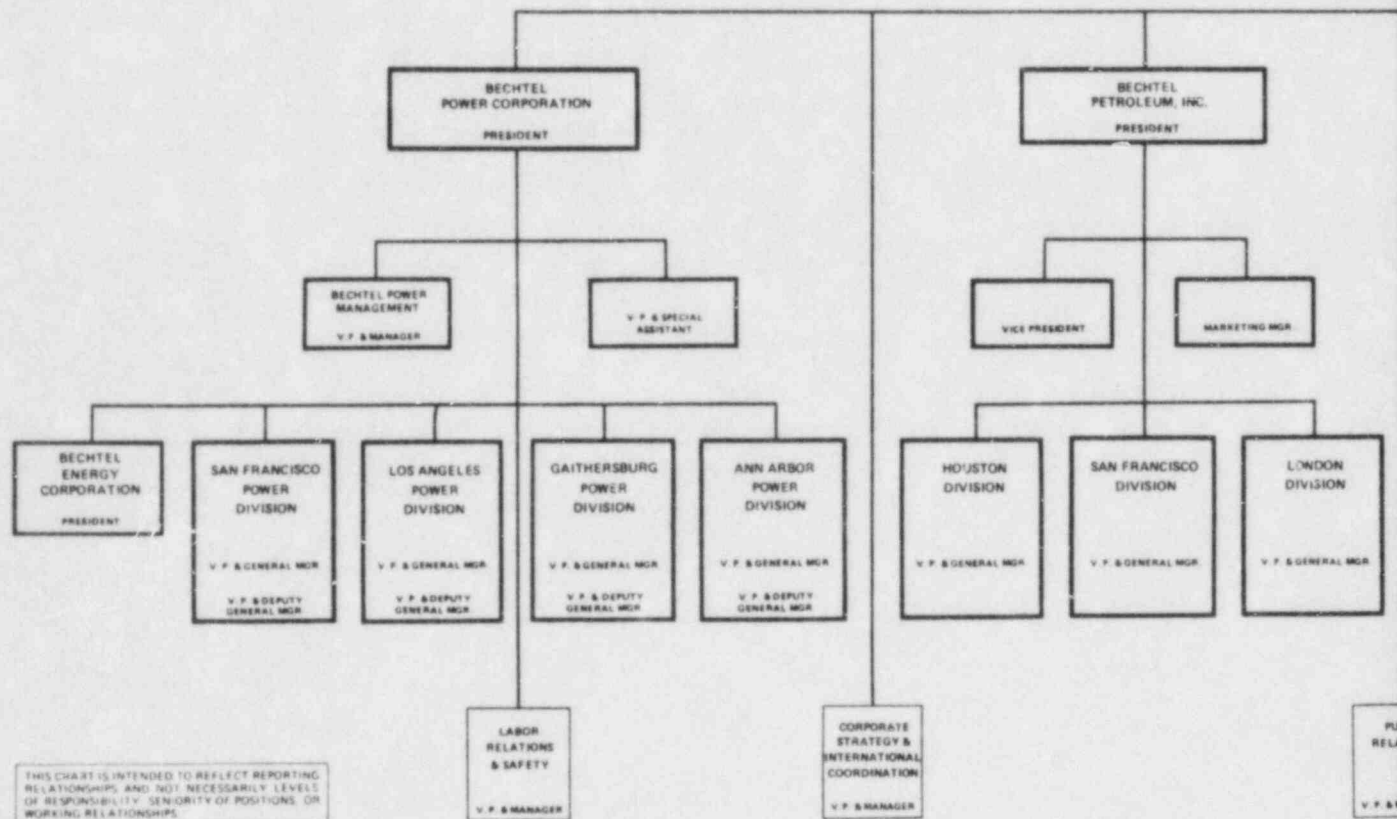
The comprehensive BPC audit program includes both frequent audits conducted by project Quality Assurance personnel, as well as formal periodic team audits performed by personnel independent of project activities. Audit activities include the following;

- A. Continuing individual audits of project engineering activities by office Quality Assurance personnel assigned to the project. These audits are planned, scheduled, and documented. Results are reported to the Project Engineering Manager, and Quality Assurance Manager Projects (immediate functional supervisor of the Project Quality Assurance Engineer).

- B. Periodic audits of BPC suppliers and contractors performing Q-list work subject to quality surveillance. These are conducted by Procurement Supplier Quality Department (PSQD) with appropriate assistance from QA, Engineering, MQS specialists, and Quality Control personnel, on at least a triennial basis for contractors performing continuing work on GPC purchase orders or contracts, or at least once during performance on single or multiple purchase orders and subcontracts having a limited duration. During the period between triennial audits, annual evaluations will be made to assess supplier quality program performance and determine if a supplemental audit is needed. Supplier audits are reported to the supplier-affected projects, to PSQ and QA management. Results of these audits are placed in supplier and contractor quality history files. S9
- C. Formal audits of Project Engineering design and procurement activities by Quality Assurance audit teams under the direction of Division Quality Assurance Manager, assisted by M&QS specialists and others, as required. These audits are conducted at least annually, and results are reported to the management of the function audited, cognizant project management, division management, and the BPM Manager of Quality Assurance. These audits are responsive to requirements of NRC regulations and those of ASME Boiler and Pressure Vessel Code, Section III. S2 S9
- D. Audits of division technical staff and services activities performed on an annual basis under the direction of the Division Quality Assurance Managers. These audits cover those groups doing design and/or review outside of direct control of the Project Engineering Manager. Results of these audits are reported to the manager or supervisor of the function audited, division management, and BPM Manager of Quality Assurance. S9 S9
- E. Audits of Procurement and M&QS conducted annually by Quality Assurance personnel under the direction of BPM Manager of Quality Assurance. These audits are conducted for the benefit of all divisions, and division QA personnel participate in the audits. Results of these audits are reported to cognizant management of the audited group, QA management in each division, and the BPM Manager of Quality Assurance. S2 S9 S9

Audit programs include provisions for identification of deficiencies, determination that corrective action is defined, and followup to verify that corrective action has been taken and is effective. Audits include selective review of procedures, work practices, and examination of items and records. Records of audits are available.

BECHTEL
PLAN OF ORGANIZATION



RESEARCH & ENGINEERING IS IN BECHTEL GROUP, INC.
ALL SERVICES ARE IN BECHTEL POWER CORPORATION
EXCEPT CORPORATE STRATEGY & INTERNATIONAL
COORDINATION WHICH IS IN BECHTEL PETROLEUM, INC.

Also Available On
Aperture Card
8306100267-02

PRINCIPAL BECHTEL COMPANIES

BECHTEL INVESTMENTS, INC.

PRINCIPAL OPERATING COMPANIES

SAN FRANCISCO

FARIS
RIO DE JANEIRO
RIYADH
SANTIAGO
SE-04/L
TAIPEI
TOKYO
TORONTO
VANCOUVER
WASHINGTON, D. C.

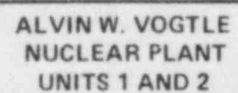
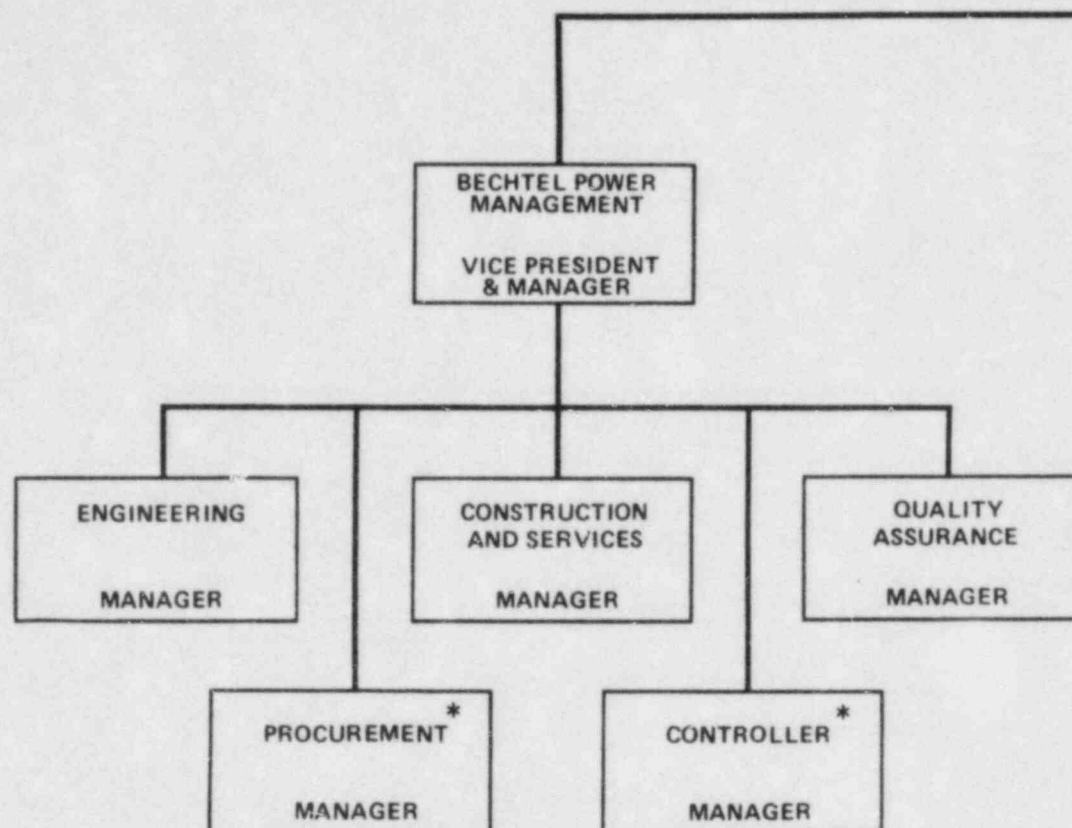


FIGURE 17A-1

THIS CHART IS INTENDED TO REFLECT REPORTING
RELATIONSHIPS AND NOT NECESSARILY LEVELS
OF RESPONSIBILITY, SENIORITY OF POSITIONS, OR
WORKING RELATIONSHIPS.



NOTE:
ALL PERSONNEL BASED IN HOME OFFICE
UNLESS OTHERWISE INDICATED

* RECEIVES FUNCTIONAL
APPLICABLE SAN F

Also Available On
Aperture Card

8306100267-03

BECHTEL POWER CORPORATION
PRESIDENT

BECHTEL POWER CORPORATION

SAN FRANCISCO

VICE PRESIDENT
& SPECIAL ASSISTANT

SAN FRANCISCO
POWER DIVISION

VICE PRESIDENT
& GENERAL MGR.

VICE PRESIDENT
& DEPUTY GEN. MGR.

LOS ANGELES
POWER DIVISION
(NORWALK)

VICE PRESIDENT
& GENERAL MGR.

VICE PRESIDENT
& DEPUTY GEN. MGR.

HOUSTON
AREA OFFICE
(HOUSTON)

VICE PRESIDENT
& MANAGER

GAITHERSBURG
POWER DIVISION
(GAITHERSBURG)

VICE PRESIDENT
& GENERAL MGR.

VICE PRESIDENT
& DEPUTY GEN. MGR.

ANN ARBOR
POWER DIVISION
(ANN ARBOR)

VICE PRESIDENT
& GENERAL MGR.

VICE PRESIDENT
& DEPUTY GEN. MGR.

BECHTEL ENERGY
CORPORATION
(MEMPHIS)

PRESIDENT

OPERATIONS MGR.

PRC
APERTURE
CARD

ADDITIONAL GUIDANCE FROM THE
SAN FRANCISCO SERVICE ORGANIZATION

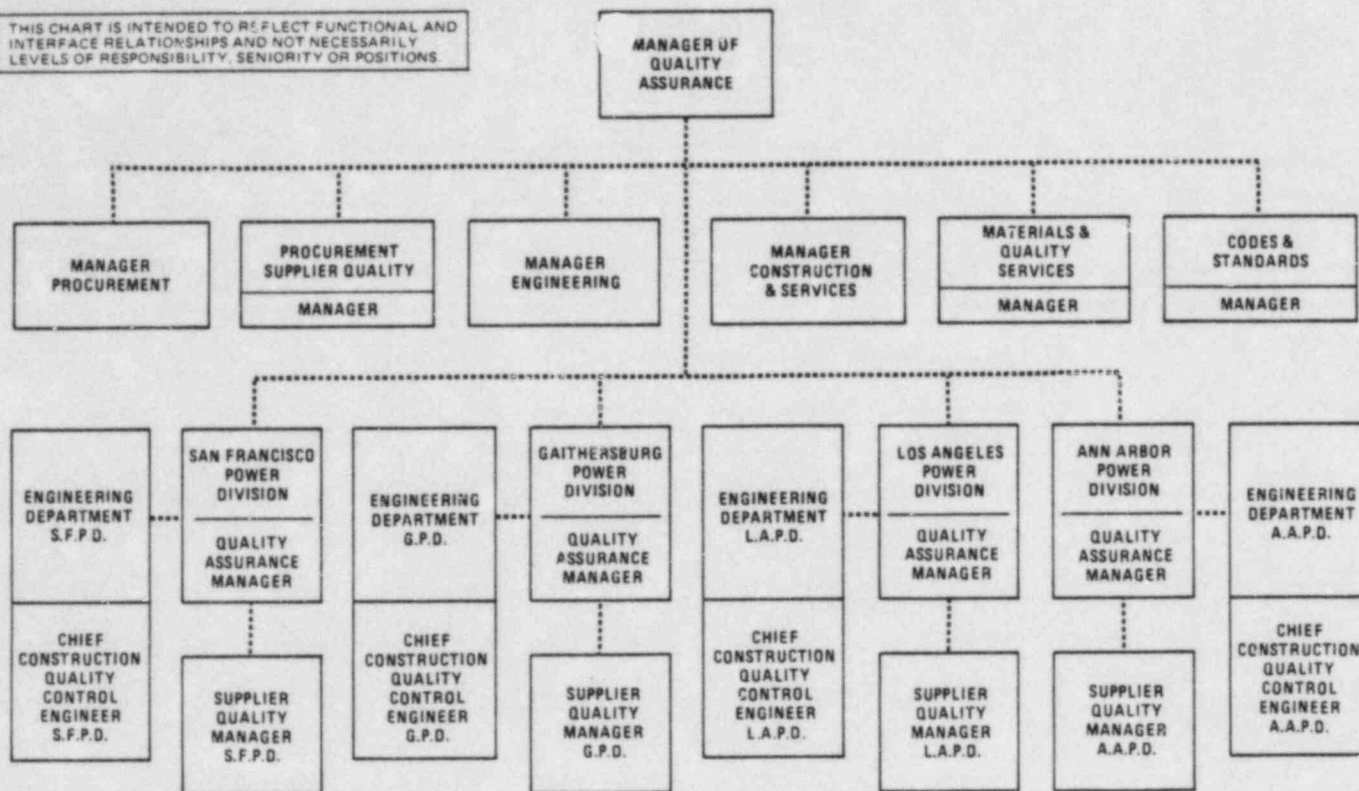


ALVIN W. VOGTLE
NUCLEAR PLANT
UNITS 1 AND 2

BECHTEL POWER ORGANIZATION
BECHTEL POWER MANAGEMENT


FIGURE 17A-2

THIS CHART IS INTENDED TO REFLECT FUNCTIONAL AND INTERFACE RELATIONSHIPS AND NOT NECESSARILY LEVELS OF RESPONSIBILITY, SENIORITY OR POSITIONS.

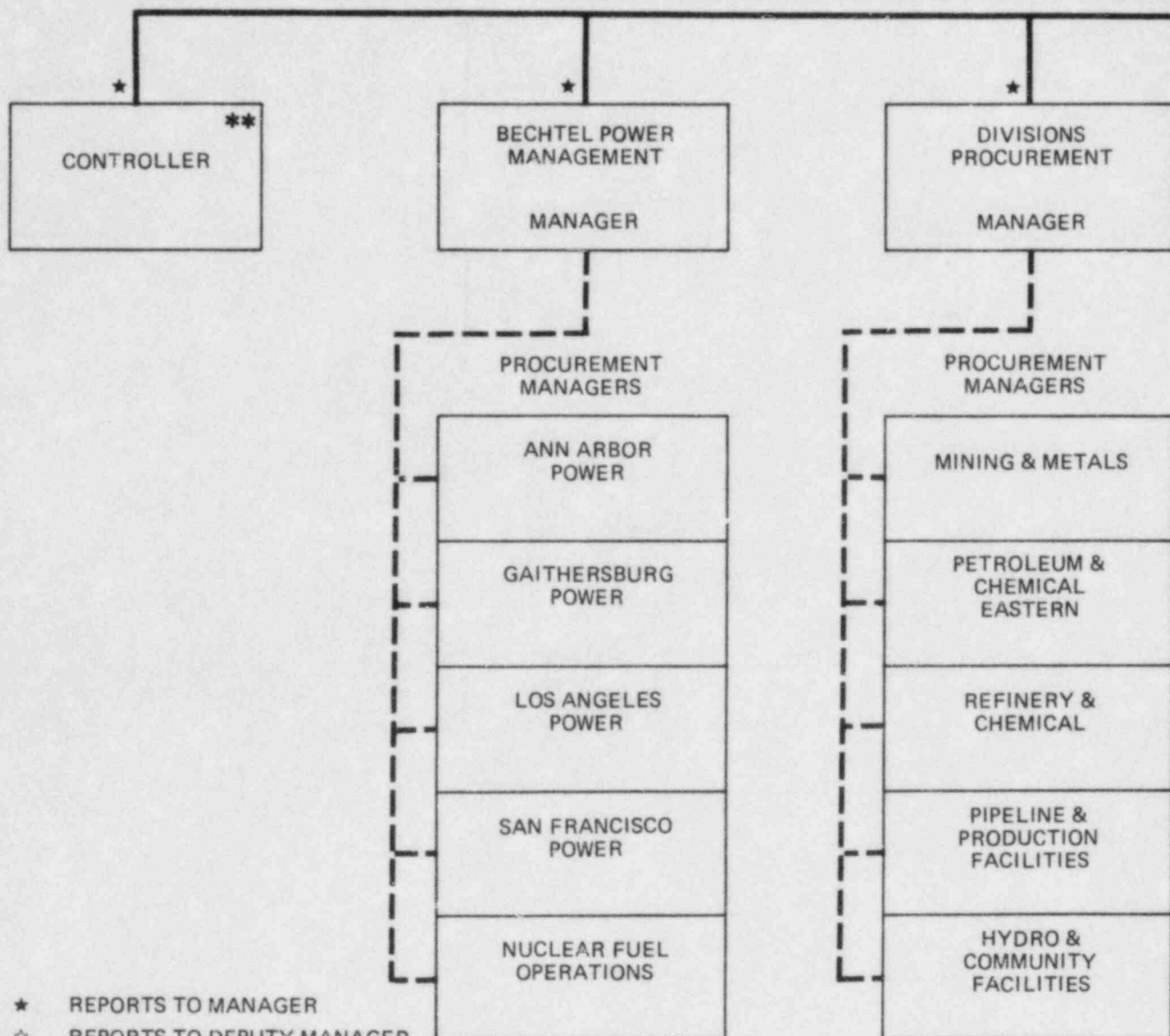


LEGEND

----- POLICY AND PROGRAM COORDINATION

 Georgia Power	ALVIN W. VOGTLE NUCLEAR PLANT UNITS 1 AND 2
BECHTEL POWER CORPORATION QUALITY ASSURANCE FUNCTIONAL RELATIONSHIPS	
FIGURE 17A-3	

THIS CHART IS INTENDED TO REFLECT REPORTING RELATIONSHIPS AND NOT NECESSARILY LEVELS OF RESPONSIBILITY, SENIORITY OF POSITIONS, OR WORKING RELATIONSHIPS.



- ★ REPORTS TO MANAGER
- ☆ REPORTS TO DEPUTY MANAGER

— FUNCTIONAL REPORTING

** RECEIVES FUNCTIONAL GUIDANCE FROM THE APPLICABLE SAN FRANCISCO SERVICE ORGANIZATION

* REPLACES CHART DATED JANUARY 4, 1982

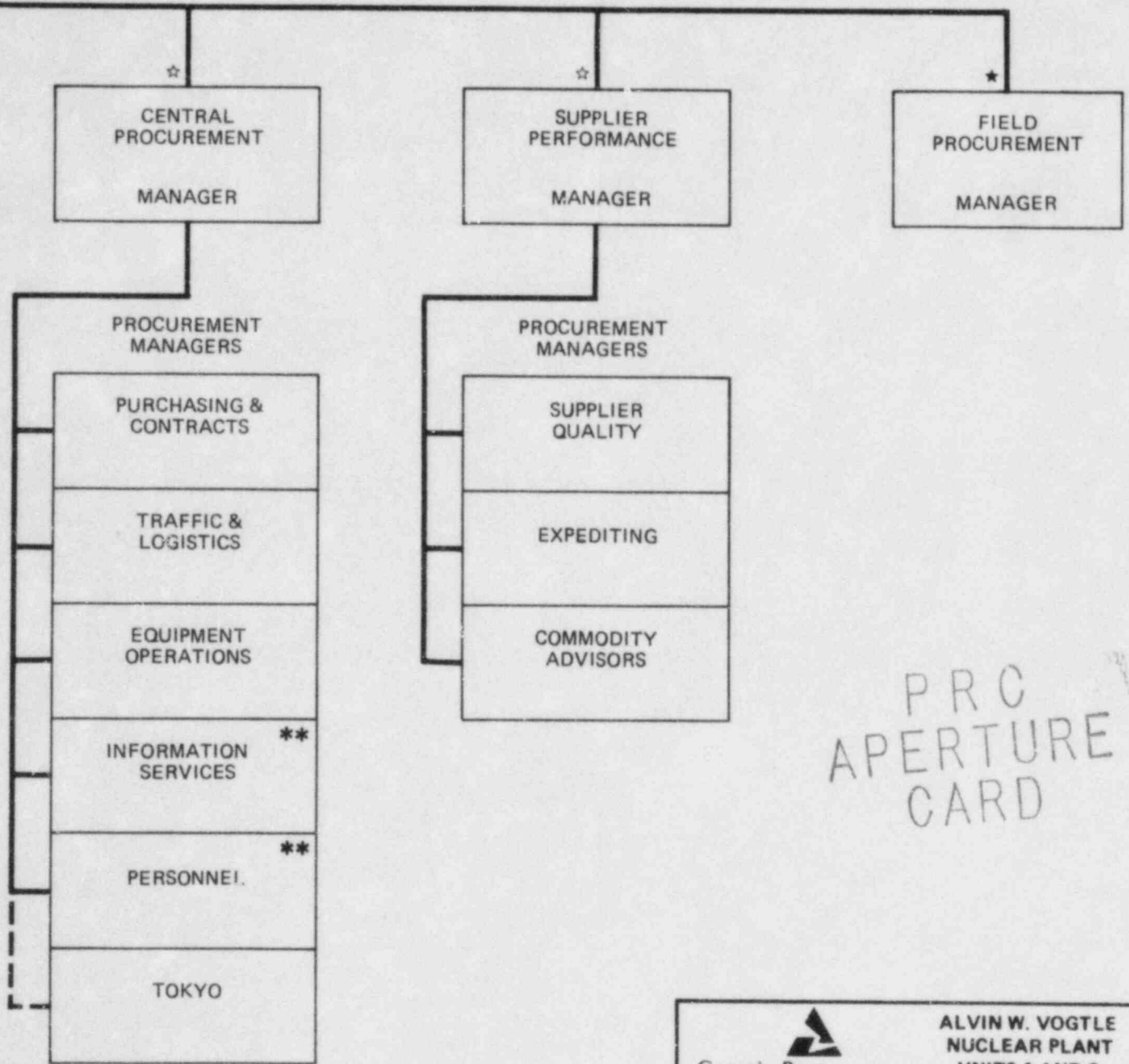
NOTE:

PERSONNEL ASSIGNED TO DIVISIONS ARE LOCATED AT DIVISION HEADQUARTERS. ALL OTHER PERSONNEL ARE BASED IN HOME OFFICE UNLESS OTHERWISE INDICATED.


8306100267-04
Also Available On
Aperture Card

PROCUREMENT
 CE PRESIDENT
 ND MANAGER
 PUTY MANAGER

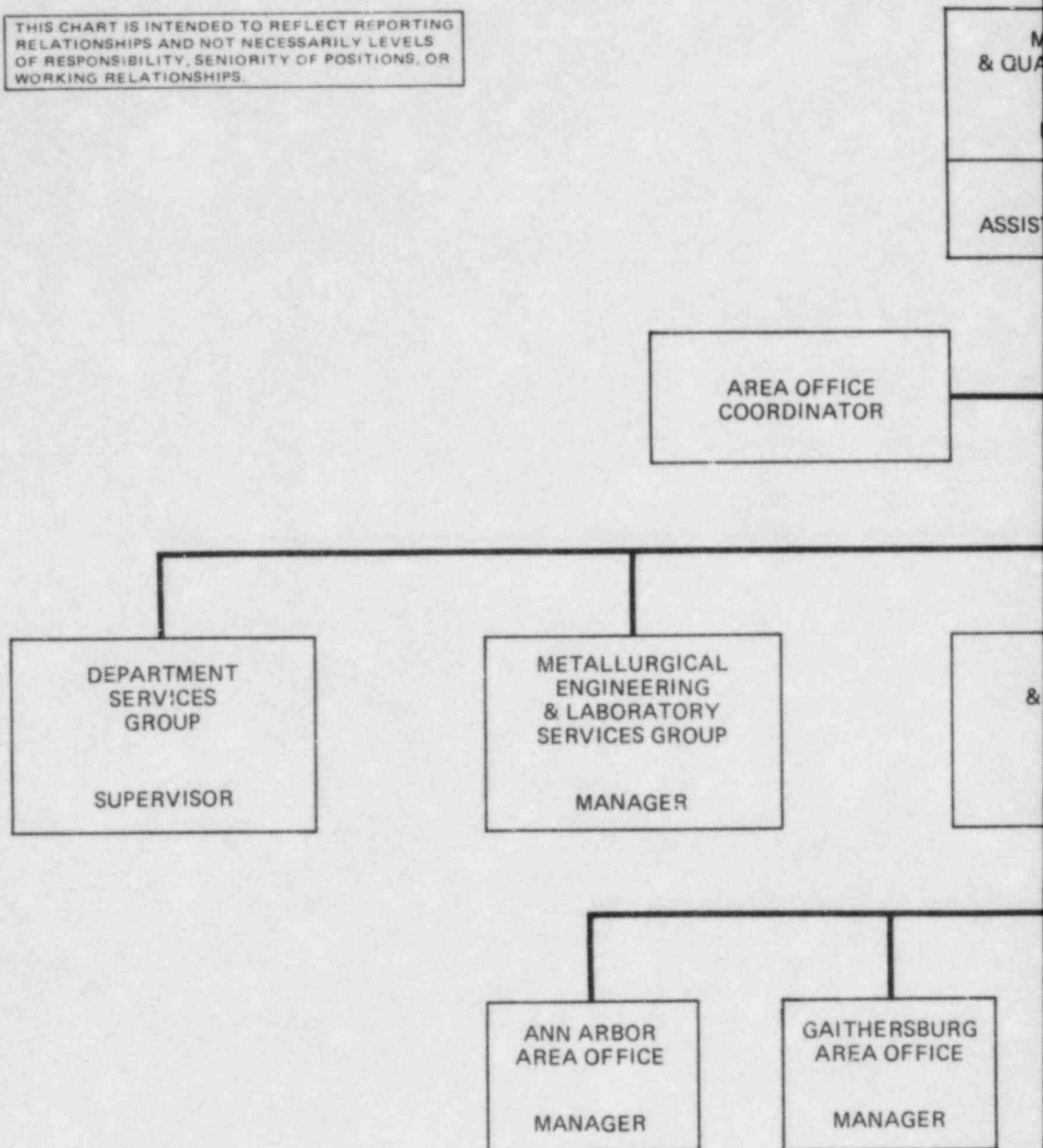
PROCUREMENT
 SAN FRANCISCO
 * MARCH 24, 1982



PRC
 APERTURE
 CARD

 Georgia Power	ALVIN W. VOGTLE NUCLEAR PLANT UNITS 1 AND 2
BECHTEL PROCUREMENT ORGANIZATION	
FIGURE 17A-4	

THIS CHART IS INTENDED TO REFLECT REPORTING
RELATIONSHIPS AND NOT NECESSARILY LEVELS
OF RESPONSIBILITY, SENIORITY OF POSITIONS, OR
WORKING RELATIONSHIPS.



Also Available On
Aperture Card

8306100267-05

MATERIALS
QUALITY SERVICES
MANAGER
TANT MANAGER

COATINGS
CORROSION
GROUP
MANAGER

WELDING ENGINEERING
& FIELD WELDING
SERVICES GROUP
MANAGER

NONDESTRUCTIVE
EXAMINATION
SERVICES GROUP
MANAGER


HOUSTON
AREA OFFICE
MANAGER

LONDON
AREA OFFICE
MANAGER

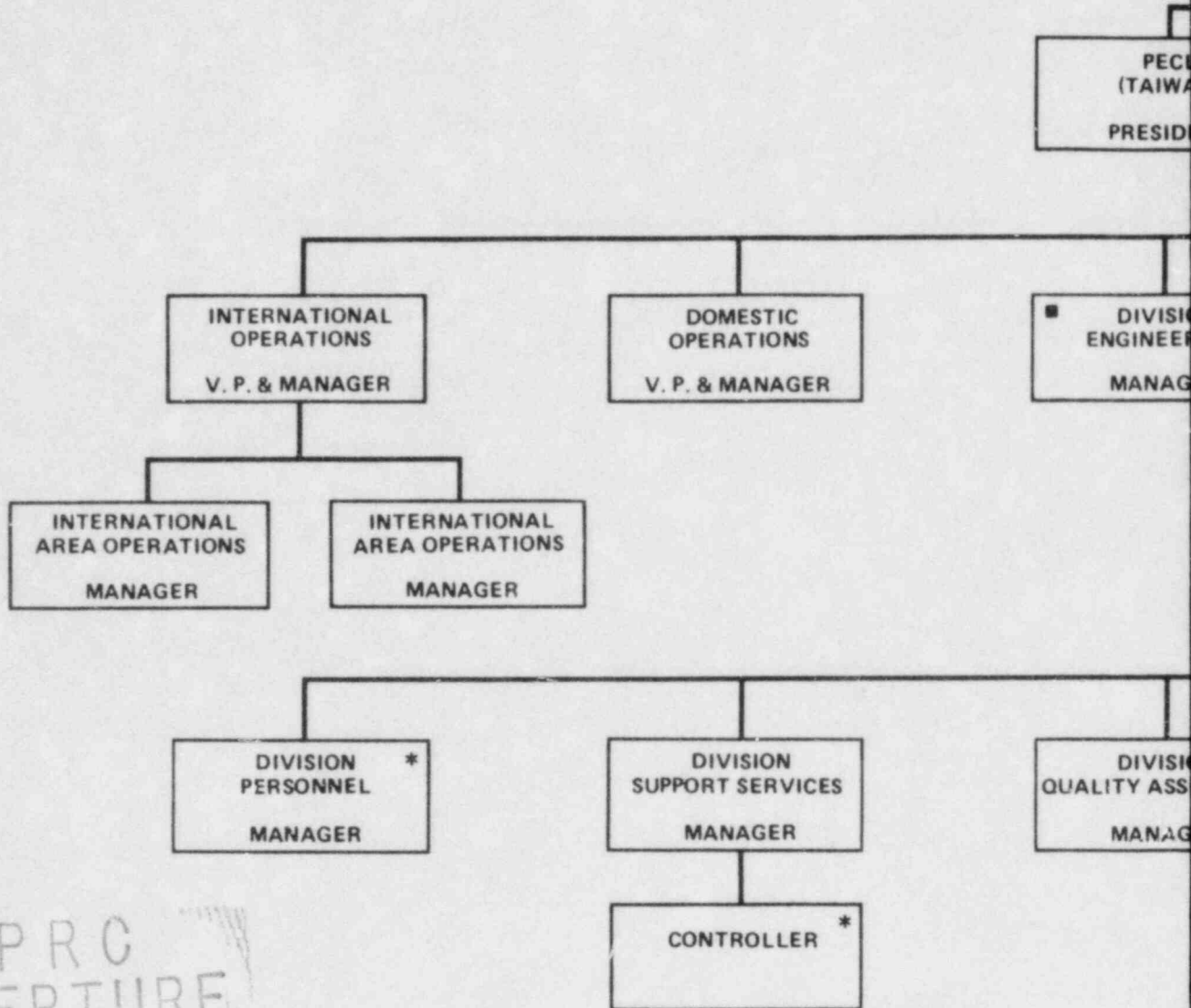
LOS ANGELES
AREA OFFICE
MANAGER

SAN FRANCISCO
AREA OFFICE
MANAGER

PRC
APERTURE
CARD

 Georgia Power	ALVIN W. VOGTLE NUCLEAR PLANT UNITS 1 AND 2
BECHTEL MATERIALS AND QUALITY SERVICES (M&QS)	
FIGURE 17A-5	

THIS CHART IS INTENDED TO REFLECT REPORTING
RELATIONSHIPS AND NOT NECESSARILY LEVELS OF
RESPONSIBILITY, SENIORITY OF POSITIONS, OR
WORKING RELATIONSHIPS, OR, IN THE CASE OF
COMPANIES, TO SHOW OWNERSHIP RELATIONSHIPS.



PRC
APERTURE
CARD

NOTE:
ALL PERSONNEL BASED IN DIVISION HOME
OFFICE UNLESS OTHERWISE INDICATED

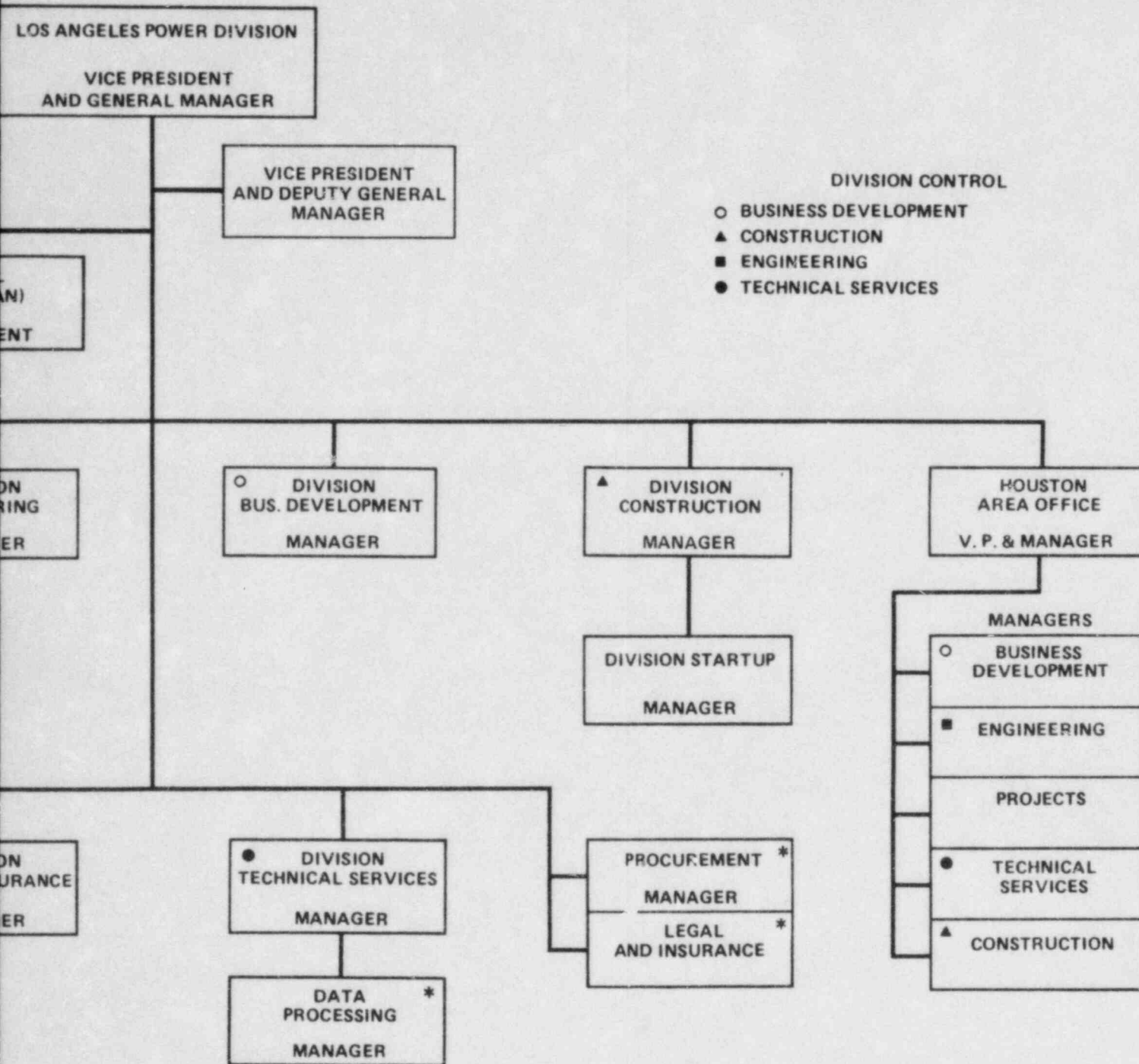
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Aperture Card


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APPLIC

LOS ANGELES POWER DIVISION

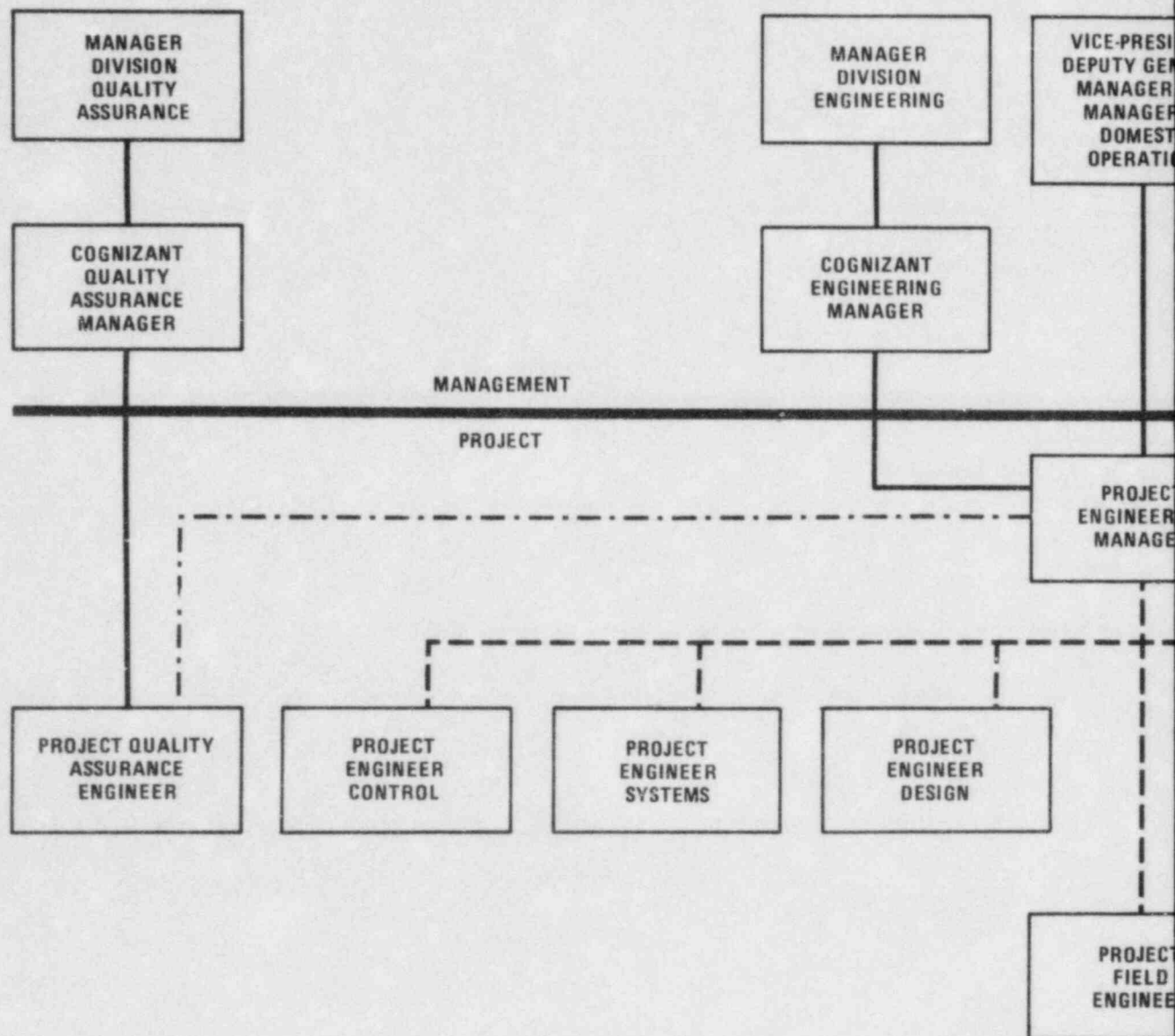
NORWALK, CALIFORNIA



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ABLE SAN FRANCISCO SERVICE ORGANIZATION

 Georgia Power	ALVIN W. VOGTLE NUCLEAR PLANT UNITS 1 AND 2
	THE BECHTEL ORGANIZATION LOS ANGELES POWER DIVISION
FIGURE 17A-6	

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PROJ



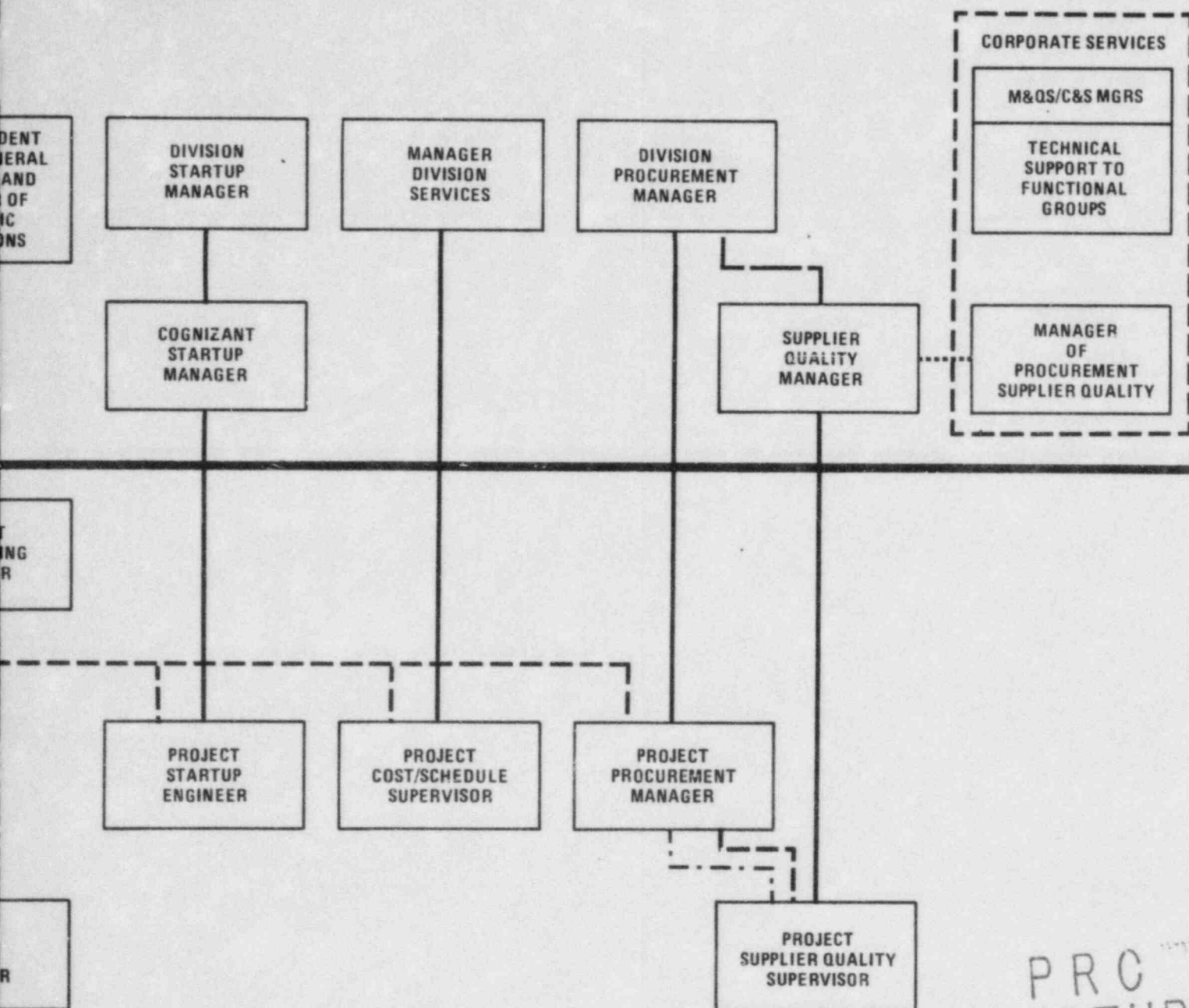
LEGEND

- TECHNICAL & ADMIN. DIRECTION ONLY
- - - PROJECT DIRECTION
- . - PROJECT COORDINATION
- TECHNICAL DIRECTION
- - - ADMINISTRATIVE DIRECTION ONLY

Also Available On
Aperture Card

9306100 267-07

V. VOGTLE NUCLEAR PLANT EJECT TEAM ORGANIZATION



PRC
APERTURE
CARD

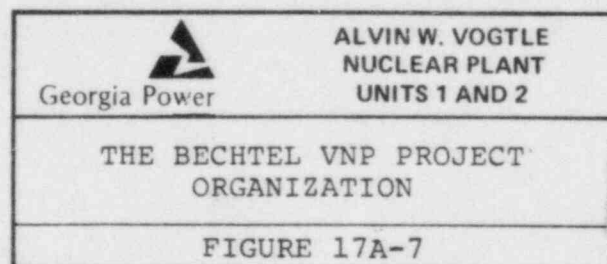


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17C.2	<u>SCS PROCEDURES APPLICABLE TO THE VNP QA PROGRAM</u>	S9 17C-3
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S9

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S9

APPENDIX 17B

WESTINGHOUSE WATER REACTOR DIVISION
QUALITY ASSURANCE PLAN

S9

17B QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

The original quality assurance (QA) program implemented by Westinghouse for the Vogtle Nuclear Plant (VNP) was described in amendment 16 dated 2-25-74 to chapter 17 of the PSAR.

S9

Over the course of performing the design and initial procurement activities for the VNP, the Westinghouse QA program was upgraded to reflect changes in regulatory requirements (including Regulatory Guide 1.70) and industry standards. These changes first culminated in WCAP-8370, Revision 7A, which was applicable to activities from January 1, 1975, to October 1, 1977. This was superseded by Revision 8A, which was applicable from October 1, 1977, to October 31, 1979.

S2

The present Westinghouse Water Reactor Divisions QA program is described in WCAP-8370, Revision 9A, Amendment #1, "Westinghouse Water Reactor Divisions Quality Assurance Plan." The Westinghouse Nuclear Fuel Division QA program is described in WCAP-7800, Revision 5A, "Nuclear Fuel Division Quality Assurance Program Plan."

S9

APPENDIX 17C

SOUTHERN COMPANY SERVICES, INC.
AUDITING AND SUPPLIER SURVEILLANCE INSPECTION FUNCTIONS

17C.0 INTRODUCTION

Appendix 17C is limited to the auditing functions and those duties with regard to supplier evaluation and surveillance assigned to the VNP Project Quality Assurance Engineer SCS PQAE, who is supported in this function by the SCS Quality Assurance Department and appropriate GPC and BPC personnel.

The following sections address those parts of 10 CFR 50, Appendix E 18 criteria which are applicable.

I	Organization	Section 17C.1
II	Quality Assurance Program	Section 17C.2 and 17C.3
VII	Control of Purchased Material, Equipment, & Services	Section 17C.5
XVII	Quality Assurance Records	Section 17C.4
XVIII	Audits	Section 17C.5

17C.1 SCS ORGANIZATIONAL ELEMENTS ASSOCIATED WITH THE PQAE FUNCTIONS

Only those organizational elements of SCS that relate to the SCS PQAE responsibilities are described in this appendix. The responsibilities of individuals and groups within SCS (Figure 17C-1) relating to the direction, verification, and support of these functions are as follows:

17C.1.1 EXECUTIVE VICE-PRESIDENT ENGINEERING

The SCS Executive Vice-President Engineering is responsible for SCS engineering and associated functions, including SCS quality assurance activities. Specifically he approves the general policy and procedures with regard to implementation of the auditing and supplier surveillance inspection activities. He is a member of the VNP Project Management Board and of the GPC QA Committee.

17C.1.2 DIRECTOR, ENGINEERING SERVICES

The Director of Engineering Services has functional and administrative supervision of the SCS Manager, Quality Assurance (SCS MQA).

17C.1.3 MANAGER, QUALITY ASSURANCE

The SCS MQA is responsible for the implementation of QA procedures applied to the SCS auditing and supplier surveillance inspection activities. Detailed procedures for accomplishment

S2

S2 | of these activities are contained in the SCS QA Department Policy and Procedures Manual which is approved by the SCS MQA.

17C.1.3.1 Manager, Project and Supplier Section

S9 | The manager, Project and Supplier Section, has responsibility for the development and implementation of QA Department procedures relating to monitoring and auditing of VNP design and procurement activities. Also included is the monitoring and auditing of the supplier surveillance program applicable to Q-list items as well as the performance of supplier surveillance applicable to selected items.

17C.1.3.2 Supervisor, Supplier Surveillance

S2 | The Supervisor, Supplier Surveillance, administers the contract for supplier surveillance inspection services and assures the adequacy of the supplier surveillance inspection program in conjunction with the SCS PQAE.

S9 | 17C.1.3.3 Supervisor, Projects

S2 | The Supervisor, Projects QA Section, has functional and administrative supervision of the SCS PQAE.

S9 | 17C.1.3.4 SCS Project Quality Assurance Engineer

S2 | Implementation of the Vogtle Project Supplier surveillance inspection activities and auditing of engineering is the responsibility of the SCS PQAE. The SCS PQAE receives project direction from and is accountable to the VQAM for the performance of assigned activities and to the SCS Supervisor, Project QA Section for functional and administrative supervision. The SCS PQAE has authority from the VQAM to stop, in a timely manner, work which is not in compliance with specifications or procedures.

S9 | Specific duties and responsibilities of the SCS PQAE include:

- S2 | A. Verify through audits of BPC that VNP engineering contractors and suppliers have developed and implemented acceptable QA programs.
- S9 | B. Assure through audits the adequacy of the VNP supplier quality surveillance program activities.
- S2 | C. Advises the VQAM regarding the status and results of the supplier surveillance inspection programs, audits, and quality problems.

D. Monitors quality surveillance inspection reports on the project and takes action as necessary to assure timely resolution of quality problems.

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S2

E. Review and approve the scope of BPC surveillance activities.

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17C.1.3.5 Qualifications-QA Personnel

Qualifications for the position of SCS QA managers are as follows:

A. Have a degree in engineering from accredited college or university.

S9

- B. Have at least five years' experience in an engineering organization, including association with quality assurance and quality control techniques.

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Qualifications for the positions of Supervisor and SCS PQAE are as follows:

S9

- A. Have a degree in engineering or comparable training and experience.
- B. Three years' engineering or quality experience, or equivalent.

17C.2 SCS PROCEDURES APPLICABLE TO THE VNP QA PROGRAM

S2

SCS auditing and supplier surveillance inspection Quality Assurance activities on VNP are performed in accordance with procedures contained in Section 7 of the SCS Engineering Policy and Procedures Manual (EPPM) and the SCS QA Department Policy and Procedures Manual.

These procedures ensure that the above tasks performed by the SCS QA Department for the VNP project are conducted in accordance with the quality policies of SCS, and meet the applicable parts of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" (October 11, 1971), NRC Regulatory Guide 1.28 "Quality Assurance Program Requirements (Design and Construction)," NRC Regulatory Guide 1.144 "Auditing of QA Programs for Nuclear Power Plants" (January 1979), and the following ANSI standards:

S9

ANSI N45.2-1971 "Quality Assurance Program Requirements for Nuclear Power Plants."

S2

ANSI N45.2.9-1973 "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants" (Draft 11, Rev. 0 - March 1973).

17C.3 QUALITY ASSURANCE TRAINING

S9

SCS has both formal and on-the-job training programs for quality assurance personnel. Quality assurance representatives attend formal, organized training programs inside and outside of the company. Training courses are conducted by the SCS Training Department on subjects such as generating systems, supervision training, etc. In addition, periodic meetings are conducted in which the latest pertinent procedures, regulations, guides, etc., are discussed and evaluated.

S2

S2 | The SCS QA training program includes auditor training which is
 S9 | designed to develop qualified auditors in accordance with the
 S2 | requirements of NRC Regulatory Guide 1.144 (January, 1979).
 S9 | Records of individual qualifications and training are on file in
 S2 | the SCS QA Department.

S2 | 17C.4 QUALITY ASSURANCE RECORDS

S9 | The SCS QA Department has a record system which ensures
 S2 | that quality assurance records, such as audit reports, generated
 S9 | by the SCS QA Department for VNP are filed, stored, and
 S2 | maintained as required by VNP procedures, which assure compliance
 S9 | with applicable codes, standards, and regulatory requirements.
 S2 | ANSI N45.2.9, "Requirements for Collection, Storage, and
 S9 | Maintenance of Quality Assurance Records for Nuclear Power
 S2 | Plants," was used as a guide in the development of the SCS
 S9 | records control system.

S2 | 17C.5 QUALITY ASSURANCE AUDITING AND SURVEILLANCE

S9 | The SCS PQAE, supported by the SCS QA Department, is responsible
 S2 | for surveillance and monitoring of the quality performance of
 S9 | engineering and procurement activities assigned to BPC and for
 S2 | assuring that programs are in effect for resolving quality
 S9 | problems and nonconformances arising in these activities.
 S2 | The SCS PQAE is also responsible for periodic QA auditing of BPC.

S2 | Audits are conducted when a need is indicated as a result of
 S9 | QA Program surveillance or when a periodic QA Program audit
 S2 | indicates that it would be appropriate. These audits are
 S9 | conducted annually as a minimum.

S9 | The SCS PQAE develops audit agendas, leads the audits of
 S2 | BPC, and prepares the audit reports. The audit agenda
 S9 | is approved by the VQAM. The SCS PQAE may be assisted in
 S2 | the conduct of the audits by other SCS QA Department personnel.
 S9 | The VQAM may act as an observer at these audits.

S9 | The VNP activities of Bechtel's Procurement Supplier Quality
 S2 | Department are audited annually by the SCS QA Department's
 S9 | Supervisor, Supplier Surveillance.

S2 | BPC PQAE takes the lead in conducting audits of Westinghouse.
 S9 | The VQAM and SCS PQAE may accompany the BPC PQAE on these
 S2 | audits. These audits are conducted annually as a minimum.

S9 | The SCS PQAE reviews and approves the annual evaluations made
 S2 | by BPC to assess supplier quality program performance and deter-
 S9 | mine if a supplemental supplier audit is required.

VNP

BPC or SCS QA Department conducts audits of selected suppliers of safety-related components and materials for VNP, except for certain construction materials if procured directly by GPC. SCS and GPC Quality Assurance personnel selectively participate in these audits.

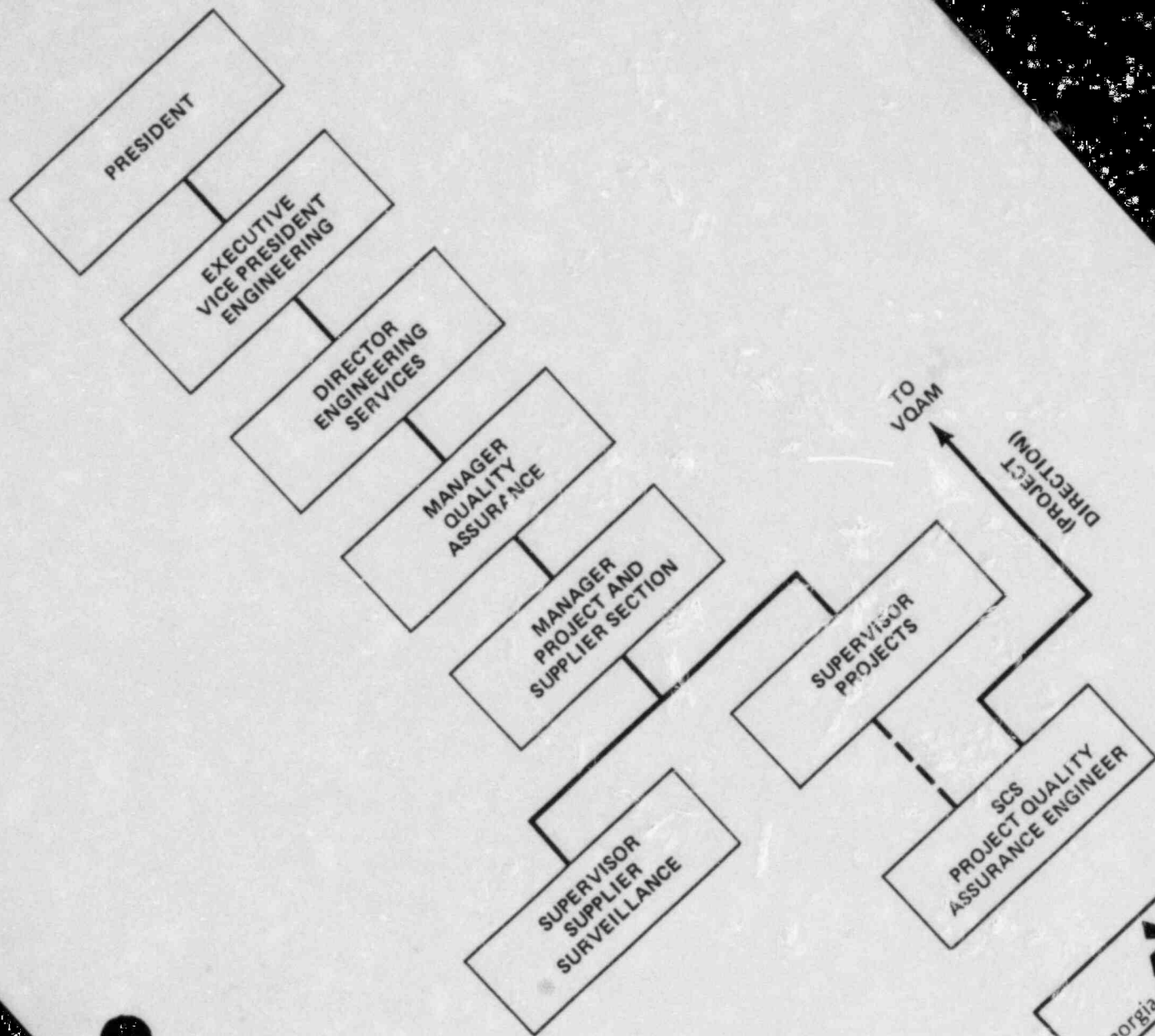
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S2

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Appendix 17B

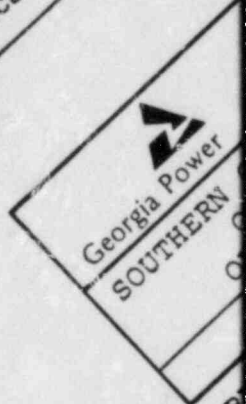
<u>Section</u>	<u>Title</u>	<u>Page</u>	
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17B.0	<u>QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION</u>	S9 17B-1	

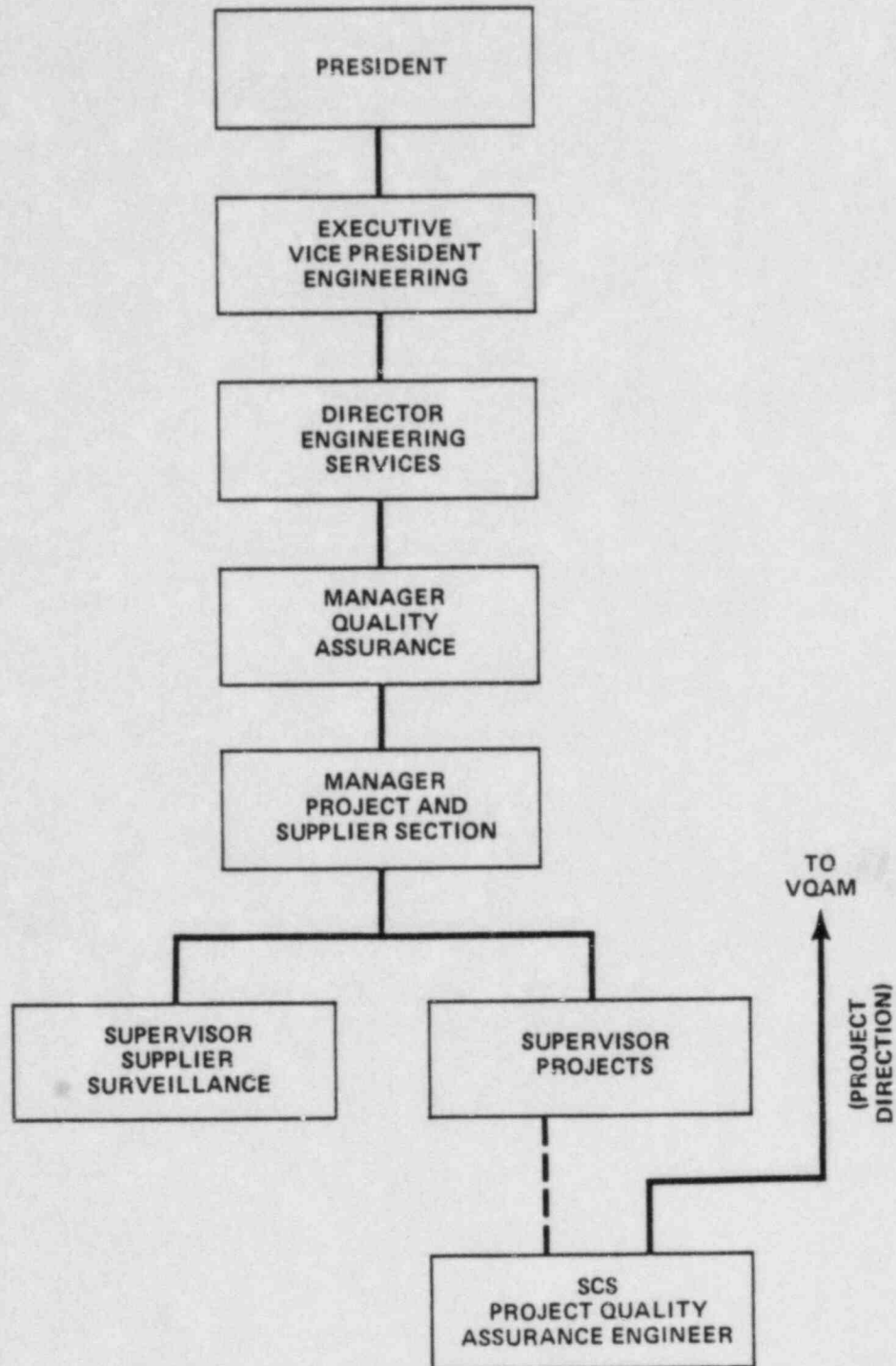


LEGEND
—— LINE RESPONSIBILITY
- - - FUNCTIONAL DIRECTION

*GPC QUALITY ASSURANCE COMMITTEE MEMBER

CONSTRUCTION PERMIT SUPPLEMENTARY






LEGEND

— LINE RESPONSIBILITY
 - - - FUNCTIONAL DIRECTION

*GPC QUALITY ASSURANCE COMMITTEE MEMBER

 Georgia Power	ALVIN W. VOGTLE NUCLEAR PLANT UNITS 1 AND 2
SOUTHERN COMPANY SERVICES, INC. QUALITY ASSURANCE ORGANIZATIONAL CHART	
FIGURE 17C-1	