

PART A

HOUSTON LIGHTING AND POWER COMPANY
QUALITY ASSURANCE PROGRAM DESCRIPTION

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

REVISION 7

DATE JULY 27, 1984

8509060142 840727
PDR ADOCK 05000498
A PDR

HOUSTON LIGHTING & POWER COMPANY
QUALITY ASSURANCE PROGRAM DESCRIPTION

Table of Contents

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	Organization	2
2.0	Quality Assurance Program	12
3.0	Design Control	14
4.0	Procurement Document Control	16
5.0	Instruction, Procedures and Drawings	18
6.0	Document Control	18
7.0	Control of Purchased Material, Equipment and Services	19
8.0	Identification and Control of Material, Parts and Components	21
9.0	Control of Special Processes	22
10.0	Inspection	24
11.0	Test Control	25
12.0	Control of Measuring and Test Equipment	26
13.0	Handling, Storage and Shipping	27
14.0	Inspection, Test and Operating Status	27
15.0	Nonconforming Materials, Parts or Components	27
16.0	Corrective Action	28
17.0	Quality Assurance Records	28
18.0	Audits	29

HOUSTON LIGHTING & POWER COMPANY
QUALITY ASSURANCE PROGRAM DESCRIPTION

List of Tables

<u>NUMBER</u>	<u>TITLE</u>
1	ANSI Standard and Regulatory Guide Compliance
2	HL&P Manuals Used to Implement the Quality Assurance Program

List of Figures

<u>NUMBER</u>	<u>TITLE</u>
1	South Texas Project. Internal QA Relationship
2	Lines of Communication HL&P & BEC/Westinghouse (Contractors)

QUALITY ASSURANCE PROGRAM DESCRIPTION

South Texas Project Electric Generating Station

Quality Assurance During Design and Construction

Houston Lighting & Power Company (HL&P), as a licensee and as Project Manager for itself and the other owners, has quality assurance responsibility for design, engineering, procurement, fabrication, construction and operation associated with the South Texas Project Electric Generating Station (STP). Although HL&P has delegated certain of its quality assurance authority to its contractors, it nevertheless retains the responsibility for the quality assurance program controlling all aspects of the STP. HL&P reviews and approves this QAPD and all changes thereto prior to implementation. Additionally, HL&P establishes quality assurance requirements for the Project in a Project Quality Assurance Plan. The Project Quality Assurance Plan specifies requirements applicable to prime contractors and HL&P. The HL&P Quality Assurance staff monitors the performance of HL&P staff and contractors to assure compliance with the Project Quality Assurance Plan.

HL&P has contracted with Westinghouse Electric Corporation (Westinghouse) for the design, fabrication and quality assurance services for the nuclear steam supply system and with Bechtel Energy Corporation (BEC) for plant Design, procurement, engineering, construction management, quality assurance services and other related services, including quality assurance services for Westinghouse items upon receipt at the Project site. HL&P has contracted with Ebasco Services, Inc. (ESI) for construction services including quality assurance and quality control for its scope of work. This quality assurance program description addresses the HL&P quality assurance program (Part A), the quality assurance program of BEC (Part B), and the quality assurance program of ESI (Part C). The Westinghouse quality assurance program is described in WCAP-8370, "Westinghouse Nuclear Energy System Divisions Quality Assurance Plan" and is not included in this program description.

PART A

HOUSTON LIGHTING & POWER COMPANY QUALITY ASSURANCE PROGRAM DESCRIPTION

South Texas Project Electric Generating Station Quality Assurance During Design and Construction

Houston Lighting & Power Company (HL&P), as a licensee and as Project Manager for itself and the other owners, has the Quality Assurance (QA) responsibility for design, engineering, procurement, fabrication, construction, preoperational testing and operation of the South Texas Project (STP) Electric Generating Station.

HL&P's Project Quality Assurance Plan requires that HL&P, its prime contractors, subcontractors and vendors comply with the criteria established by 10CFR50, Appendix B. It is the intent of HL&P to comply with ANSI N45.2 and the applicable daughter standards and implementing Regulatory Guides as indicated in Table 1. Furthermore, HL&P will assure through programmatic direction that the prime contractors and all their subcontractors and suppliers performing nuclear safety-related work comply with 10CFR50, Appendix B; ANSI N45.2, and the Regulatory Guides as referenced herein consistent with their scope of work.

Programmatic direction is defined as the role of the owner in establishing the program requirements and ensuring the adequacy of the Prime Design, Engineering and Construction Management Quality Assurance Program. The programmatic direction consists of review and approval of the system features initially and continued monitoring of those systems if the systems need strengthening. The assurance of compliance by first level nuclear safety-related suppliers and contractors will be accomplished through the Engineer/Construction Manager's review and approval of the supplier's/contractor's Quality Assurance Program.

The system monitoring is achieved through audits and surveillances of work in progress.

The HL&P Quality Assurance Program is implemented in two phases: the design and construction phase as defined by the Project Quality Assurance Plan and the operational phase, including preoperational testing and startup, as defined by the Operational Quality Assurance Plan. The Project Quality Assurance Plan is described herein. The Operational Quality Assurance Plan is described in Chapter 17.2 of the FSAR.

The combination of these Quality Assurance programs augmented by definitive procedures provide HL&P with the assurance that its quality commitments are met.

1.0 Organization

- 1.1 The organization chart shown in figure 1 illustrates: (a) groups within HL&P having quality responsibilities (engineering, procurement, construction) and b) Quality Assurance interdepartmental relationships for the South Texas Project.
- 1.2 The Project Quality Assurance Manager, South Texas Project, is responsible for providing the programmatic direction, and administering policies, goals, objectives and methods which are described in the Project Quality Assurance Plan. The HL&P Executive Vice President, Nuclear Group, reviews and approves the Project Quality Assurance Plan and has ultimate responsibility for Quality Assurance activities. The Project Quality Assurance Plan interfaces with the Corporate Quality Assurance Program objectives describing specific Quality Assurance controls to be established by HL&P and the prime contractors on the South Texas Project.
- 1.3 Two levels of control have been implemented by HL&P to monitor the effectiveness of the Quality Assurance Programs at the South Texas Project.
 - a. Corporate level control - Corporate level control is achieved through the direct involvement of the HL&P Executive Vice President, Nuclear Group, and corporate audits and vendor surveillance as described below. The Executive Vice President, Nuclear Group, regularly meets with QA management and receives reports on the status of the QA Programs to aid him in evaluating the overall effectiveness. Corporate QA audits and vendor surveillance are conducted under the direction of the Manager, Quality Assurance to evaluate the overall program effectiveness of HL&P Project Quality Assurance, Westinghouse and its suppliers. Corporate audits of the Architect Engineer/Construction Manager's activities may be performed as requested by the Project Quality Assurance Manager.
 - b. Project level control - Project level control is achieved through Project Quality Assurance Program approval and monitoring of the effectiveness of implementation by HL&P, prime contractors and subcontractors. The Project QA staff under the direction of the Project Quality Assurance Manager prepares the Project Quality Assurance Plan and reviews and approves the Project Quality Program Manual for the Architect Engineer/Construction Manager. The monitoring is implemented by scheduled Project audits performed by qualified auditors. Additional monitoring is accomplished by Project QA personnel performing unscheduled selected surveillance of in-process work. HL&P Project Quality Assurance also maintains the capability to perform inspection verifications of in-process or completed work if determined to be necessary by the Project Quality Assurance Manager. If necessary the inspections are performed by personnel qualified in accordance with ANSI N45.2.6.

1.4 Executive Vice President, Nuclear Group

The Executive Vice President, Nuclear Group, is responsible for management of nuclear projects and operating nuclear plants and for all nuclear activities within HL&P related to design, engineering, construction, operation, and quality assurance. The Executive Vice President, Nuclear Group, provides technical guidance and administrative direction to:

- a. Vice President, Nuclear Engineering and Construction
- b. Vice President, Nuclear Plant Operations
(Description of responsibilities is contained in Chapter 17.2, FSAR)
- c. Manager, Nuclear Training
- d. Manager, Quality Assurance

The Executive Vice President, Nuclear Group, reports to the Chairman of the Board and Chief Executive Officer.

1.5 Vice President, Nuclear Engineering & Construction

The Vice President, Nuclear Engineering and Construction, is responsible for nuclear project management and the engineering, construction, and licensing of the nuclear plants. The Vice President, Nuclear Engineering and Construction, provides technical guidance and administrative direction to:

- a. General Manager, Nuclear Engineering
- b. Manager, South Texas Project
- c. Manager, Engineering Assurance

The Vice President, Nuclear Engineering and Construction, reports to the Executive Vice President, Nuclear Group.

1.5.1 Manager, South Texas Project

The Manager, South Texas Project reports to the HL&P Vice President, Nuclear Engineering and Construction. He has overall responsibility for the engineering, construction, procurement, cost, schedule, and startup of the South Texas Project. He has authority to "Stop Work" for cause in all activities of the Project.

1.5.2 Deputy Project Manager

The Deputy Project Manager reports to the Manager, South Texas Project. He has the overall responsibility for all design and construction activities for the South Texas Project. The Deputy Project Manager is responsible for

direction or delegation of authority to the Startup Manager and the Site Manager; and through the Site Manager to the Site Engineering and Construction Manager, and Site Support Services Manager. He has the authority to "Stop Work" for cause in all activities related to design and construction of the South Texas Project.

1.5.3 Site Manager

The Site Manager reports to the Deputy Project Manager. He is responsible for providing technical direction and administrative guidance to HL&P and its prime contractors in the area of construction, construction control and reviewing documents, drawings and specifications related to construction. He has the authority to "Stop Work" for cause in all activities related to construction.

1.5.4 Site Support Services Manager

The Site Support Services Manager reports to the Site Manager. He provides project direction to Site Purchasing, Site Contracts, Site Accounting, Site Security, Site Records Management, and Material Control personnel. The role of the HL&P Material Control personnel is monitoring of Bechtel's comprehensive Material Control Program.

1.5.5 Site Engineering and Construction Manager

The Site Engineering and Construction Manager reports to the Site Manager. He is responsible for ensuring that the prime contractors comply with all contractual and construction requirements. He monitors the prime contractors construction in the areas of evaluating and analysis of construction plans and schedules, work methods, craft performance, staffing, equipment utilization and progress.

1.5.6 Supervising Project Engineer, Site Engineering

The Supervising Project Engineer, Site Engineering reports to the Site Engineering and Construction Manager for project direction and to the Manager, Engineering for technical direction. He is responsible for coordinating the site engineering interface in the technical resolution of all site related engineering problems, reviewing field change requests, site-initiated design change notices, and for monitoring the activities of the prime contractor's construction engineering groups. He assists in the release and interpretation of design documents. He can recommend "Stop Work" for cause in the engineering and design for those items within his area of responsibility.

1.5.7 Construction Superintendents (Unit 1, Unit 2, Startup)

The Construction Superintendents report to the Site Engineering and Construction Manager. They are responsible for monitoring and surveillance of the prime contractor's construction activities, expediting the resolution and corrective actions of problems identified by QA/QC and verifying that construction planning includes requirements for inspection and testing. The Startup Superintendent interfaces with the Startup Manager to assure the proper construction turnover of systems.

1.5.8 Manager, Engineering

The Manager, Engineering reports to the Manager, South Texas Project. He directs project engineering personnel in the performance of the owner's review of the design and engineering work performed by the prime contractors. The Manager, Engineering ensures that adequate engineering planning, coordination of solutions to problems and work priorities are established by the prime contractor. He has the authority to "Stop Work" for cause in the engineering and design of all items.

1.5.9 Supervising Engineer, STP Licensing

The Supervising Engineer, STP Licensing, reports to the Manager, South Texas Project for project direction and to the Manager, Nuclear Licensing for technical direction. He is responsible for overseeing, coordinating and administering the South Texas Project Licensing effort.

1.5.10 STP Licensing Team Leader

The STP Licensing Team Leader reports to the Supervising Engineer, STP Licensing. He is responsible for coordinating all regulatory activities related to the nuclear safety analysis and licensing of the South Texas Project. The Chairman of the IRC, while not necessarily the STP Licensing Team Leader, is a duly qualified member of the Nuclear Licensing Department. Assignment of this responsibility will be specified in approved procedures for compliance by the contracting parties; and for direct placement and administration of required contracts not within the scope of the Architect-Engineer/Construction Manager's contract.

1.5.11 Manager, Support Services

The Manager, Support Services reports to the Manager, South Texas Project. He is responsible for procurement, project control services, accounting, project administration, contract administration and records management services. He has the authority to "Stop Work" for cause in activities related to purchasing and expediting.

1.5.12 Manager, Records Management and Information Processing

The Manager, Records Management and Information Processing reports to the Manager, Support Services. The Manager, RMIP is responsible for managing the Records Management personnel and interfacing with the prime contractors and all Project organizations with respect to the establishment of systems that control, collect, store and transfer records related to the South Texas Project.

1.5.13 Manager, Nuclear Purchasing

The Manager, Nuclear Purchasing reports to the Manager, Support Services for project direction and to the Vice President, Purchasing for technical direction. He is responsible for overall coordination and administration of purchasing, contracts administration and subcontracting activities for the South Texas Project. He directs the development and implementation of procedures, vendor selection, contract negotiations and preparing purchase orders for those contracts administered by HL&P.

1.5.14 Project Purchasing Manager

The Project Purchasing Manager reports to the Manager, Nuclear Purchasing. He is responsible for the proper procurement of permanent and temporary equipment and material for Stores operations of the South Texas Project.

1.5.15 Project Contracts Manager

The Project Contracts Manager reports to the Manager, Nuclear Purchasing. He is responsible for the overall coordination of the project's contracting activities; for assuring the monitoring and auditing of project contracts for compliance by the contracting parties; and for direct placement and administration of required contracts not within the scope of the Architect-Engineer/Construction Manager's contract.

1.5.16 General Manager, Nuclear Engineering

The General Manager, Nuclear Engineering reports to the Vice President, Nuclear Engineering and Construction. He provides technical direction and administrative direction to:

- a. Manager, Nuclear Licensing
- b. Manager, Nuclear Fuel
- c. Manager, Nuclear Services

and is responsible for assuring that departmental activities adhere to accepted and approved standards of HL&P, State and Federal regulations.

1.5.17 Manager, Nuclear Licensing

The Manager, Nuclear Licensing reports to the General Manager, Nuclear Engineering. He is responsible for the planning, coordination, direction, and control of the Nuclear Licensing Department activities, and for providing technical direction, as necessary, to ensure that STP licensing activities are accomplished in an effective and timely manner consistent with HL&P policy.

1.5.18 Manager, Nuclear Fuel

The Manager, Nuclear Fuel reports to the General Manager, Nuclear Engineering. On request from the STP Project Team, the Manager, Nuclear Fuel, supplies nuclear fuel related support to the STP Project Team. (NOTE: All other Nuclear Fuel Department quality activities are described in Chapter 17.2 of the FSAR.)

1.5.19 Manager, Nuclear Services

The Manager, Nuclear Services reports to the General Manager, Nuclear Engineering. He is responsible for directing project personnel in the performance of an owner's review of selected analyses performed by others.

1.5.20 Manager, Engineering Assurance

The Manager, Engineering Assurance reports to the Vice President, Nuclear Engineering and Construction. He is responsible for the planning, scheduling, and execution of appropriate independent technical reviews of HL&P Project and Contractor Engineering activities.

1.6 Manager, Nuclear Training

The Manager, Nuclear Training reports to the Executive Vice President, Nuclear Group. He directs, coordinates and administers the STP nuclear training efforts and provides direction to the prime contractors relative to training. The STPEGS Nuclear Training program includes the Quality Assurance Indoctrination for HL&P personnel associated with the safety related activities for the South Texas Project.

1.7 Manager, Quality Assurance

The Manager, Quality Assurance, has the authority and responsibility to identify, initiate, recommend, or provide solutions to quality

related problems and verify the implementation and effectiveness of the solutions. He has the authority to "Stop Work" for cause in the design, construction and operation phase of the nuclear plant. The minimum requirements established for this position are:

- a) A college degree in a field of engineering or science, or equivalent experience.
- b) Familiarity with nuclear power generation facilities and the related operations.
- c) Knowledge of the industry's quality assurance standards and regulatory requirements.
- d) Management experience and familiarity with HL&P corporate organizations.

The Manager, Quality Assurance, provides technical guidance and administrative direction to:

- a) Project Quality Assurance Manager
- b) Support Quality Assurance Manager
- c) Operations Quality Assurance Manager
(The responsibilities of the Operations Quality Assurance Manager are described in Chapter 17.2, FSAR.)

The Manager, Quality Assurance, reports to the Executive Vice President, Nuclear Group.

1.7.1 Project Quality Assurance Manager, South Texas Project

The Project Quality Assurance Manager, South Texas Project, has the responsibility to identify, initiate, recommend, or provide solutions and authority to solve quality related problems and to verify the implementation and effectiveness of the solutions. He has the authority to "Stop Work" for cause on any quality-related activity during the design and construction phase of the South Texas Project.

The Project Quality Assurance Manager, South Texas Project, must, as a minimum, have:

- a) A college degree in a field of engineering or science, or equivalent experience.
- b) Familiarity with nuclear power generation facilities and related operations.
- c) Knowledge of the QA standards and regulatory requirements.
- d) Management experience and familiarity with HL&P corporate organizations.

The major responsibilities of the Project Quality Assurance Manager, STP, are:

- a) Develop and administer QA policies, goals, objectives, and methods which ensure the proper planning, development, implementation, coordination and administration of the Project Quality Assurance Plan.
- b) Provide programmatic direction on QA related matters to HL&P, and contractor management, and provide the primary interface with NRC.
- c) Direct the onsite audit and surveillance activities; direct audits/surveillances of the Engineer/Construction Manager's QA program implementation in the design office.
- d) Coordinate activities relating to auditing and vendor surveillance in conjunction with the HL&P Support Quality Assurance Manager.

The Project Quality Assurance Manager reports on all quality assurance matters directly to the Manager, Quality Assurance.

1.7.2 Project Quality Assurance General Supervisor, Quality Engineering

The Project Quality Assurance General Supervisor, Quality Engineering reports directly to the Project Quality Assurance Manager, South Texas Project. He is responsible for technical direction and administrative guidance to the site Quality Engineering personnel, providing programmatic direction to prime contractors and interfacing with the NRC. He has the authority to "Stop Work" for cause on any quality related activity during the design and construction phase of the South Texas Project at the site.

1.7.3 Project QA Supervisors, Quality Engineering

The Project QA Supervisors, Quality Engineering report to the Project Quality Assurance General Supervisor, Quality Engineering. They are responsible for technical direction and administrative guidance to the HL&P Quality Engineering personnel in their respective discipline group; conducts audits of the construction manager and contractor activities, including QA; interface with NRC during audits; identifying deficiencies; reviewing procedures applicable to their respective discipline; and providing programmatic direction to the prime contractor. They have authority to "Stop Work" for cause on any quality related activity during the design and construction phase of the South Texas Project at the site.

1.7.4 Supervisor, Quality Systems/Administration

The Supervisor, Quality Systems/Administration reports directly to the Project Quality Assurance Manager, South Texas Project. He is responsible for providing technical direction and administrative guidance to the Quality Systems/Administration personnel; developing and administering the HL&P Project QA Plan; evaluating the Engineer/Construction Manager and Constructor QA programs; administering the HL&P STP QA personnel training and certification program; administrative control of HL&P STP Project quality assurance procedures and providing mechanisms to correct the QA programs as necessary. He has the authority to "Stop Work" for cause on any quality related activity during the design and construction phase of the South Texas Project at the site.

1.7.5 Supervisor, Quality Control

The Supervisor, Quality Control reports directly to the Project Quality Assurance Manager, South Texas Project. He is responsible for technical direction and administrative guidance to the HL&P Quality Control personnel, coordinating inspection of selected fabrication and construction activities, ensuring proper nonconformance identification and assuring that the personnel performing inspections are properly certified. He has the authority to "Stop Work" for cause on any quality related activity during the design and construction phase at the South Texas Project at the site.

1.7.6 Project QA Supervisor, Design/Procurement

The Project QA Supervisor, Design/Procurement reports directly to the Project Quality Assurance Manager, South Texas Project. He is responsible for providing technical direction and administrative guidance to HL&P Design/Procurement Quality Assurance personnel, coordinating the resolutions of vendor problems identified by HL&P QA, coordinating with site QE personnel for input to vendor surveillance/audit activities and providing programmatic direction to the Engineer/Construction Manager regarding design control, vendor surveillance and auditing functions. He has the authority to "Stop Work" for cause on any quality related activity during the design and construction phase of the South Texas Project at the Design office.

1.7.7 Support Quality Assurance Manager

The Support Quality Assurance Manager is responsible for directing all HL&P corporate office auditing, vendor surveillance and vendor evaluation activities. He has the authority to "Stop Work" for cause on any quality-related activity of the South Texas Project.

The Support Quality Assurance Manager must, as a minimum, have:

- a) A college degree in a field of engineering or science, or equivalent experience.
- b) Familiarity with nuclear power generation facilities and the related operations.
- c) Knowledge of the industry QA standards and regulatory requirements.
- d) Management experience and familiarity with HL&P corporate organizations.

The major responsibilities of the Support Quality Assurance Manager are:

- a) Directs the HL&P Corporate Quality Assurance audit program.
- b) Directs the HL&P Vendor Surveillance group.
- c) Directs the HL&P Vendor Evaluation group.

The Support Quality Assurance Manager reports on all quality assurance matters directly to the Manager, Quality Assurance.

- 1.8 The organizations or entities listed below may be delegated quality assurance authority within their scope of work.

HL&P has the responsibility to audit and monitor all of the below listed organizations' or entities' performance to assure that their quality programs provide sufficient authority and organizational freedom for personnel performing QA functions and that they are effectively implemented.

- a) Houston Lighting & Power Company as a licensee and Project Manager for itself and the other owners has the overall responsibility for design, engineering, procurement, construction, operation and quality assurance activities. Bechtel Energy Corporation and Westinghouse Electric Corporation have contractual responsibility to provide acceptable QA programs to HL&P. The contract provides HL&P the authority to audit and monitor BEC and Westinghouse performance to assure that the QA programs provide for sufficient authority and organizational freedom to be effectively implemented.
- b) Bechtel Energy Corporation as the Architect/Engineer and Construction Manager provides HL&P with design, engineering, procurement, construction management and quality assurance services.

- c) Westinghouse Electric Corporation as the Nuclear Steam Supply System (NSSS) supplier provides HL&P with the NSSS design, engineering, procurement, fabrication, and quality assurance services.
- d) Ebasco Services Inc. as the Constructor shall provide HL&P with construction quality assurance and quality control services under the direction and as approved by the Construction Manager.
- e) Consultants - HL&P utilizes the services of qualified consultants to assist in the performance of quality tasks.

Figure 2 illustrates how these companies interrelate with HL&P for the South Texas Project.

2.0 Quality Assurance Program

- 2.1 The HL&P Project Quality Assurance Program for the South Texas Project has been developed in accordance with the criteria of 10CFR50 Appendix B, ANSI N45.2 and Regulatory Guides as referenced herein, to provide programmatic direction on quality requirements for the prime contractors and subcontractors during design and construction.
- 2.2 The nuclear safety-related structures, systems and components covered by this program are listed in Section 3.2 of the FSAR. Westinghouse Electric Corporation provides quality assurance services for the items listed in Table 3.2.B-1 of the FSAR until delivery to the site. BEC and ESI provide quality assurance services for the items listed in Table 3.2.A-1 of the FSAR within the scope of their work. BEC provides quality assurance and quality control services for Westinghouse items (Table 3.2.B-1) upon receipt at the site until release for construction, after which ESI provides such services.
- 2.3 The HL&P Quality Assurance Program for the South Texas Project is described by the HL&P Project Quality Assurance Plan. The plan requires that written procedures, training and certification, issuance of specifications and drawings, and work and inspection planning be accomplished in advance of performing nuclear safety-related activities. HL&P Project Quality Assurance ensures through procedure reviews that this advance preparation is accomplished.

The Project Quality Assurance Plan for the South Texas Project has in the past been structured in accordance with the Regulatory Guides (RGs) and Industrial Standards that are addressed in the NRC publications "Guidance on QA Requirements During Design and Procurement Phase of Nuclear Power Plants," (The Gray Book) Revision 1, dated May 24, 1974 (WASH 1283) and "Guidance on QA Requirements During the Construction Phase of Nuclear Power Plants," (The Green Book) dated May 10, 1974 (WASH 1309). Presently the regulatory guides and standards listed on Table 1 are in effect for the South Texas Project.

- 2.4 The HL&P Plans and Procedures Manuals, which are used to implement the quality related activities for each major HL&P organization, are

listed in Table 2. Verification that plans and procedures are properly implemented is accomplished by HL&P Quality Assurance through audits, surveillance, and regular management assessment of the Quality Assurance Program.

- 2.5 It is the policy of HL&P, acting as a licensee and Project Manager for the other owners for the South Texas Project, to assure that the design, fabrication, construction, testing and operation of STP are in conformance with Project specifications, procedures, codes and NRC regulations. It is the responsibility of each organization assigned to the STP to ensure that Project procedural review methods include provisions to ensure that the requirements stated in this program description are incorporated into Project procedures. The Project Quality Assurance Plan identifies activities and establishes requirements for procedures which identify, initiate and verify the resolution of nuclear safety-related quality problems. The implementing procedures call for the resolution of quality problems at the lowest possible authorized level. However, if a dispute is encountered in the resolution of a quality problem which cannot be resolved at lower levels, the Manager, Quality Assurance, presents the problem ultimately to the HL&P Executive Vice President, Nuclear Group, for resolution.
- 2.6 The HL&P Nuclear Training Department is responsible for conducting a quality oriented indoctrination program for new HL&P personnel who have quality-related functions. The HL&P Project Quality Assurance Plan requires that prior to performing activities affecting quality the personnel are trained, as necessary, in the applicable procedures. The training provides a thorough understanding of the purpose, scope, policies, principles, and techniques of the specific procedures or instructions. When personnel perform special activities, a training and certification program is established and maintained. Refresher training is conducted as necessary to ensure that proficiency is maintained. Bechtel is required to establish a training program for Bechtel and administer the constructor's training program including refresher training, as necessary, to ensure proficiency is achieved and maintained. HL&P Quality Assurance audits and surveillances are performed to ensure compliance with these criteria.
- 2.7 The Project Quality Assurance Manager is directly responsible for assuring effective implementation of the Quality Assurance program. The qualifications for this position are defined in Section 1.3.
- 2.8 The HL&P Project Quality Assurance Plan requires BEC to review and approve procedures which control nuclear safety-related construction activities. It is the responsibility of BEC's Project Quality Assurance to determine that the contractor's procedures require proper equipment, environment and other prerequisites to perform the associated activity. The implementation of these requirements is verified through audits and surveillance by HL&P, BEC and ESI Quality Assurance.
- 2.9 The results of the HL&P Quality Assurance audit and surveillance

activities are presented in a periodic report to the HL&P Executive Vice President, Nuclear Group. Regular executive management review of these activities and the direct involvement of the HL&P Executive Vice President, Nuclear Group, assures that an objective program assessment of the South Texas Project Quality Assurance programs is being performed.

HL&P Project Quality Assurance reviews and documents approval of the BEC Project Quality Program Manual (PQPM); and audits and surveillances are performed by HL&P Quality Assurance to ensure compliance with the BEC PQPM.

- 2.10 HL&P and BEC Project Quality Assurance will establish and document a program for transferring responsibilities and controls for quality-related activities from BEC to HL&P during phaseout of design/construction and plant turnover. This program will be implemented prior to preoperational testing. This program will be in accordance with and consistent with the requirements of this section and/or 17.2 of the FSAR.
- 2.11 HL&P is committed to maintaining the Quality Assurance Program Description as an effective and meaningful document to provide programmatic direction to HL&P and the prime contractors on the South Texas Project. When changes are proposed to the QAPD for HL&P or its prime contractors and those proposed changes reduce the commitments previously established in the QAPD, approval by the NRC will be obtained prior to implementation of the change(s).
- 2.12 When changes are made to the QAPD which alter the program for HL&P or its prime contractors and those changes do not reduce the commitments previously established in the QAPD, appropriate notification will be made to the NRC within 90 days of implementation.

3.0 Design Control

HL&P has the overall responsibility for design and engineering of the South Texas Project and imposes the requirements of 10CFR50, Appendix B, Criterion III, Regulatory Guide 1.64 and ANSI N45.2.11 on the prime contractors and applicable subcontractors.

HL&P has assigned the authority to BEC and Westinghouse to perform the design, engineering and design verification.

HL&P, as appropriate, selects contractors/subcontractors to perform design related tasks. These tasks include but are not limited to the following:

- ° New design
- ° Special design studies
- ° Design work outside the scope of prime contractors
- ° Changes to existing design performed by contractors no longer associated with the South Texas Project.

To be eligible to participate in design activities the contractor must be approved to assure he has the capability to perform the design or requested task in accordance with specified requirements. When a contractor has been selected, HL&P Manager, STP, or designee shall ensure that all appropriate design background information with which to perform the task is provided.

HL&P Engineering performs reviews of selected elements of the completed design, design documents and specifications to ensure that contractual requirements are met.

The HL&P Manager, Engineering is responsible for ensuring that Project engineering activities are conducted in accordance with approved engineering procedures. The Project engineering organization provides programmatic direction and overview of the engineering activities. The HL&P Project engineering activities are conducted in accordance with Project Engineering Procedures (PEP's).

When HL&P has direct responsibility or assumes direct responsibility for conducting design activities, these activities will be conducted in accordance with the requirements of this section and/or the FSAR Section 17.2.3.

HL&P contractors are required to provide the following design control measures in their quality assurance programs:

- ° A design control system is established to document the methods of accomplishing and controlling essential design activities.
- ° Design documents such as calculations, diagrams, specifications and drawings are prepared and records developed such that the final design is traceable to its sources.
- ° Design activities, documents and interfaces are controlled to assure that applicable input such as design bases, regulatory requirements, codes and standards are incorporated into the final design.
- ° Design input requirements, including design criteria, are documented and their selection reviewed and approved.
- ° Design documents include an indication as to their importance to safety and shall specify the quality characteristics, including materials, parts, equipment and processes, that are essential to safety-related aspects of structures, systems, and components. Design documents also include, as appropriate, acceptance criteria for inspections and tests.
- ° Design control measures are applied to safety-related items such as seismic, stress, thermal, hydraulic, radiation and accident analyses, as they apply to the development of design input or as they are used to analyze the design.
- ° Safety-related designs, including Seismic Category I designs, are verified for adequacy and accuracy through independent objective review of design documents by individuals competent in the subject

activity. This verification may include the use of alternate or simplified solution methods or qualification testing, as appropriate.

- ° Design changes, including engineering, vendor and construction originated changes, are controlled in a manner commensurate with the control imposed on the original design.
- ° Document distribution is controlled such that all individuals using a design document or its results and/or conclusions for further design work can be notified if the document is revised or cancelled.
- ° Design documentation includes evidence that design control requirements have been satisfied.
- ° Errors and deficiencies in approved design documents, including design methods (such as computer codes), that could adversely affect safety-related structures, systems and components are documented; and action taken to assure that all errors and deficiencies are corrected.
- ° Deviations from specified quality standards are identified and procedures are established to ensure their control.
- ° An accurate definition of the quality classes, including systems designated as safety-related is provided.

HL&P Quality Assurance performs audits of HL&P, BEC and Westinghouse to ensure that design controls, requirements, specifications and documents are in accordance with the design control criteria.

In addition, HL&P Project Quality Assurance reviews selected quality/construction procedures to ensure that the quality requirements of the design specifications are incorporated. HL&P Project Quality Assurance also performs audits and surveillances to ensure that the work is accomplished in accordance with the design requirements and to ensure that field changes to the design are processed in accordance with the design control criteria.

4.0 Procurement Document Control

To assure that nuclear safety-related items are purchased in a planned and controlled manner, the HL&P Project Quality Assurance Plan establishes basic requirements which are to be used by HL&P and prime contractors in preparing procurement procedures for the South Texas Project. BEC performs procurement activities for nuclear safety-related equipment, materials, and services, exclusive of the NSSS contract, which is performed by Westinghouse. BEC will approve any Ebasco nuclear safety-related procurements. BEC, and as appropriate, Ebasco verify through contract, vendor surveillance and audit that their suppliers comply with the established requirements.

When HL&P has direct responsibility or assumes direct responsibility for procurement activities, these activities will be conducted in accordance with the requirements of this section.

The basic requirements are:

- ° Written procedures are established clearly delineating the sequence of actions to be accomplished in the preparation, review, approval, and control of procurement documents.
- ° A review of the adequacy of quality requirements stated in procurement documents is performed by qualified personnel knowledgeable in the QA requirements. This review is to determine all quality requirements are correctly stated; they can be inspected and controlled; there are adequate acceptance and rejection criteria; and the procurement document has been prepared in accordance with QA Program requirements.
- ° Documented evidence of the review and approval of procurement documents is provided and available for verification.
- ° Procurement documents identify those quality assurance requirements which must be complied with and described in the supplier's QA Program to meet 10CFR50, Appendix B; ANSI N45.2 and applicable ANSI standards and Regulatory Guides. This QA Program shall be reviewed for adequacy by qualified personnel knowledgeable in quality assurance.
- ° Procurement documents contain or reference applicable design bases; technical requirements, including regulatory requirements; component and material identification; drawings; specifications; codes and industrial standards, including their revision status; tests and inspection requirements; and instructions for such activities as fabrication, cleaning, erecting, packaging, handling, shipping, storing and inspecting.
- ° Procurement documents contain, as applicable, requirements which identify the documentation to be prepared, maintained, submitted and made available to the procuring agent for review and/or approval, such as drawings, specifications, procedures, inspection and test records, personnel and procedure qualifications and material and test reports.
- ° Procurement documents contain, as required, provisions for extending applicable requirements to lower tier subcontractors and suppliers, including purchaser's access to facilities and records.
- ° Procurement documents contain provisions for control of nonconformances including 10CFR21 notification and for method of acceptance of the item or service.
- ° Procurement documents contain the requirements for the retention, control, submittal and maintenance of records.
- ° Procurement documents contain the procuring agency's right of access to Vendor's facilities and records for source inspection and audit.
- ° Changes and/or revisions to procurement documents are subject to at least the same review and approval requirements as the original document.

- ° Purchase documents for spare or replacement parts of safety-related structures, systems and components are reviewed for adequacy of quality requirements by qualified personnel knowledgeable in quality assurance. The review is to determine the adequacy of the quality assurance requirements and acceptance criteria relative to the original design.
- ° The evaluation and selection of suppliers are determined by qualified personnel in accordance with written procedures acceptable to HL&P.
- ° Procurement documents, records and changes thereto are collected, stored, maintained and retrievable in a systematic and controlled manner.

HL&P Engineering is responsible for review of selected BEC Procurement Specifications.

HL&P, BEC and, as appropriate, ESI Quality Assurance are responsible for performing audits and surveillances to verify that the requirements have been implemented and that they are effective.

5.0 Instructions, Procedures and Drawings

The HL&P Project Quality Assurance Plan requires HL&P, the prime contractors and their suppliers to establish and implement a Quality Assurance Program which is in compliance with 10CFR50 Appendix B, ANSI N45.2 and applicable ANSI standards and Regulatory Guides. Each program is required to be effective in verifying that the defined activities are accomplished and documented in accordance with written procedures, instructions, and drawings and that they provide quantitative and qualitative acceptance criteria.

HL&P Project Quality Assurance reviews and approves the BEC South Texas Project Quality Assurance Program. To measure the effectiveness of the prime contractors' quality assurance programs, HL&P Project Quality Assurance has implemented a monitoring program consisting of audits and surveillances. HL&P Corporate Quality Assurance also audits HL&P Corporate organizations that perform functions for the South Texas Project, HL&P Project Quality Assurance and Westinghouse for compliance with their respective Quality Assurance Programs.

6.0 Document Control

The HL&P Project Quality Assurance Plan and implementing procedures require that HL&P, the prime contractors and subcontractors implement a document control system for nuclear safety-related items for the South Texas Project. The established system ensures that design, engineering, procurement, fabrication, construction and QA/QC procedures, plans and changes thereto are reviewed and approved by procedurally authorized groups and that the documents are issued, maintained current and controlled by the use of controlled lists of document holders to ensure that superseded documents are replaced in a timely manner.

Measures are established and documented to control the issuance of documents, such as instructions, procedures and drawings, including changes thereto, which prescribe activities affecting quality. These measures assure that documents, including changes, are reviewed for technical adequacy and the inclusion of appropriate quality requirements, are approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed. Changes

to documents are reviewed and approved by the same organizations that performed the original review and approval unless other organizations are specifically designated. The reviewing organizations have access to pertinent background information upon which to base their approval and shall have adequate understanding of the requirements and intent of the original document.

Those participating in an activity are made aware of and use proper and current instructions, procedures, drawings and engineering requirements for performing the activity. Participating organizations have procedures for control of the documents and changes thereto to preclude the possible use of outdated or inappropriate documents.

Document Control measures provide for:

- ° Identification of individuals or organizations responsible for preparing, reviewing, approving and issuing documents and revisions thereto;
- ° Identifying the proper documents to be used in performing the activity;
- ° Coordination and control of interface documents;
- ° Ascertaining that proper documents are being used;
- ° Establishing current and updated distribution lists;
- ° A listing identifying the current revision of instructions, procedures, specifications, drawings and procurement documents. The list is updated and distributed to predetermined responsible personnel.

HL&P, BEC and ESI Quality Assurance perform audits and surveillances to verify that document control systems are in place and effectively implemented.

7.0 Control of Purchased Material, Equipment and Services

The HL&P Quality Assurance Plan and implementing procedures require that HL&P, prime contractors and subcontractors define and document the system and requirements for the control of nuclear safety-related purchased material, equipment and services.

Control and verification of supplier's activities during fabrication, inspection, testing and shipment of materials, equipment and components is planned and performed as early as possible, as required to assure confor-

mance to the purchase order or contractual requirements. These procedures provide for:

- ° Requiring the supplier to identify processes to be utilized in fulfilling procurement requirements.
- ° Reviewing documents required to be submitted by the procurement requirements.
- ° Specifying the characteristics or processes to be witnessed, inspected or verified and accepted based upon the fabrication schedules; the method of surveillance and the extent of documentation required; and those responsible for implementing these procedures.
- ° Audits, surveillance and/or inspections which verify that the supplier complies with the quality requirements of his QA program.

Control and verification of organizations performing services is accomplished by technical verification of data provided, surveillance and/or audit of the activity and review of objective evidence such as certifications, reports, etc.

The selection of suppliers is based on evaluation of their capability to provide items or services in accordance with the requirements of the procurement documents prior to award of contract.

Procurement source evaluation and selection measures are implemented by HL&P and BEC which provide for the identification of the organizational responsibilities for determining supplier capability.

Measures for evaluation and selection of procurement sources, and the results thereof, are documented and include one or more of (a) through (c) and also must include (d) below:

- a. Evaluation of the supplier's history of providing an identical or similar product or service which performs satisfactorily in actual use. The supplier's history shall reflect current capability.
- b. Supplier's current quality records supported by documented qualitative and quantitative information which can be objectively evaluated.
- c. Supplier's technical and quality capability as determined by a direct evaluation of his facilities and personnel and the implementation of his approved quality assurance program.
- d. Evaluation of bid documents including review for technical adequacy, quality assurance and commercial considerations.

Procurement of spare or replacement parts for safety-related structures, systems and components is subject to QA program controls, to codes and standards and to technical requirements at least equal to the invoked original technical requirements or any properly reviewed and approved revisions.

A Receipt inspection is planned and implemented to assure:

- ° Timely inspection of items upon receipt.
- ° The material, component or equipment is properly identified, and corresponds to the identification on the purchase document and receiving documentation.
- ° Material, components, equipment and acceptance records satisfy the receiving inspection instructions prior to installation or use.
- ° Specified inspection, test and other records are accepted and available at the South Texas Project prior to installation or use where required unless otherwise authorized by conditional release.
- ° Items accepted and released are identified as to their inspection status prior to forwarding them to a controlled storage area or releasing them for further work or installation.
- ° Coordination of receipt inspection with vendor surveillance activities to verify the required vendor inspection has been performed or a waiver documented.
- ° Deficiencies if applicable have been resolved prior to shipment.

Supplier control and use of Certificates of Conformance, when required by procurement documents, are evaluated by audits, vendor inspections or tests to ensure they are valid. The supplier's records shall include a description of those nonconformances from the procurement requirements dispositioned "accept as is" or "repair," including evidence of acceptance by the purchaser's engineering organization.

Site receiving inspection ensures that, for nuclear safety-related items received at the South Texas Project, there is accompanying documentation that indicates review and concurrence by the appropriate prime contractor or designee, that the item complies with established requirements or has an authorized waiver prior to shipment. BEC Quality Assurance audits and surveillances are performed to ensure compliance with these criteria.

HL&P Design Office Quality Assurance ensures by audits/surveillance of the AE/construction manager's vendor surveillance function that source surveillance and inspection are performed in accordance with the quality assurance program. In addition, HL&P Quality Assurance performs audits and surveillances of activities commencing with receiving inspection at the site to ensure proper controls of purchased material and equipment are exercised and to ensure overall compliance.

8.0 Identification and Control of Material, Parts and Components

The HL&P Project Quality Assurance Plan requires that prime contractors and suppliers establish written procedures for the identification and control of materials, parts and components including partially assembled components. Prime contractor's and supplier's procedures shall include the

documented verification of correct identification of materials, components and subassemblies, and that the method of identification does not affect the function or quality of the item prior to release of the items for assembly or installation. These procedures must:

- ° Establish controls to identify and control materials (including consumables), parts and components (including partially fabricated subassemblies).
- ° Provide specific identification and traceability controls when required by codes, standards or specifications.
- ° Provide a method for identification and control of incorrect or defective items. This system includes verification and documentation prior to release for fabrication, assembling, shipping and installation.

All safety related items and materials shall be controlled by one or more of the following:

- ° Uniquely identified and traceable.
- ° Physically marked - items are not traceable but are readily retrievable.
- ° Physically identified as to type and user tested.
- ° Identifiable as to type, by some physical characteristic or other administrative control.

BEC and ESI Quality Assurance verify that the above criteria are incorporated into the quality/construction procedures during the review/approval cycle and then follows up with audits and surveillances to verify compliance.

In addition, HL&P Quality Assurance performs audits and surveillances on prime contractors for evaluation of the conformance to identification and control criteria.

9.0 Control of Special Processes

The HL&P Project Quality Assurance Plan requires that written procedures be established by prime contractors and subcontractors for the activities associated with all special processes. For special processes the qualification of personnel, procedures and equipment relating to specific codes, standards, specifications and contractual requirements shall be documented and maintained current.

Special Processes - special manufacturing processes, metallurgical, chemical, material cleaning, welding, plating and other processes where assurance of the process quality is dependent largely on the inherent skill of the operator and cannot be assured by the inspection of articles alone.

Special processes for the South Texas Project include but are not limited to:

- ° Welding
- ° Heat treating
- ° Cadwelding
- ° Nondestructive examination
- ° Chemical cleaning and flushing
- ° Coatings

Organizational responsibilities are defined in procedures for qualification of special processes, equipment and personnel. These responsibilities will include the provision to assure that special processes are performed by qualified personnel using procedures qualified and approved in accordance with applicable codes, standards or other requirements.

Special processes are performed under controlled conditions by qualified personnel using procedures qualified and approved in accordance with applicable codes, standards or other requirements. For special processes not covered by existing codes or standards the specific equipment, personnel qualification and procedure qualification requirements are defined prior to application of the special process.

Records are maintained for the qualification of procedures, equipment and personnel associated with special processes. Records are in sufficient detail to clearly define the procedures, equipment or personnel being qualified; criteria or requirements used for qualification; and the individual approving the qualification.

HL&P Quality Assurance verifies that the special process control criteria are met by BEC and ESI review and approval of special process procedures and their performance of audits and surveillances to ensure compliance.

HL&P will retain the capability with a quality control group to perform, as directed by the PQAM, certain special process examinations (NDE) during the inspection verification process. These examinations will be performed by personnel qualified in accordance with SNT-TC-1A-80 using qualified procedures approved by HL&P NDE Level III personnel. Instances of recommendations within SNT-TC-1A-80 ('shoulds') will be considered mandatory requirements ('shall's'). This exception will be reflected in approved implementing procedures.

HL&P Quality Assurance performs audits and surveillances of special process activities to ensure compliance with all aspects of the Quality Assurance Program.

10.0 Inspection

The HL&P Project Quality Assurance Plan requires the prime contractor for construction and subcontractors to establish and implement an inspection operation whose activities are independent from the group performing the activities being inspected. The training, qualifications and certifications of inspectors include criteria from appropriate codes, standards and procedures. Inspector training shall be documented and kept current. Inspection activities relating to construction, fabrication, installation and testing are documented, kept current and identify all mandatory inspection hold and test points and the criteria to be witnessed by authorized inspectors. Operations and inspections (including rework, replaced items) are performed in predetermined, documented sequences. Deviations or deletions must be accomplished in accordance with approved and documented systems. Inspection procedures include all required inspection operations defined by the specifications, drawings, codes and standards. These procedures provide for the following:

- a. Identification of characteristics and activities to be inspected
- b. A description of the method of inspection
- c. Identification of the individuals or groups responsible for performing the inspection operation
- d. Acceptance and rejection criteria
- e. Identification of required procedures, drawings and specifications and revisions
- f. Recording the identification of inspector and/or data recorder if applicable and the results of the inspection operation
- g. Specifying necessary measuring and test equipment including accuracy requirements and verification of calibration
- h. Evaluation of inspection results

Where direct inspections are impossible or disadvantageous, in-process monitoring is specified in the inspection procedures and both direct and in-process monitoring are used when control is inadequate without both. All required procedures, specifications and drawings are made available to the inspectors prior to performing inspection. If mandatory inspection hold points are required beyond which work cannot proceed without the specific consent of the designated representative, the specific hold points will be indicated in appropriate documents. Inspection results are documented, evaluated and their acceptability determined by a responsible individual or group.

BEC and ESI Quality Assurance verify that inspection control criteria are complied with by review and approval of the inspection procedures and by audits and surveillances of inspections.

HL&P Quality Control may occasionally perform inspection verifications as deemed necessary by the Project Quality Assurance Manager.

HL&P, BEC and ESI Quality Assurance perform audits and surveillance of inspection activities to ensure compliance with all aspects of the quality assurance program.

The HL&P inspectors are trained and certified by a program conforming to ANSI N45.2.6 and as applicable, SNT-TC-1A-80. Instances of recommendations within SNT-TC-1A-80 ('shoulds') will be considered mandatory requirements ('shall's'). This exception will be reflected in approved implementing procedures.

11.0 Test Control

The HL&P Project Quality Assurance Plan requires that a test control program be developed and documented by the prime contractors and contractors for tests that they are responsible for, which demonstrates that the facility performs in accordance with the South Texas Project requirements and specifications. Preoperational testing and start-up testing requirements are established by the Operational Quality Assurance Plan, as described in Chapter 17.2 of the FSAR. The training, certification of personnel, calibration and certification of test equipment, system or component status, environmental conditions, inspection hold points and configuration of the items to be tested are included in the procedures. Test results are documented, evaluated and the acceptance status determined by the authorized departments.

Test procedures or instructions provide for the following as required:

- a. The inclusion of requirements and acceptance limits contained in applicable design and procurement documents
- b. Instructions for performing the test
- c. Test prerequisites such as calibrated instrumentation, adequate test equipment and instrumentation including their accuracy requirements, completeness of item to be tested, suitable and controlled environmental conditions and provisions for data collection and storage
- d. Mandatory inspection hold points for witness by Owner and the contractor's inspector (as required)
- e. Acceptance and rejection criteria
- f. Methods for documenting or recording test data and results
- g. Provisions for assuring that test prerequisites have been met
- h. Evaluation of results

BEC and ESI Quality Assurance verify inclusion of adequate test control criteria by review and approval of test procedures. HL&P, BEC and ESI Quality Assurance perform audits and surveillance to verify that the

controls are implemented and effective.

The test control activities are an example of a case in which HL&P Project Quality Assurance monitoring activities and the Operational Quality Assurance monitoring activities will interface and in some instances overlap. HL&P Project Quality Assurance procedures will specifically define the responsibilities for this period.

12.0 Control of Measuring and Test Equipment

The HL&P Project Quality Assurance Plan requires the establishment, documentation and implementation of a Measuring and Test Equipment Control System. The system is to include calibration techniques, accuracy, frequency and maintenance of all measuring instruments/test equipment used in the measuring, inspection and monitoring of nuclear safety-related items. Calibration and maintenance data shall be filed and kept current. Calibration standards are to be traceable to nationally recognized standards where standards exist. If standards do not exist, the basis for calibration of the equipment shall be documented. If measuring or test equipment is found to be out of calibration, missing or lost, an investigation is required to be performed to determine the validity of the use of the instrument and whether measurements or tests are required to be reperformed. Reinspection when required will be documented.

Equipment is identified and traceable to the calibration test data and suitably marked to indicate calibration due date.

Measuring and test equipment is calibrated at specified intervals and based on the required accuracy, purpose, frequency of use, stability characteristics, and other conditions affecting the measurement. Calibration of this equipment is against standards that have an accuracy of at least four times the required accuracy of the equipment being calibrated, or when this is not possible, have an accuracy that assures the equipment being calibrated will be within required tolerance and that the basis of acceptance is documented and authorized by responsible management.

Calibrating standards will, when possible, have greater accuracy than standards being calibrated. Calibrating standards with the same accuracy may be used if they can be shown to be adequate for the requirements and the basis of acceptance is documented and authorized by responsible management.

BEC and ESI Quality Assurance review and approve calibration procedures to ensure these criteria are incorporated. In addition, HL&P, BEC and ESI Quality Assurance perform audits and surveillances to verify compliance.

In the conduct of its inspection verifications, as directed by the PQAM, HL&P Quality Control is required to use measuring and test equipment of the appropriate accuracy level which is controlled by procedures meeting the requirements of this section.

13.0 Handling, Storage and Shipping

The HL&P Project Quality Assurance Plan requires that for nuclear safety-related items, written procedures be developed in accordance with design requirements, specifications and standards to control the cleaning, handling, storage, packaging, shipping and preservation to preclude damage and deterioration by environmental conditions. The activities are to be accomplished by appropriately trained and experienced personnel.

BEC and, as appropriate, ESI Quality Assurance review and approve quality construction procedures for receiving, handling, storage and cleaning to verify that the appropriate criteria of Regulatory Guide 1.38 and ANSI N45.2.2 are included. Periodic audits and surveillances are conducted by HL&P, BEC and ESI Quality Assurance to verify compliance with the procedures.

14.0 Inspection, Test and Operating Status

The HL&P Project Quality Assurance Plan requires that the prime contractor and construction contractors indicate the current inspection, test and operating status of nuclear safety-related items through the use of stamps, markings, tags or other suitable means. Procedures include the requirements for:

- a. Controlling the application and removal of inspection status indicators such as tags, markings, labels and stamps
- b. Documenting the status of nonconforming, inoperative, or malfunctioning structures, systems and components to prevent inadvertent use
- c. Defining, controlling and documenting the use, application and removal of inspection tags, labels or markings which identify the status of inspections or tests performed and attest to the acceptability of the structure, system or component
- d. Controlling the altering of the sequence of required tests, inspections and other operations.

BEC and ESI Quality Assurance reviews and approves these procedures and conduct periodic audits and surveillances to assure compliance. HL&P Quality Assurance also conducts audits and surveillances to assure compliance.

15.0 Nonconforming Materials, Parts or Components

The HL&P Project Quality Assurance Plan requires that HL&P maintains and the prime contractors' Quality Assurance Programs include a system which is documented by written procedures for the identification, segregation and disposition of nonconforming materials, parts and components. The procedures shall specify the preparation and handling of nonconformance documents, segregation requirements and which groups are responsible for review and disposition of the items. Documentation identifies the nonconforming

item; describes the nonconformance, the disposition of the nonconformance and the inspection requirements; and includes signature approval of the disposition and final closeout. Nonconformances are corrected or resolution determined prior to initiation of the preoperational test program on the item. Rework, repairs and subsequent reinspection and tests are conducted in accordance with the original inspection and test requirements or accepted alternatives. These tests shall be performed in accordance with controlled procedures and contain mechanisms for providing information to the identifying group as to the disposition of the nonconformance. For NSSS items, the organization responsible for dispositioning of the nonconformance shall obtain concurrence of the Westinghouse Site Representative. HL&P Quality Assurance performs trend analysis of HL&P, BEC and ESI nonconformances. Procedures are established by HL&P to report significant deficiencies during the design, construction and startup phase to HL&P executive management and to the Nuclear Regulatory Commission in accordance with 10CFR50.55(e) and 10CFR21 where applicable.

HL&P, BEC and ESI Quality Assurance perform periodic audits and surveillance to assure compliance.

16.0 Corrective Action

The HL&P Project Quality Assurance Plan for the South Texas Project requires that a system be established and documented by HL&P and the prime contractors which defines the responsibilities, authorities and methods used by specific groups involved in the evaluation of nonconformances and trending to determine the need for corrective action. The system includes measures to identify the cause of significant conditions adverse to quality, measures to ensure that the root causes are corrected, and measures to ensure that timely action is taken. Follow-up is performed to ensure the effectiveness of corrective action and that appropriate levels of management are informed of the results. HL&P performs trend analysis of HL&P, BEC and ESI identified deficiencies to determine the need for corrective action. General categories of documents to be trended are: Nonconformance Reports; Corrective Action Reports; Deficiency Notices; and Audit Deficiency Reports. Specific documents to be trended, and the frequency of trending, are identified in approved procedures. HL&P, BEC and ESI Quality Assurance perform audits and surveillances to assure compliance.

17.0 Quality Assurance Records

The HL&P Project Quality Assurance Plan requires that a Quality Assurance record system be developed by HL&P and the prime contractors for the South Texas Project. The record system provides evidence that activities relating to quality are defined, implemented and that inspection and test documents contain a description of the type of observation, reference to nonconformance reports, evidence relating to status of observation, date and inspector identification.

Quality records shall include reviews, audits, reports, specifications, nonconformance reports, analyses, personnel and equipment qualification procedures.

The HL&P Project Quality Assurance Plan requires that HL&P and prime contractors establish requirements to ensure that records generated during the design, procurement and construction are identifiable, retrievable and meet the requirements of 10CFR50, Appendix B, and ANSI N45.2.9 as endorsed by Regulatory Guide 1.88.

As an alternative to the ANSI N45.2.9 storage requirements, records may be maintained for the South Texas Project in a two-hour rated fire resistant file room meeting NFPA No. 232-1975 including the following provisions:

- ° An automatic fire suppression system and an early warning fire detection system is utilized.
- ° Records are stored in fully enclosed metal cabinets
- ° Smoking and eating/drinking are prohibited within the records storage facility
- ° Work not directly associated with record storage or retrieval is prohibited within the records storage facility
- ° Ventilation, temperature and humidity control equipment is controlled where they penetrate fire barriers bounding the storage facility.

HL&P, BEC and EII Quality Assurance perform audits and surveillances to assure compliance.

18.0 Audits

The HL&P Project Quality Assurance Plan establishes the requirement that HL&P, prime contractors and subcontractors develop, document and implement audit activities which are structured in accordance with the requirements of ANSI N45.2.9 for the South Texas Project. As required by the ANSI standard, results of audits are presented for review to management of the audited organization and, in the case of HL&P performed audits the HL&P Executive Vice President, Nuclear Group. Where indicated HL&P performs follow-up action.

HL&P has the ultimate responsibility for the auditing of quality related activities on the Project. HL&P Corporate audits are performed primarily on the HL&P Project Quality Assurance group, HL&P corporate organizations providing services to the Project and Westinghouse. HL&P Project Quality Assurance is primarily responsible for audits of the Engineer/Construction Manager, contractor, subcontractors and the HL&P Project team organizations. Cases may arise in which audits may be required by either the Corporate or Project audit groups in the primary area of responsibility of the other group.

The prime contractors and subcontractors perform quality related audits of internal activities and suppliers of material, components and systems.

HL&P, BEC and ESI perform supplemental audits when required, based on such factors as significant changes in the Quality Assurance Program, results of trending programs or investigations into the root causes of problems.

TABLE 1

ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE

The STP Quality Assurance Program complies with the following ANSI Standards and associated Regulatory Guides except as noted:

<u>STANDARD</u>	<u>TITLE</u>
ANSI N45.2-1971 R.G. 1.28 (Rev. 0, 6/72)	Quality Assurance Program Requirements for Nuclear Facilities
ANSI N45.2.1-1973 R.G. 1.37 (Rev. 0, 3/73) (see Notes 8 through 10)	Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants
ANSI N45.2.2-1972 R.G. 1.38 (Rev. 0, 3/73) (see Notes 11 through 16)	Package, Shipping, Receiving, Storage and Handling of Items of Nuclear Power Plants
ANSI N45.2.3-1973 R.G. 1.39 (Rev. 0, 3/73) (see Notes 17 and 18)	Housekeeping During the Construction Phase of Nuclear Power Plants
ANSI N45.2.4-1972 R.G. 1.30 (Rev. 0, 8/72) (see Notes 19 and 20)	Installation, Inspection and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations
ANSI N45.2.5-1974 (see Notes 1 and 2)	Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants
ANSI N45.2.6-1973 R.G. 1.58 (Rev. 0, 8/73) As modified by positions C.5, C.6, C.7, C.8 and C.10 of Rev. 1 (see Note 33)	Qualifications of Inspection, Examination and Testing Personnel for the Construction Phase of Nuclear Power Plants
ANSI N45.2.8-1975 Reg. 1.116 (6/76) (see Notes 21 through 23)	Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants

TABLE 1
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE
(Continued)

ANSI N45.2.9-1974 R.G. 1.88 (Rev. 2, 11/76) (see Notes 24 through 26)	Requirements for Collection, Storage and Maintenance of Quality Assurance Records for Nuclear Power Plants
ANSI N45.2.10-1973 R.G. 1.74 (Rev. 0, 2/74)	Quality Assurance Terms and Definitions
ANSI N45.2.11-1974* R.G. 1.64 (Rev. 2, 6/76) (see Notes 3 through 7)	Quality Assurance Requirements for the Design of Nuclear Power Plants
ANSI N45.2.12-1977 R.G. 1.144 (Rev. 1, 4/80) (see Note 32)	Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants
ANSI N45.2.13-1976 R.G. 1.123 (10/76) (see Notes 27 through 31)	Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants
ANSI N45.2.23-1978 R.G. 1.146 (Rev. 0, 1/80)	Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants

Exception Notes

1. ANSI N45.2.5-1974, Section 4.8, states "Pumped concrete must be sampled from the pump line discharge." In lieu of this statement, in-process strength samples of pumped concrete are taken at the delivery point. Correlation tests of air content, slump, and temperature are performed to verify these plastic properties of the concrete at the placement point in accordance with the following frequency requirements:
 - a. A minimum of 2 correlation tests are performed for each pumped placement exceeding 200 cu. yds.
 - b. Otherwise, a minimum of 2 correlation tests per week are performed when any individual pumped placement during a week requires delivery of more than one truckload of concrete.
 - c. During a week when a pumped placement exceeding 200 cu. yds. is made, the correlation tests performed on that placement will satisfy the weekly requirement for performing two correlation tests as specified in Item B above.

When any of the specified limits and/or tolerances pertaining to air content, slump, or temperature are exceeded at the placement point, correlation tests between the delivery point and placement point will be accomplished for each 100 cu. yds. of concrete placed as long as limits and

TABLE 1
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE
(Continued)

tolerances are exceeded. If two consecutive tests are out of tolerance, corrective action will be implemented to adjust the limits for the concrete entering the pump intake so that no concrete from the subsequent trucks will enter the pump intake as long as the tolerances are exceeded.

"Correlation Tests," "Delivery Point," and "Placement Point" are as defined in ANSI N45.2.5-1978, Section 1.4.

2. Samples and frequency for cadweld testing is in accordance with ACI-359/ASME Section III, Division 2, issued for trial use and comment in 1973, including addenda 1 through 6, (see Sections 3.8.1.6.3 and 3.8.3.6.3 of the STP Final Safety Analysis Report).
- *The following interpretations (Notes 3 through 7) of ANSI N45.2.11-1974 and Regulatory Guide 1.64, Rev. 2-6/76, apply to HL&P, their contractors and consultants working under HL&P's Quality Program.
3. Section 3.1, Design Input Requirements, General. This section implies that all necessary design input (as listed in Section 3.2) should be available prior to the start of a design activity. In practice, certain design activities are initiated before the firm input requirements are available. (For example, foundation designs prepared based on preliminary information or equipment sizes and mounting, embedded conduit run based on preliminary estimates of circuit requirements, etc.) The design phase QA program will be structured to ensure that all necessary design input is available before completion of final design of the work affected by the input, and that final design input is available for use in verification of the final design.
4. Section 4.1, Design Process, General. Paragraph 3 implies traceability back from final design to the source of design input. In practice, a literal interpretation of this is not always possible. For example, final design drawings do not identify the related calculations. This paragraph will be interpreted to mean that it shall be possible to relate the criteria used and analyses performed to the final design documents and that record files will permit location of analyses supporting specific design output documents.
5. Section 4.2, Design Analyses. This section implies a requirement for retention of all calculations. In principle, it is considered good practice for the responsible engineer or engineering organization to retain all final calculations, and this will be done for all manual calculations covered by the program. However, for computer programs only documentation of the design input, assumptions made in the analyses, results obtained, and evidence of verification will be retained since permanent retention of all versions of all computer programs is not considered practical or necessary if sufficient information is available for a competent individual to verify the results using the input and assumptions.

TABLE 1
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE
(continued)

6. Section 10, Records. In-process documentation, relating to checking and coordination of drawings (for example, check and coordination prints) or copies of marked-up specifications used to solicit comments shall be retained until the drawing or specification is approved and issued for use outside of Engineering. Such in-process documents will be available for review/audit until the document is approved, but may be discarded once the document has been approved. In the first sentence of the second paragraph the phrase "final design documents" shall mean those documents which are the latest revision that has been issued for use.
7. Regulatory Position, Section C-2: If, in an exceptional circumstance, the originators' immediate supervisor is the only technically qualified individual available, the design verification or checking will be conducted by the supervisor with the following provisions:
 - a. The other requirements of Regulatory Guide 1.64 will be met.
 - b. The justification will be individually documented and approved by the next level of supervision.
 - c. Quality Assurance audits will include review of the frequency and effectiveness of the use of the immediate supervisor to assure that this provision is used only in exceptional circumstances.
8. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique. However, standard procedures or plans will be reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality. This is consistent with Section II, Paragraphs 2 and 3 of ANSI N45.2-1971 which provides for examination, measurement, or testing to assure quality or indirect control by monitoring of processing methods. However, final cleaning or flushing activities will be performed in accordance with procedures specific to the system.
9. Section 4, Preinstallation Cleanliness. This section states, "Items should not be delivered to the point of installation site sooner than necessary unless the installed location is considered a better storage area." As an alternate to this requirement, items may be delivered to the installation site sooner than absolutely necessary when determined to be advantageous for other considerations, for example, reduced handling or easier access, thereby reducing susceptibility to handling damage. In all such cases, equipment stored in place will be protected in accordance with Section 5 of ANSI N45.2.1.

TABLE 1
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE
(continued)

10. Section 3.1.2, HL&P interprets the lighting level of 100 footcandles to be guidance. It is HL&P's normal practice that the lighting level for determining "metal clean" of accessible surfaces of piping and components is determined by the inspector. Typically he uses a standard two-cell flash-light supplemented by other lighting as he deems necessary.
11. Section 2.7, Classification of Items. The four-level classification system may not be used explicitly. However, the specific requirements for each classification as specified in the standard will be applied to the items suggested in each classification and for similar items.

Classification differing from Section 2.7 will be considered acceptable provided no degradation is assured; for example, electric motors designed for outside service may be stored in Level C area rather than a Level B.

12. Section 6.2, Storage Areas. Paragraph 6.2.1 requires control and limited access to storage areas. In lieu of and to amplify this paragraph, the following will be applied:

Access to storage areas for Levels A, B and C will be controlled by the individual(s) responsible for storage. While the above areas will be posted to limit access, other positive controls (other than that for the overall site area) or guards may not be provided. Level D areas will be posted with the storage level designation only.

13. Section 5.5, Correction of Nonconformances. This section provides for "rework" and "use as is" dispositions for nonconforming items. As an alternate, the "repair" disposition (as defined in ANSI N45.2.10-1973) will also be used.
14. Section 6.2.4, Storage of Food and Associated Items. Controlled areas, within storage areas, will be established for the storage of food, drink, and salt tablets. These areas will be controlled through normal supervision and inspection.
15. In Section 8, the control of documentation and records shall be in accordance with Section 17 of this Program Description.
16. Appendix A 3.4.2, Inert Gas Blankets. There may be cases involving large or complex shapes for which an inert or dry air purge flow is provided rather than a static gas blanket in order to provide adequate protection due to difficulty of providing a leakproof barrier. In these cases a positive pressure purge flow may be utilized as an alternative to the leakproof barrier.

TABLE 1
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE
(continued)

17. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique. However, standard procedures or plans will be reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality.
18. Alternative equivalent zone designations and requirements may be utilized to cover those situations not included in the subject standard; for example, situations in which shoe covers and/or coveralls are required but material accountability is not. In addition, zones might be combined into the next more restrictive category in order to reduce total number of zones.
19. Section 1.2, Applicability. The Standard is applied to the items and systems identified in Paragraph 1.1.1 and to additional systems depending on the nature and scope of the work to be performed and the importance of the item or service involved.
20. Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique. However, standard procedures or plans will be reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality.
21. Section 1.1, Scope. The term "important items" will be interpreted to apply to those activities or quality attributes of an item or service that could affect a nuclear safety-related characteristic. For example, if a barrier is required for leakage control, but serves no structural function, the leaktight characteristic would be considered "important," but appearance, dimensional requirements, and structural features would not necessarily be considered important; or if a pump casing is required for coolant boundary integrity, but the pump does not have to operate to provide for nuclear safety, those attributes which affect its operation would not be considered important from the standpoint of nuclear safety.

Section 2.1, Planning. The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard.

TABLE 1
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE
(continued)

Individual plans for each item or system are not normally prepared unless the work operations are unique. However, standard procedures or plans will be reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality.

22. Section 3.3, Process and Procedures. The terms "installation site," "installation area," and "site" used in this standard shall be interpreted as follows:
- a. "Installation site" or "site" will be interpreted the same as "construction site." When applied to documents, these may be at the central office or work area document control station.
 - b. Installation area - Immediate proximity of location where work is to be performed.
23. Section 3.5(e), Site Conditions. This requirement will be applied only if subsequent correction of adjacent nonconformances could damage the item being installed.
- Section 4.6, Care of Items. HL&P retains the authority and is the "Responsible Organization" for temporary usage of equipment or facilities unless specific (i.e. on a case by case basis) or general authority is granted in writing to the Construction Manager's organization.
24. Section 1.4, Definitions. Quality Assurance Records - A document is considered completed when it has finished full processing and has been issued for use in design, procurement, construction, or manufacturing.
25. Section 1.4, Definitions. Authenticated Records - Those records which are clearly identified as a statement by the individual or organization holding responsibility. Handwritten signatures are not required if the document or printout is clearly identified as a statement by the reporting individual or organization.
26. For Appendix A, an installation shall be considered to be in an "as constructed" condition if it is installed within the tolerances established by Project Engineering indicated in the design output documents.
27. Section C.3 of the Regulatory Guide - A corrective action system may, depending upon complexity and/or importance to safety of the item or service provided, be imposed upon the supplier. When a corrective action system is imposed on a supplier, the applicable elements of Section 9.0 of the standard will be included and its implementation will be verified.
28. Section C.4 of the Regulatory Guide - Applicable information concerning the method(s) of acceptance of an item or service will be made available to receiving inspection personnel.

TABLE 1
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE
(continued)

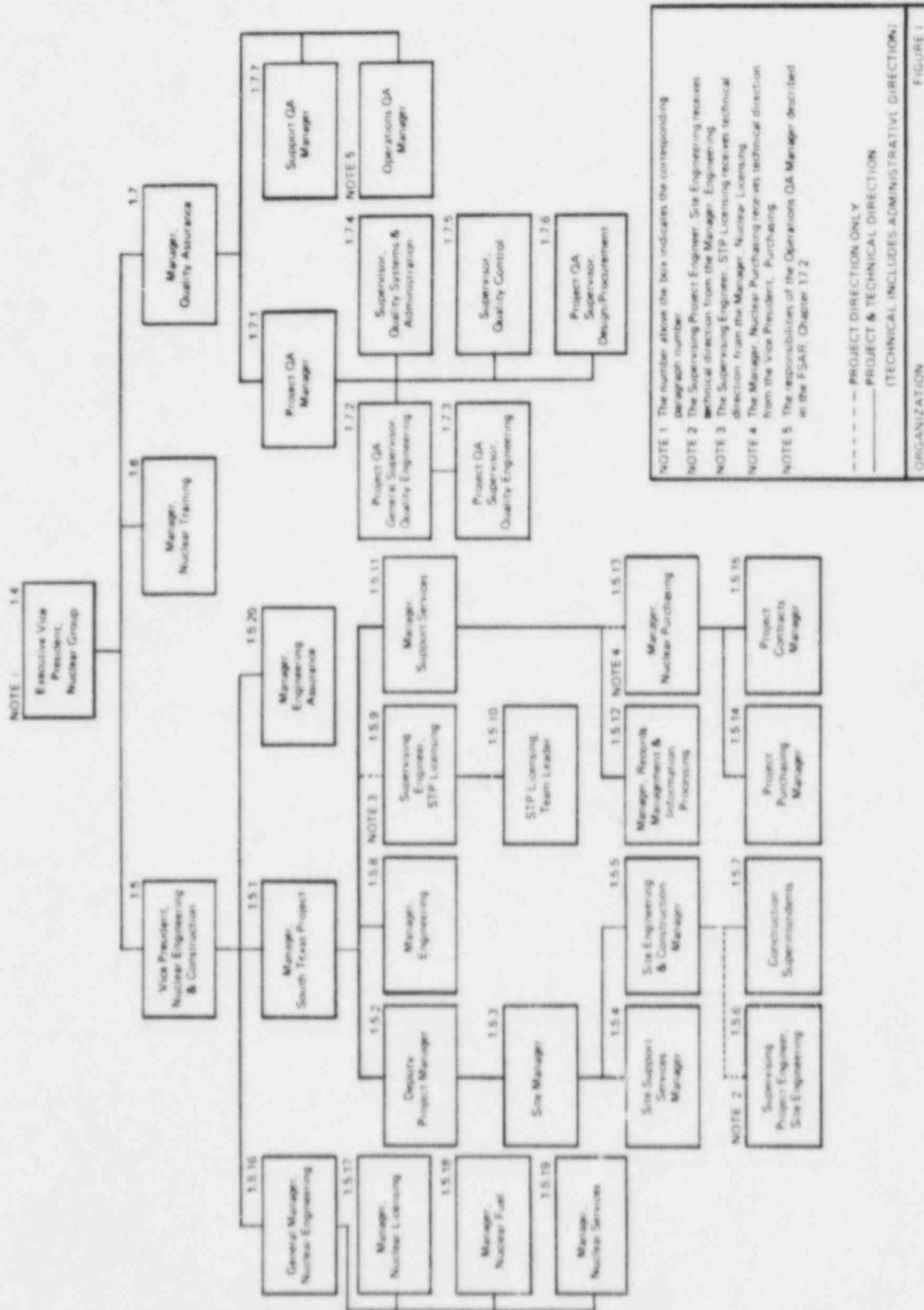
29. Section 4.2.a of the Standard - When evaluation of a supplier is based solely on historical supplier data, these data will primarily include HL&P's or a prime contractor's records that have been accumulated in connection with previous procurement actions. Data that includes experience of users of identical or similar products of the prospective supplier and product operating experience will be used if they become available; however, such data are normally available only to those involved in plant operations.
30. Section 10.2.d. of the Standard - The requirements of this section are interpreted as follows: The person attesting to a certificate shall be an authorized and responsible employee of the supplier and shall be identified by the supplier.
31. HL&P's position relative to ANSI N45.2.13-1976, Section 10.2.f., Verification of the Validity of Supplier Certificates and the Effectiveness of the Certification System, is as follows: The verification of the validity of supplier certificates and the effectiveness of the certification system are accomplished as an integral part of the total supplier control and product acceptance program, and no separate HL&P system exists that addresses itself solely to such verification. The degree of verification required will depend upon the type of item or service and their safety importance. The means of verification may include source witness/hold points, source audits, and document reviews; independent inspections at the time of material receipt; user tests on selected commodities, such as concrete components; and tests after installation on selected components and systems. All of these means verify whether or not a supplier has fulfilled procurement document requirements and whether or not a certification system is effective.
32. ANSI N45.2.12-1977, Section 4.5.1 states, "The audited organization shall provide a follow-up report stating the corrective action taken and the date corrective action was completed." This implies that the audited organization must provide the auditing organization with written notification detailing what corrective action was taken and when the corrective action was completed.

In actual practice, the audited organization will provide the auditing organization with documented corrective action including the date when the corrective action will be completed. The auditing organization will evaluate the corrective action response to determine if corrective action verification is necessary. If verification is necessary, the corrective action verification will be performed after the scheduled completion date and the results of the verification will be documented.

33. HL&P Vendor Surveillance shall comply with ANSI N45.2.6-1978 and R. G. 1.58 (Rev. 1, 9/80) in its entirety.

TABLE 2
HL&P MANUALS USED TO IMPLEMENT THE
QUALITY ASSURANCE PROGRAM

- Project Quality Assurance Plan
- Project Specific Quality Assurance Procedures Manual
- Support Division Quality Assurance Procedures Manual
- Project Engineering Procedures Manual
- Project Site Procedures Manual
- Project Licensing Procedures Manual
- Project Procurement Procedures Manual
- Project Management Procedures Manual
- Records Management Systems Procedures Manual



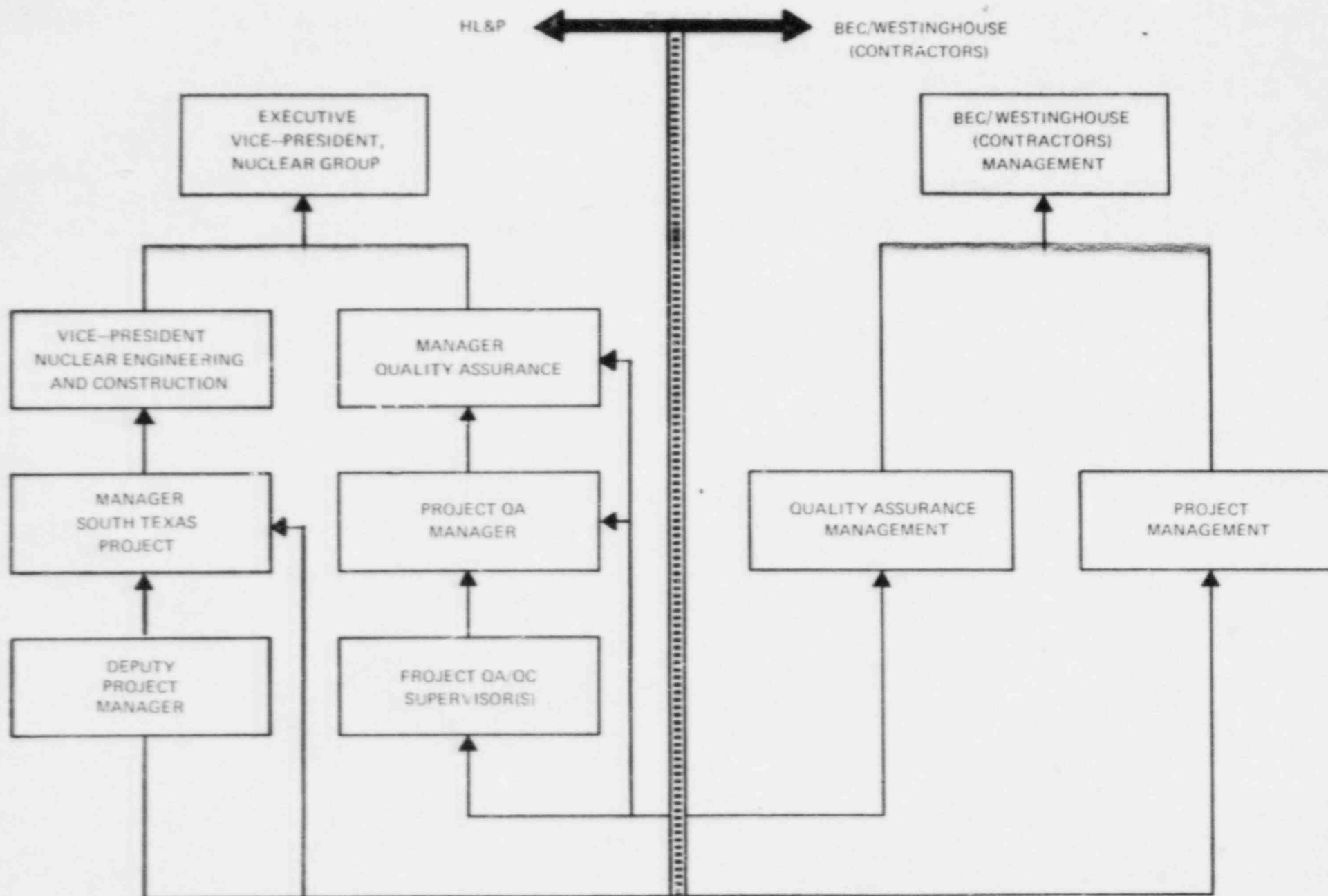


FIGURE 2

7
LINES OF COMMUNICATION
HL&P and BEC/WESTINGHOUSE (CONTRACTORS)

PART B

BECHTEL ENERGY CORPORATION
QUALITY ASSURANCE PROGRAM DESCRIPTION

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

REVISION 7

DATE JULY 27, 1984

BECHTEL QUALITY ASSURANCE PROGRAM DESCRIPTION FOR SOUTH TEXAS PROJECT

INTRODUCTION

The Bechtel Quality Assurance Program Description used by the Bechtel Energy Corporation for the South Texas Project is described in the NRC approved Bechtel Topical Report BQ-TOP-1, Rev. 3A, Bechtel Quality Assurance Program for Nuclear Power Plants and the modifications and additions described below.

Throughout the Program Description (Part B) where the Program Description states Thermal Power Organization, it shall be construed as synonymous with Bechtel Power Management.

Throughout the Program Description (Part B) where Construction Quality Control is stated, it shall be construed that Project Quality Control reports to the Project Quality Assurance Manager.

SCOPE OF SERVICES

Bechtel Energy Corporation is responsible for Engineering, Procurement and Construction Management activities at the South Texas Project. This activity includes receiving, storage, maintenance, receiving inspection and Quality Assurance functions. Bechtel Construction Management is responsible for management of the construction and quality assurance/quality control activities of the Constructor/Contractor(s). Construction Management consists of planning, scheduling, monitoring and evaluating the Constructor/Contractor(s) construction and quality assurance/quality control activities. The construction, field engineering, and quality control activities defined in the topical will be the responsibility of the Constructor/Contractor(s). The Constructor/Contractor(s) will be responsible for submitting to Bechtel, for approval, a quality program which is consistent and compatible with the applicable sections of Bechtel's Topical Report.

The following is a description of the South Texas Project modifications to meet the scope of the project and client requirements.

Introduction

Page 4 - item #5

Division Quality Policies - Guidance defining requirements and responsibilities for accomplishing Quality Program functions which may be modified, deleted by, or supplemented with project documents to meet specific project/owner requirements and the scope of the project.

Section 1 - Organization

o 1.5.4 Division Construction

Managers of Division Construction provide technical and administrative direction to the Construction Department personnel. Managers of Division Construction are assisted by Construction Managers and Chief Construction Engineers, where assigned. Construction Managers are responsible for the management and technical direction of assigned projects, and for assuring that construction projects are provided with appropriate personnel and are following prescribed division practices and procedures for conduct of construction activities.

o 1.6.1 Project Quality Assurance

The project quality assurance program is directed by the Project Quality Assurance Manager who is responsible to assure that Quality Assurance or Quality Control actions listed below are accomplished in accordance with the requirements of the project:

- 1) Coordinate the functions of the project quality program, and serve as the focal point for project communication on matters relating to this program.
- 2) Coordinate project quality-related activities of Engineering, Procurement, Project Administration, Records Management System, and Construction.
- 3) Audit and surveillance of project quality-related functions and adherence to procedures. Advise management of the status of program implementation. Conduct prescheduled project audits and supplemental audits directed by the Project Quality Assurance Manager.
- 4) Review Supplier and Constructor/Contractor(s) quality assurance program requirements in procurement documents and conditional releases of nonconforming items at the construction site. | 7
- 5) Review turnover packages and selected quality verification records prior to turnover to the Client. |
- 6) Concur with evaluation of recommended supplier's quality assurance program, in accordance with subsection 7.1. Evaluate supplier's Quality Programs for jobsite originated safety related purchases when determined necessary by the Project Quality Assurance Manager.
- 7) Take stopwork action when warranted.
- 8) Identify quality problems, initiate documented action leading to a solution, and verify implementation of solutions.
- 9) Review project plans and schedules for quality-related activities to assure timely and effective implementation of the quality assurance functions for the project.

- 10) Provide periodic reports to the Division Quality Assurance Manager and Project Manager evaluating the status of the project quality assurance program and advising of any problems requiring special attention.
- 11) Coordinate quality assurance functions within the project and with groups outside the division, such as M&QS and Procurement Supplier Quality.
- 12) Assure that quality assurance related procedures and manuals prepared by or used for the project meet project quality program requirements and initiate revisions when necessary.
- 13) Review, prior to use, Procurement Quality Surveillance Inspection plans and Quality Control instructions for clarity and the existence of the information described in Sections 7 and 10. In addition, evaluate the adequacy of selected plans and instructions by performing an in-depth review of:
 - a. Accuracy of translation of drawing and specification requirements.
 - b. Basis for determining inspection level and sequence.
 - c. Adequacy of inspection method.

This review provides assurance that the total quality program requirements inclusions are complete. Reviews of generic plans and instructions can be performed on a generic basis. In that case, the PQAM only verifies that the review of the generic plan or instructions has been performed.

- 14) Review and approve Constructor/Contractor(s) quality programs.
- 15) Prepare quality assurance descriptions in Safety Analysis Reports.
- 16) Review Nonconformance Reports and other quality problem related documents to determine trends, identify significant deficiencies, and recommend appropriate corrective action.

The field quality assurance program includes the capability to perform:

- o Receiving inspection of permanent plant material and equipment.
- o Maintenance and storage inspection of permanent plant equipment and material in Bechtel's custody.
- o Review of receiving and Bechtel QC documentation.
- o Surveillance inspection of work performed by Constructor/Contractor(s). This inspection supplements the quality programs of the Constructor/Contractor(s) who have responsibility for their work and their quality verification.

Surveillance inspection includes either selected physical inspection at prescribed hold points and observation or witness of inspections performed by the Constructor/Contractor(s):

- o Reviewing quality control documentation.
- o Reviewing Bechtel and/or Constructor/Contractor(s) quality documentation.
- o Providing technical direction to testing laboratories and inspection Contractors.
- o Reviewing supplier quality verification document packages for completeness and traceability to the item(s).
- o Identifying quality problems, initiating action leading to solutions, and verifying implementation of solutions.
- o Reviewing Constructor/Contractor(s) quality verification documents.
- o Reinspection of Constructor/Contractor(s) completed work may be imposed as deemed necessary.

1.6.2 Project Engineering

- 3) Prepare specifications for Supplier and Constructor/Contractor(s) Quality Assurance Program.
- 5) Review and approve the design changes and approve nonconformance dispositions.
- 6) Review drawings, procedures, test data, manuals and reports submitted to Engineering by suppliers and Constructor/Contractor(s).
- 8) Provide support to Construction management relative to storage and maintenance of permanent plant equipment.

1.6.3 Project Construction Management

A Manager of Construction is assigned to each nuclear plant project involving construction or construction management assignment, and is responsible for the project field construction performance. The Manager of Construction is responsible for assuring that construction activities are performed in accordance with the design requirements as established by project engineering and other applicable requirements.

The project construction management organization is shown in Figure 11.

The Constructor/Contractor(s) are assigned first-level responsibility for the control of the quality of their work. Their performance is coordinated and monitored by the Bechtel field organization. The Bechtel Quality Assurance organization performs documented audits and surveillances and has the capability to perform surveillance inspection.

In cases where the Constructor/Contractor(s) are responsible for quality verification inspection or other quality assurance functions, the contract documents incorporate the requirements for the Constructor/Contractor(s) quality assurance program. Constructor/Contractor(s) quality assurance and quality control personnel are required to have the appropriate authority, organizational freedom, and independence within their own organization. Constructor/Contractor(s) program requirements are specified by incorporation of the requirements of Reg. Guide 1.28 (6/7/72) or the ASME Boiler and Pressure Vessel Code, Section III, as appropriate. In the event that the Constructor/Contractor(s) is unable to provide an acceptable program, Bechtel may assume quality verification inspection responsibilities or these may be contracted to another organization.

1.6.4 Project Procurement

The Project Procurement Manager receives technical and administration direction from the Manager, Division Procurement, LAPD through the Manager, Division Procurement, Houston and project direction from the designee Project Manager.

Section 3 - Design Control

Page 30 - first paragraph:

In the case of proposed changes to the original design, initiated at the construction site, the design changes shall be reviewed, accepted and documented by Bechtel Project Engineering. Acceptance of design changes by Bechtel Project Engineering is required prior to implementation. For design changes proposed by suppliers, acceptance of the design change by Project Engineering is required prior to shipment of the item to the jobsite.

- third paragraph:

Certain design work may be performed by Bechtel Site Engineering providing it is in compliance with the design control features utilized by Bechtel Project Engineering in the design office.

Certain detailing work may be performed by selected contractors; however, the nature, scope and parameters will be identified in design disclosure documents for each contractor with checking of field sketches required by an individual other than the detailer.

- fourth paragraph:

Suppliers are not allowed to change Bechtel design requirements or Bechtel reviewed supplier design documents without obtaining approval by Bechtel Project Engineering. 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 authorized individually; Project Engineering may give written authorization in the form of specifications or other instructions to field organizations to make routine changes. Field organizations have the authority to approve changes to design details in cases where the original design details were prepared by that field organization.

Section 4 - Procurement Document Control

Page 32 - paragraph 3, item 1) through item 8) Page 33:

Replace the paragraph beginning "...The following describes the sequence of steps..." with the following paragraph:

Appropriate project procedures provide details to accomplish the administrative actions in processing procurement documents in the design office and at the jobsite.

Section 5 - Instructions, Procedures, and Drawings

Page 34 - sixth paragraph:

Field organizations prepare other procedures when engineering documents require amplification to perform various discipline activities associated with fabrication, cleaning, erection, installation, test, repair, modification, etc., of items.

Section 6 - Document Control

Page 35 - sixth paragraph:

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

Section 7 - Control of Purchased Material, Equipment & Services

Page 37 item number 2):

- 2) Determination by Engineering and Quality Assurance that the supplier or Constructor/Contractor(s) quality program is capable of meeting the specified requirements. This may be based on evaluations by Procurement Supplier Quality for manufacturing suppliers or Quality Assurance for jobsite Constructor/Contractor(s), and field procurements.

Section 14 - Inspection, Test, and Operating Status

Page 50 - fourth paragraph:

Project Engineering and supervisory personnel are authorized to apply and remove identifying tags, markings, and labels on equipment in accordance with approved procedures. Quality Control personnel are the only ones authorized to direct application and removal of inspection status indicators. Bechtel, in cooperation with the plant owners' operating personnel, establishes a tagging procedure which delineates those authorized for applying and removing tags during preoperational testing phases.

Section 15 - Nonconforming Items

Page 51 - paragraph 2 items 2, 3 and 5):
- paragraph 2 item 4 - Delete

- 2) Determine interim disposition by field organizations.
- 3) Have Project Engineering approve dispositions.
- 5) Provide conditional release of nonconforming items upon approval of Quality Assurance.

- last paragraph:

The authority for disposition of nonconforming items follows the rules for approval of design changes described in Section 3 of this report. Quality Assurance reviews dispositions to determine that they are fully responsive to the conditions described in the nonconformance report. Quality Control is responsible for verification of rework and repair dispositions, applying inspection processes at least equivalent to that applied to the original work. "Repair" or "use as is" dispositions on nonconformances to procurement requirements at a supplier's plant must be accepted by Project Engineering.

Page 52 - second paragraph:

Nonconforming items discovered at final inspection which cannot be corrected by rework or completion of originally prescribed processing are required to be identified, tagged, and/or segregated. Discrepancies in work not yet submitted for final inspection which can be corrected by rework or completion of work processes are not considered to be nonconformances. For construction work performed by Bechtel, no further work can proceed on the nonconforming item until an approved disposition is implemented, unless a conditional release is approved by Quality Assurance. Suppliers, and Constructor/Contractor(s), as required by procurement documents, apply similar procedures involving their quality assurance functions. Bechtel Procurement Supplier Quality Representatives are instructed to withhold release for shipment until all nonconformances have been resolved or an interim disposition is approved by Project Engineering.

The following is a modification of Appendix "A" of the topical which describes Bechtel's position on Regulatory Guide and ANSI standards:

- o Reg. Guide 1.58 Rev. 0, 8/73 As modified by positions C.5, C.6, C.7, C.8, and C.10 of Rev. 1
- o ANSI N45.2.5, 1974
Exception 2. & 3. (listed below)
- o Reg. Guide 1.116, Rev. 0-R, 6/76
ANSI N45.2.8, 1975
Exception 4 (listed below)
- o Reg. Guide 1.144 Rev. 1, 9/80
ANSI N45.2.12, 1977
Exception 1. (listed below)
- o Reg. Guide 1.146 Rev. 0, 8/80
ANSI N45.2.23, 1978
Full Compliance - No exceptions

Exceptions

1. ANSI N45.2.12-1977, Section 4.5.1 states, "The audited organization shall provide a follow-up report stating the corrective action taken and the date corrective action was completed." This implies that the audited organization must provide the auditing organization with written notification detailing what corrective action was taken and when the corrective action was completed.

In actual practice, the audited organization will provide the auditing organization with documented corrective action including the date when the corrective action will be completed. The auditing organization will evaluate the corrective action response to determine if corrective action verification is necessary. If verification is necessary, the corrective action verification will be performed after the scheduled completion date and the result of the verification will be documented.

2. ANSI N45.2.5-1974, Section 4.8, states "Pumped concrete must be sampled from the pump line discharge." In lieu of this statement, in-process strength samples of pumped concrete are taken at the delivery point. Correlation tests of air content, slump, and temperature are performed to verify these plastic properties of the concrete at the placement point in accordance with the following frequency requirements:
 - a. A minimum of 2 correlation tests are performed for each pumped placement exceeding 200 cu. yds.
 - b. Otherwise, a minimum of 2 correlation tests per week are performed when any individual pumped placement during a week requires delivery of more than one truckload of concrete.

- c. During a week when a pumped placement exceeding 200 cu. yds. is made, the correlation tests performed on that placement will satisfy the weekly requirement for performing two correlation tests as specified in Item b above.

When any of the specified limits and/or tolerances pertaining to air content, slump, or temperature are exceeded at the placement point, correlation tests between the delivery point and placement point will be accomplished for each 100 cu. yds. of concrete placed as long as limits and tolerances are exceeded. If two consecutive tests are out of tolerance, corrective action will be implemented to adjust the limits for the concrete entering the pump intake so that no concrete from the subsequent trucks will enter the pump intake as long as the tolerances are exceeded.

"Correlation Tests," "Delivery Point," and "Placement Point" are as defined in ANSI N45.2.5-1978, Section 1.4.

3. ANSI N45.2.5-1974, samples and frequency for cadweld testing is in accordance with ACI-359/ASME Section III, Division 2, issued for trial use and comment in 1973, including addenda 1 through 6, (see Sections 3.8.1.6.3 and 3.8.3.6.3 of the STP Final Safety Analysis Report).
4. ANSI N45.2.8-1975, Section 4.6, Care of Items. HL&P retains the authority and is the "Responsible Organization" for temporary usage of equipment or facilities unless specific (i.e. on a case by case basis) or general authority is granted in writing to the Construction Manager's organization.

Appendix A

Page A-4 - item #2 - second paragraph

"Access to storage areas for Levels A, B, and C will be controlled by the individual(s) responsible for storage. While the above areas will be posted to limit access, other positive controls (other than that for the overall site area) or guards may not be provided. Level D areas will be posted with the storage level designation only."

Figure 9

This Figure, indicating STP actual organization, replaces Figure 9 of BQ-TOP-1, Rev. 3A, PROJECT TEAM ORGANIZATION (TYPICAL).

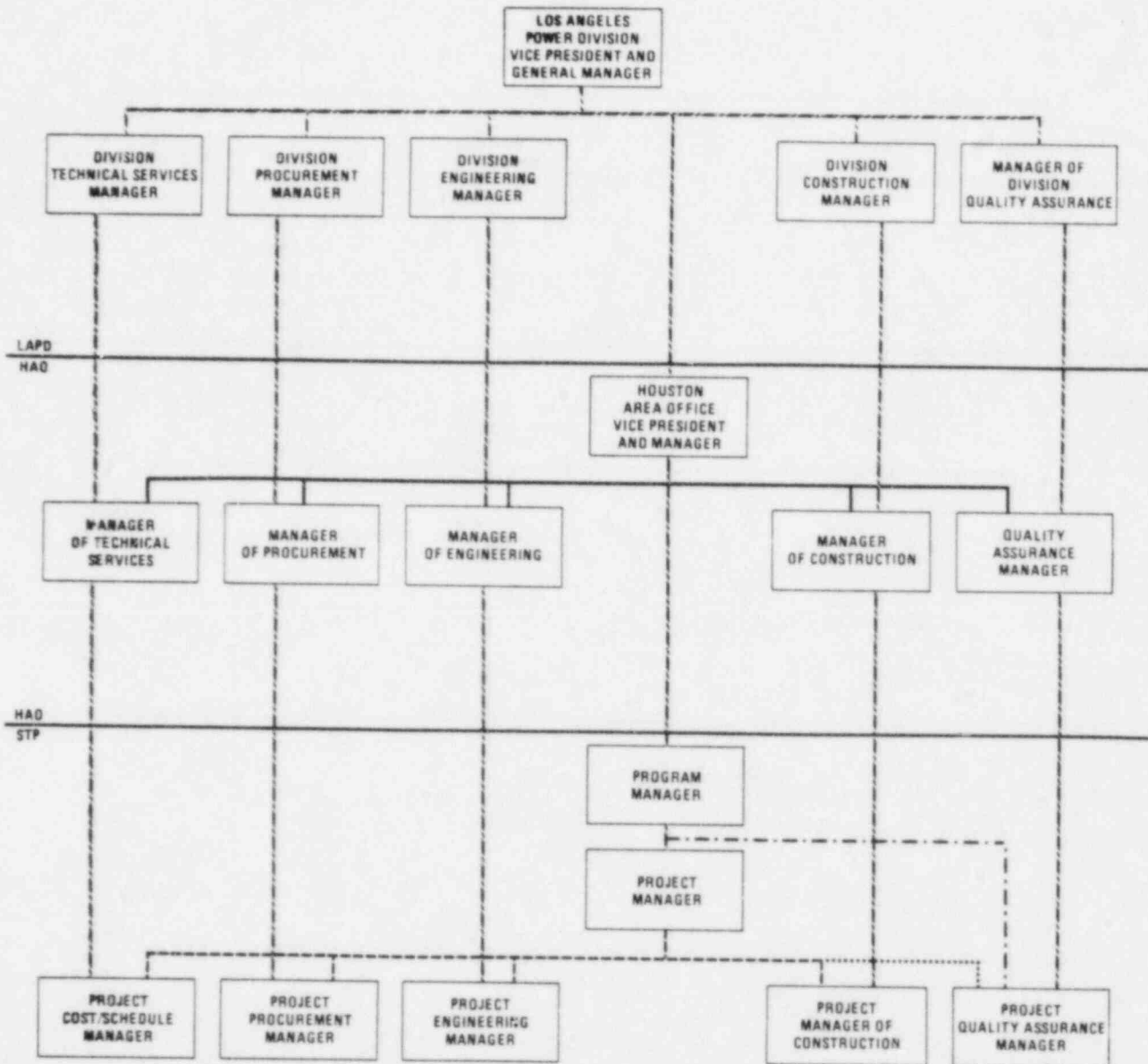
Attachment A is a modified Table I to the topical which describes Bechtel's Quality Program Documents.

* BECHTEL QUALITY ASSURANCE MANUAL- ASME NUCLEAR COMPONENTS (BQAM- ASME III)	MANAGER C&S/R&E	QA-8PC** DIVISION QUALITY ASSURANCE MANAGER	PRESIDENT AND APPROPRIATE AUTHORIZED CODE INSPECTION AGENCY	POLICIES AND PROCEDURES FOR OVERALL BECHTEL PROGRAM APPLICABLE TO ASME WORK
QUALITY ASSURANCE PROCEDURES	PROJECT QUALITY ASSURANCE MANAGER	N/A	DIVISION QUALITY ASSURANCE MANAGER	PROCEDURES FOR CONDUCTING PROJECT QUALITY ASSURANCE ACTIVITIES
ENGINEERING DEPARTMENT PROCEDURES AND INSTRUCTIONS	DESIGNATED INDIVIDUALS	DIVISION QUALITY ASSURANCE MANAGER***	MANAGER DIVISION ENGINEERING***	DEFINITION OF RESPONSIBILITIES AND PROCEDURES FOR DESIGN, DESIGN REVIEW, AND DOCUMENT CONTROL IN THE ENGINEERING DEPARTMENTS
PROCUREMENT MANUALS (QUALITY PROGRAM RELATED)	PROCUREMENT	QA-8PC**	COGNIZANT PROCUREMENT MANAGERS	PROCEDURES FOR HOME OFFICE AND FIELD PROCUREMENT NECESSARY TO FOLLOW TPO QUALITY POLICY
* PROCUREMENT SUPPLIER QUALITY MANUAL	MANAGER PROCUREMENT SUPPLIER QUALITY	QA-8PC**	MANAGER PROCUREMENT SUPPLIER QUALITY	PROCUREMENT SUPPLIER QUALITY PROCEDURES
M&QS PROCEDURE AND POLICY GUIDES (QUALITY PROGRAM RELATED)	MANAGER M&QS	QA-8PC**	MANAGER M&QS	POLICIES AND PROCEDURES FOR PERFORMING M&QS FUNCTIONS
TECHNICAL SUPPORT PRO- CEDURES MANUAL	TECHNICAL SERVICES	DIVISION QA MANAGER	MANAGER TECHNICAL SERVICES	RESPONSIBILITIES AND PROCEDURES FOR PROJECT SUPPORT GROUPS
PROJECT MANUALS PROCEDURES (QUALITY PROGRAM RELATED)	COGNIZANT PROJECT TEAM MEMBER	POAE	COGNIZANT MANAGERS	NOTE 2

* AVAILABLE ON REQUEST TO APPROPRIATE REGULATORY AGENCIES
 ** INCLUDES REVIEW BY DIVISION QUALITY ASSURANCE MANAGERS
 *** AREA OFFICE EDPS ARE REVIEWED AND APPROVED BY THE AREA
 OFFICE QUALITY ASSURANCE MANAGER AND AREA OFFICE
 MANAGER OF ENGINEERING. THESE EDPS SHALL BE SENT
 TO DIVISION QUALITY ASSURANCE STAFF FOR POST
 APPROVAL REVIEW.

NOTES: 1 REVISIONS TO THESE DOCUMENTS REQUIRE THE SAME REVIEW
 AND APPROVAL AS THE ORIGINAL.
 2 THERE ARE PROVISIONS FOR PROJECT UNIQUE MODIFICATIONS
 TO THE ABOVE DOCUMENTS TO DELINEATE SPECIFIC PROJECT
 REQUIREMENTS BUT NOT DEPART FROM THE PROGRAM
 REQUIREMENTS OF THIS REPORT. REVIEW AND APPROVAL
 AUTHORITY FOR SUCH MODIFICATIONS ARE DEFINED WITHIN
 THE GOVERNING PROCEDURES.

SOUTH TEXAS PROJECT TEAM ORGANIZATION



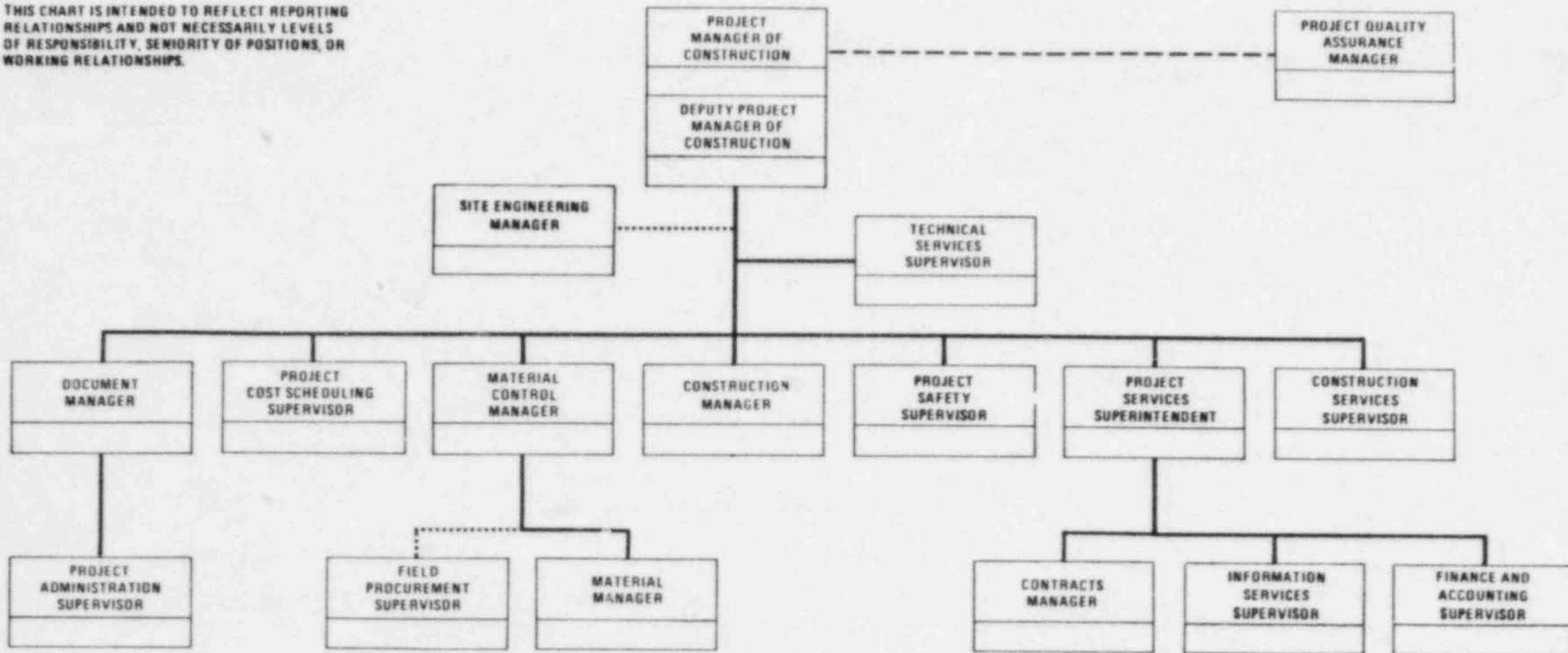
— ADMINISTRATION
 - - - ADMINISTRATION & TECHNICAL
 - - - - - PROJECT DIRECTION
 PROJECT COORDINATION
 - . - . - PROGRAM DIRECTION

Figure 9

QAPD PART B
 REV. 7
 JUNE 1984

SOUTH TEXAS PROJECT CONSTRUCTION MANAGEMENT ORGANIZATION CHART

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



LEGEND:
 TECHNICAL & ADMINISTRATIVE —————
 PROJECT COORDINATION - - - - -
 PROJECT DIRECTION

Figure 11
 QAPD, Part B
 Rev. 7, June 1984
 Page 12 of 12

BECHTEL
PLAN OF ORGANIZATION
PRINCIPAL BECHTEL COMPANIES

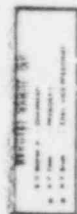
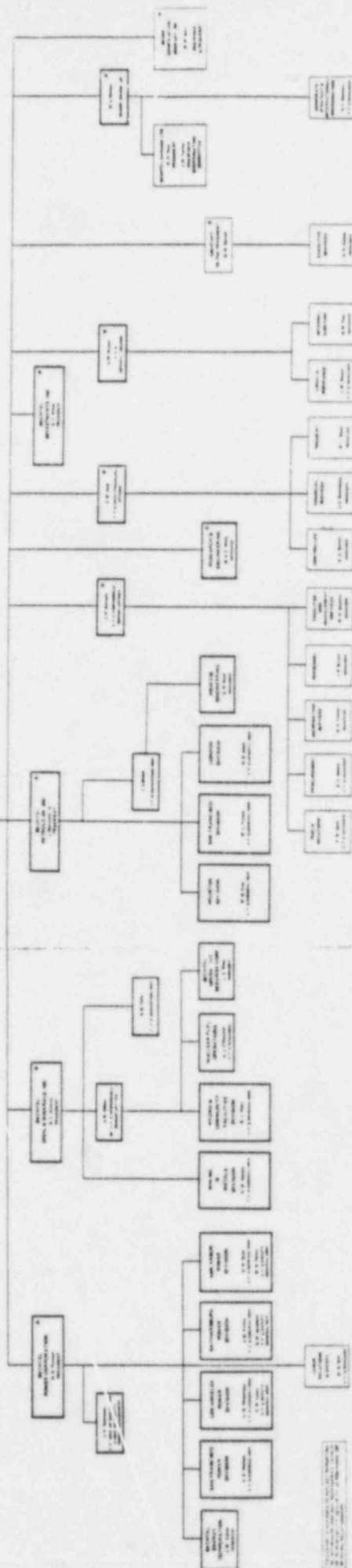
$\approx 0.87 \pm 0.03$

JULY 1, 1983

Conclusions

[illegible][illegible]

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 105–112

[illegible]

1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 26

Explanation of attached correspondence:

- (a) J. M. Amaral (BPC) to W. P. Haass (NRC), dated October 6, 1980, subject: Organizational Changes.
- (b) W. P. Haass (NRC) to R. M. Collins (BPC), dated October 16, 1980, subject: NRC Acceptance of (above) Organizational Changes.
- (c) J. M. Amaral (BPC) to W. P. Haass (NRC), dated December 2, 1980, subject: Organizational Changes.
- (d) W. P. Haass (NRC) to J. M. Amaral (BPC), dated December 17, 1980, subject: NRC Acceptance of (above) Organizational Changes.
- (e) J. M. Amaral (BPC) to W. P. Haass (NRC), dated June 3, 1982, subject: Organizational Changes.
- (f) W. P. Haass (NRC) to J. M. Amaral (BPC), dated June 18, 1982, subject: NRC Acceptance of (above) Organizational Changes.

Letters (a), (c), and (e) above were submittals by Bechtel Power Corporation to amend BQ-TOP-1, Revision 3A with respect to organizational changes; letters (b), (d), and (f) are the NRC acceptance of the proposed organizational changes.

Bechtel Power Corporation

Engineers—Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-258-3000

October 6, 1980



Mr. W. P. Haass, Chief
Quality Assurance Branch
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject:
Organizational Changes
QAS-80-301; File: 7.10

Dear Mr. Haass:

As directed in your August 15, 1977, acceptance letter of the Bechtel QA Topical Report, BQ-TOP-1, Rev. 2A, and subsequent to discussions with members of your staff, the following description of organizational changes within the Bechtel Power Corporation are submitted for your information.

The Ann Arbor area office of the San Francisco Power Division has been designated the Ann Arbor Power Division in the Thermal Power Organization. Like the other power divisions, Ann Arbor will handle engineering and construction work along with all the supporting activities associated with power division work.

Attached to this letter are organization charts showing the Ann Arbor Power Division's reporting relationship in the Bechtel Organization and a chart showing the reporting relationships within the Ann Arbor Power Division.

Additionally, an organization change has been made in the Thermal Power management group. The reporting relationship for the quality assurance function within the Thermal Power Management function has been transferred from the Vice President, Planning and Quality Assurance to the Vice President responsible for the Procurement, Engineering, and Construction, Project Operations and Services functions, Thermal Power Management. These changes will be shown on a revised Thermal Power Organization chart, Figure 3 of BQ-TOP-1, Revision 3, which will be forwarded at a later date.

If you have any questions regarding these changes, please call me on (301) 258-3776.

Very truly yours,

A handwritten signature in dark ink, appearing to read "J. M. Amaral".
J. M. Amaral, Manager
Division Quality Assurance

JMA:vpw

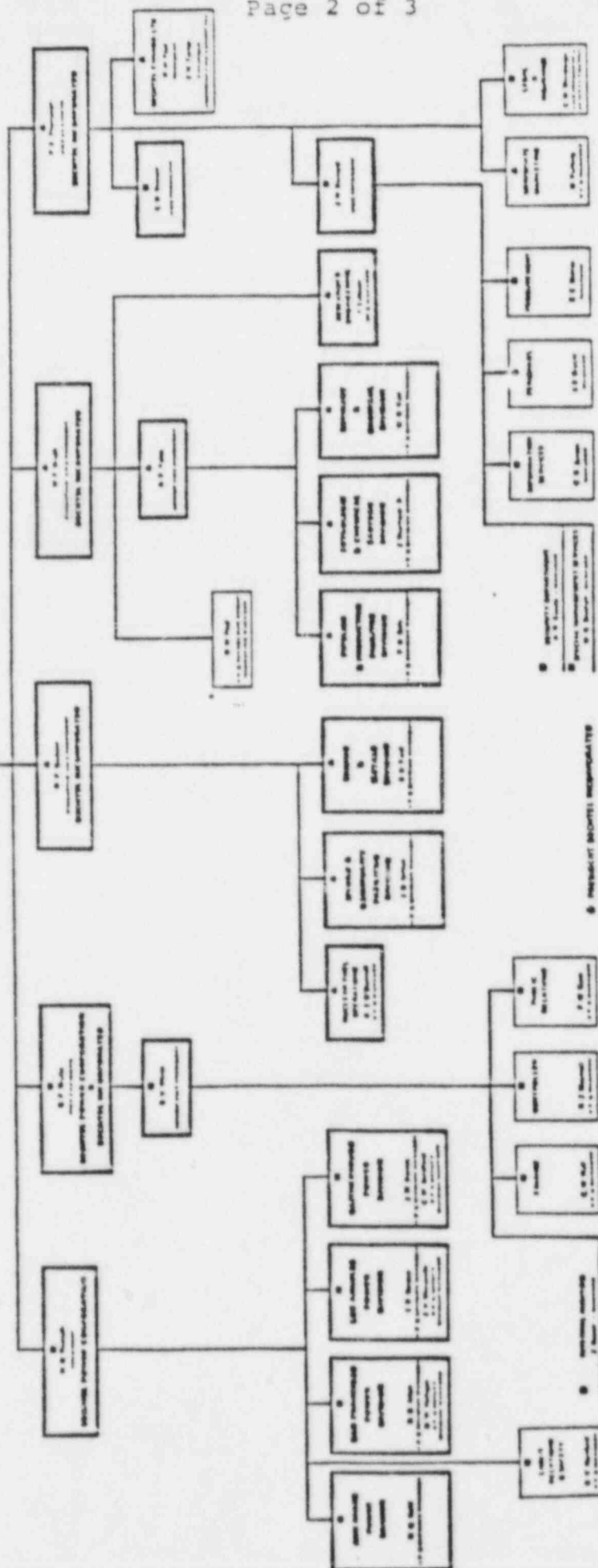
Attachment

Table 1. *Salmonella* serotypes and their associated diseases.

Author	Year	Country	Sample Size	Study Design	Findings
Wong et al.	2001	China	1,000	Case-control	Increased risk of lung cancer in heavy smokers.
Li et al.	2002	China	2,000	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2003	China	1,500	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2004	China	1,200	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2005	China	1,800	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2006	China	1,600	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2007	China	1,400	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2008	China	1,300	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2009	China	1,700	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2010	China	1,500	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2011	China	1,600	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2012	China	1,400	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2013	China	1,500	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2014	China	1,300	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2015	China	1,600	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2016	China	1,400	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2017	China	1,500	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2018	China	1,300	Cohort	Increased risk of lung cancer in heavy smokers.
Wang et al.	2019	China	1,600	Case-control	Increased risk of lung cancer in heavy smokers.
Chen et al.	2020	China	1,400	Cohort	Increased risk of lung cancer in heavy smokers.

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 115–121

Page 2 of 3



For further information, contact the author at 202/336-6000 or edward.schlesinger@nih.gov.

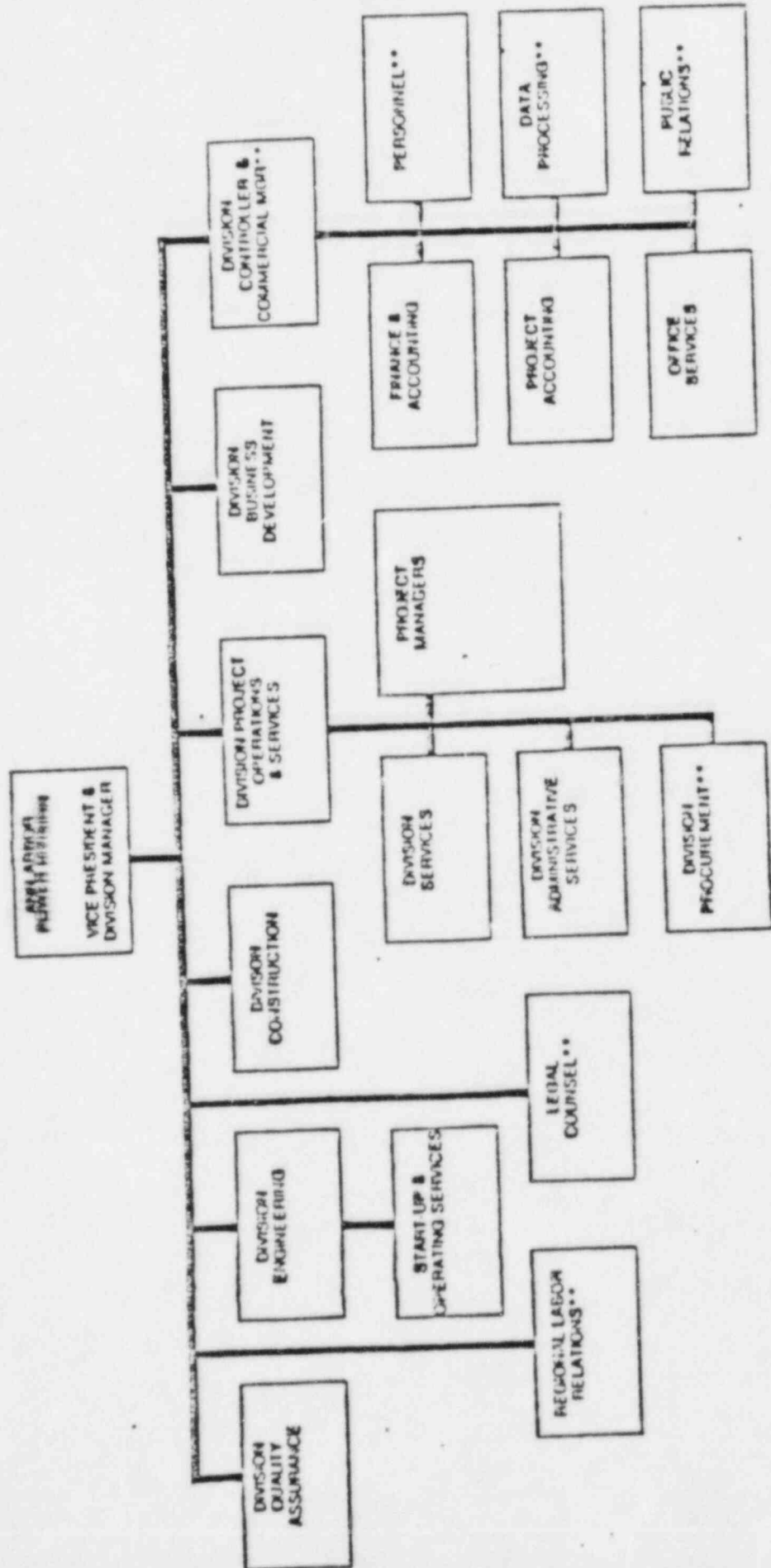
© 2004 The Author
Journal compilation © 2004 Blackwell Publishing Ltd

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 399–406

4. **How many people have been interviewed?** 100

ANN ARBOR POWER DIVISION

As of June 1, 1980



**Receives functional guidance from the applicable San Francisco service organization

OCT 16 1980

Mr. R. M. Collins
Vice President, TPO
Bechtel Power Corporation
P.O. Box 3965
San Francisco, CA 94119

Dear Mr. Collins:

SUBJECT: NRC ACCEPTANCE OF REVISED BECHTEL TOPICAL REPORT ON QUALITY ASSURANCE

By letter of December 13, 1979, Bechtel Power Corporation submitted proposed Revision 3 to its Topical Report, BQ-TOP-1. The submittal reflects proposed changes resulting from our review of your March 17, 1978; April 27, 1979; and July 18, 1979 quality assurance topical report submittals and various clarifying discussions between our staffs. The revisions reflect organizational and programmatic changes in the Bechtel quality assurance effort.

We find that the December 19, 1979 submittal of the topical report, as changed by the Bechtel letter of October 6, 1980, describes an acceptable quality assurance program for the design, procurement, and construction activities within the Bechtel Power Corporation scope of work for nuclear power plants. Therefore, your topical report on quality assurance is acceptable, and you may implement it upon issuance. For the Bechtel Power Corporation quality assurance program description, applicants need only reference this topical report in Chapter 17 of license applications. We do not plan to rereview this topical report unless changes occur.

Should regulatory criteria or regulations change such that conclusions about this topical report are invalidated, we will notify you. You will be given the opportunity to revise and resubmit it should you so desire. Programmatic changes by Bechtel Power Corporation to this topical report are to be submitted to the NRC for review prior to implementation. Organizational changes are to be submitted no later than 30 days after announcement.

Please replace our letter of August 19, 1977 shown in your topical report with this letter, change the revision number to 3A, change the date to October 1980, and forward 36 copies to the NRC. Your submittal should point out the changes by use of a black bar in the margin where a change is made, and the revision number should be adjacent to the bar. In your transmittal letter, indicate to which plant(s) this report will be applicable.

Should you have any questions regarding our review or if we can provide assistance, please contact Mr. Jack Spraul or me on (301) 492-7741.

Sincerely,

Walter P. Haass

Walter P. Haass, Chief
Quality Assurance Branch
Division of Engineering

Enclosure:
Topical Report Evaluation

Topical Report Evaluation

Report Number: BQ-TOP-1, Revision 3A
 Report Title: Quality Assurance Program for Nuclear Power Plants
 Revision Date: October 1980
 Originating Organization: Bechtel Power Corporation
 Reviewed By: Quality Assurance Branch

SUMMARY OF TOPICAL REPORT

Topical report BQ-TOP-1, Revision 3A describes the quality assurance program which the Bechtel Power Corporation applies to those design, procurement, and construction activities involving safety-related structures, systems, and components of nuclear power plants within the Bechtel scope of work. BQ-TOP-1, Revision 3A commits Bechtel to comply with the requirements of Appendix B to 10 CFR Part 50 and to comply with the regulatory position provided by the NRC (with some exceptions which have been found acceptable by the NRC) in the following Regulatory Guides:

<u>Regulatory Guide</u>	<u>Date</u>
1.28	6/72
1.30	8/72
1.37	3/73
1.38	3/73
1.39	3/73
1.58	8/73
1.64	6/76
1.74	2/74
1.88	10/76
1.94	4/76
1.116	6/76
1.123	10/76
ANSI N45.2.12 (D-3, R-4)	2/74

Bechtel Power Corporation has provided for our evaluation a detailed description of organizations and groups involved in implementing activities required by the quality assurance program and a delineation of duties, responsibilities, and authority of those organizations involved in the quality assurance program. BQ-TOP-1, Revision 3A describes the measures used to carry out the Bechtel Power Corporation quality assurance program, and it describes how the applicable requirements of Appendix B to 10 CFR Part 50 will be satisfied by the administration and implementation of these measures.

SUMMARY OF REGULATORY EVALUATION

We have evaluated the quality assurance program and the organizations responsible for quality assurance functions as described in BQ-TOP-1, Revision 3A. We find that quality assurance policy and direction originate at an acceptably high

management level and are effectively communicated to other parts of the organization. Those performing quality assurance functions have responsibility and authority commensurate with their duties in implementing the quality assurance program. We also find that measures have been established, to be implemented by written procedures and instructions, which address each of the criteria of Appendix B in an acceptable manner.

Based on our review and evaluation of BQ-TOP-1, Revision 3A, we conclude that:

1. The organizations and persons performing quality assurance functions within Bechtel Power Corporation have the required independence and authority to effectively implement the quality assurance program without undue influence from those directly responsible for costs and schedules, and
2. The Bechtel Power Corporation quality assurance program contains the requirements and controls which, when properly implemented, comply with the requirements of Appendix B to 10 CFR Part 50 and the applicable regulatory guides and standards contained in Chapter 17 of the NRC Standard Review Plan (NUREG-75/087, Revision 0).

Bechtel Power Corporation

Engineers—Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20760
301-258-3000



December 2, 1980

Mr. W. P. Haass, Chief
Quality Assurance Branch
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Haass:

Organizational Changes
QAS-80-385
File: 7.10

Ref: Letter, J. M. Amaral to, W. P. Haass
dated October 6, 1980, same subject

As directed in your October 16, 1980 acceptance letter of the Bechtel QA Topical Report, BQ-TOP-1, Rev. 3A, the following description of organizational changes within the Bechtel Power Corporation (BPC) are submitted for your information.

As indicated in the referenced letter, the Thermal Power Organization of Bechtel Power Corporation has undergone a change with the addition of a Vice President over the Corporate Staff functions. We have since reinstated the position of the Manager of Quality Assurance, Thermal Power Organization, as shown on the enclosed organization chart.

The primary responsibilities of the Manager of QA, TPO will be:

- o Development and approval of TPO quality policies
- o Provide guidance on quality policies to the BPC Divisions
- o Coordination of quality functions of organizations external to BPC, e.g., M&QS and Procurement
- o Evaluate the effectiveness of the divisions' Quality Assurance Programs and report the adequacy of implementation to Bechtel Power Corporation management.

PP

Bechtel Power Corporation

Mr. W. P. Haass
QAS-BO-385

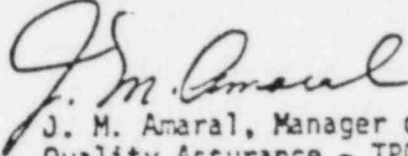
December 2, 1980

The aforementioned responsibilities were assigned previously, as indicated in Rev. 3A of BQ-TOP-1, to the Vice President, Planning and Quality Assurance - TPO.

The referenced letter discussed an organizational change within TPO and committed to forwarding an organizational chart showing these changes. The enclosed chart satisfies that commitment also. The organizational changes described in this letter, as well as the referenced letter, will be reflected in the Bechtel QA Topical Report, BQ-TOP-1, whenever it is revised in the future.

Should you have any questions regarding these changes, please call me at (301) 258-3776.

Very truly yours,


J. M. Amaral, Manager of
Quality Assurance - TPO

JMA/dkh

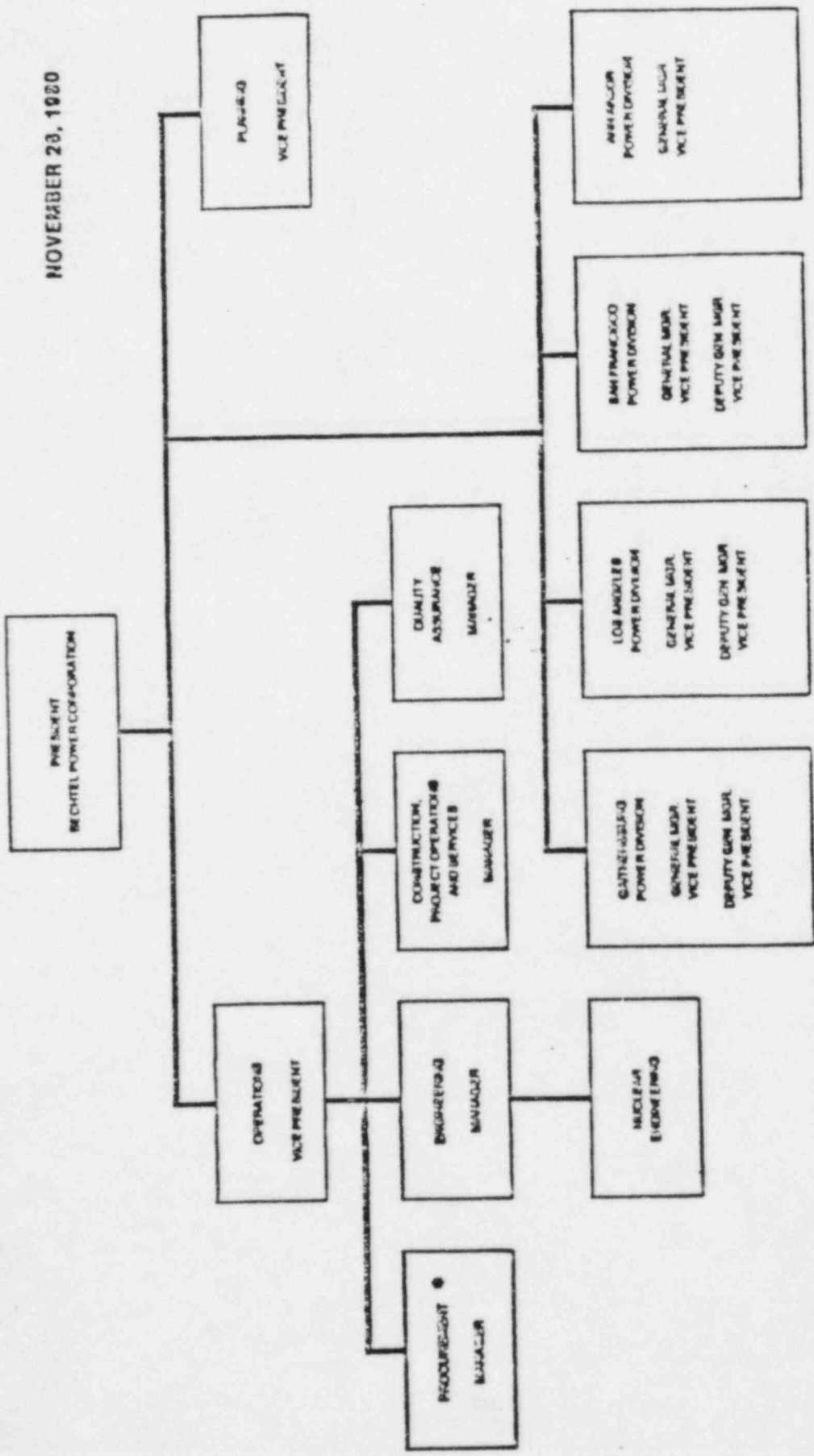
Enclosure - Organization Chart

bcc: R. M. Collins
C. W. Dick
J. C. Kansal
J. Milandin
R. L. Patterson

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

THERMAL POWER ORGANIZATION

NOVEMBER 23, 1980



**This chart was developed for illustrative purposes only.

© RECEIVES FUNCTIONAL GUIDANCE FROM THE APPLICABLE SAN FRANCISCO SERVICE ORGANIZATION

U B O L O H U



Page 1 of 1
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 17 1980

Mr. J. M. Amaral
Manager of Quality Assurance, TPO
Bechtel Power Corporation
15740 Shady Grove Road
Gaithersburg, MD 20760

Dear Mr. Amaral:

SUBJECT: CHANGES TO BQ-TOP-1 REVISION 3A

We have reviewed your letter dated December 2, 1980 concerning an organizational change within the Bechtel Power Corporation which affects the Bechtel Nuclear QA program. The program is described in Revision 3A of the Bechtel QA topical report BQ-TOP-1, "Bechtel Quality Assurance Program for Nuclear Power Plants," October 1980. Your letter indicates that the position of the Manager of Quality Assurance, Thermal Power Organization has been reinstated, reporting to the Operations Vice President. Your letter also lists the primary responsibilities of the Manager of Quality Assurance and provides an updated organization chart.

We believe the change should not reduce the effectiveness of Bechtel's QA program, and we find the change acceptable. We note your commitment to incorporate the change into the topical report at the time of the next revision.

Sincerely,

A handwritten signature in cursive script, reading "Walter P. Haass".

Walter P. Haass, Chief
Quality Assurance Branch
Division of Engineering

Bechtel Power Corporation

Engineers—Constructors

Fifty Beale Street

San Francisco, California

Mail Address: P.O. Box 3965, San Francisco, CA 94119



June 3, 1982

Mr. W. P. Haass, Chief
Quality Assurance Branch
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject:
Organizational Changes

Dear Mr. Haass:

As directed by your October 1980 acceptance letter of Bechtel QA Topical Report BQ-TOP-1, Rev. 3A, and to confirm our discussion on May 12, 1982, the following description of changes within the Procurement organization are submitted for your information.

As can be seen in the attached organization chart dated March 23, 1982, the Central Procurement organization has been restructured to include the equipment operations (formerly combined with field procurement) and information services groups. The supplier quality and expediting groups have been removed from Central Procurement and, along with the new commodity advisors group, have been combined to form a new organization identified as Supplier Performance. This restructuring of the Procurement organization was done to improve our effectiveness with suppliers; improve the interface between the supplier quality, expediting, and commodity advisors groups; and improve the quality of the Supplier Information System.

The Manager of Supplier Performance is responsible for management of the expediting, supplier quality, and commodity advisors groups, which provide functional guidance and assistance to all Bechtel divisions and projects. He is responsible for the formulation of policies, methods, and standards to ensure consistency with overall Bechtel objectives. He is the primary Bechtel contact with vendors when generic or major vendor performance problems occur.

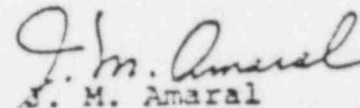
Mr. Haass
June 3, 1982
Page 2

Programmatically, the topical report is unchanged. The duties of the Manager of Supplier Quality remain unchanged. The responsibility for control of supplier quality is left with the supplier quality manager in each of the divisions. Project supplier quality supervisors who report to the respective division supplier quality managers are responsible for direction of project procurement surveillance inspection activities. Their duties include the preparation of shop inspection plans; direction and assignments to supplier quality representatives; initiation and coordination of supplier surveys and audits; and approval of surveillance inspection reports.

Mr. S. I. Heisler has been appointed Manager of Supplier Performance.

If you have any questions regarding the above, please call me on (415)768-7900.

Very truly yours,



J. M. Amaral
Manager of Quality Assurance
Bechtel Power Corporation

JMA/rmm

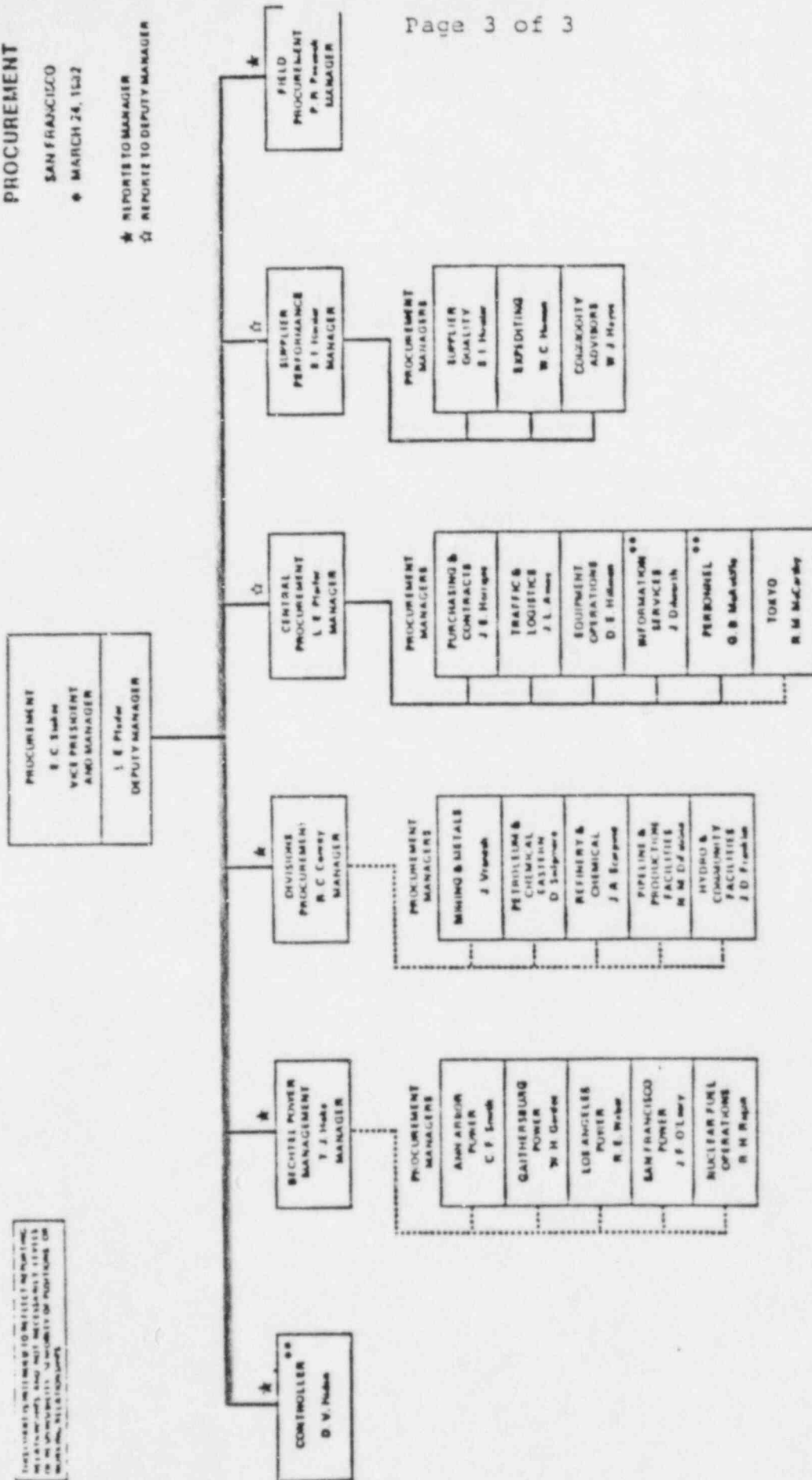
Attachment

PROCUREMENT

SAN FRANCISCO

★ MARCH 24, 1952

★ REPORTS TO MANAGER
☆ REPORTS TO DEPUTY MANAGER



***** FUNCTIONAL REPORTING

★ RECEIVES FUNCTIONAL GUIDANCE FROM THE APPLICABLE SAN FRANCISCO SERVICE ORGANIZATION

☆ REPLACES CHART DATED JANUARY 4, 1952

NOTE

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



Page 1 of 1
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 18 1982

J.M. Amaral
Manager of Quality Assurance
Bechtel Power Corporation
P.O. Box 3965
San Francisco, California 94119

Dear Mr. Amaral:

In your letter dated June 3, 1982, you describe changes in Bechtel's San Francisco procurement organization including the establishment of a new organization identified as "Supplier Performance." You indicate the reorganization was done to improve the Bechtel-supplier interface.

We have reviewed the procurement organization presented in your June 3, 1982 letter and find it acceptable.

Sincerely,

Walter P. Haass
Walter P. Haass, Chief
Quality Assurance Branch
Division of Engineering

PART C

EBASCO SERVICES INCORPORATED
QUALITY ASSURANCE PROGRAM DESCRIPTION

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

REVISION 7

DATE JULY 27, 1984