

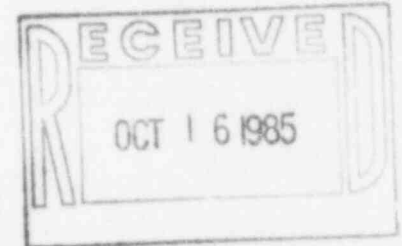
# The Light company

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October 11, 1985  
ST-HL-AE-1383  
File No.: G9.11/Q39

Mr. Robert D. Martin  
Regional Administrator, Region IV  
Nuclear Regulatory Commission  
611 Ryan Plaza, Dr., Suite 1000  
Arlington, TX 76012

South Texas Project  
Units I & II  
Docket Nos. STN 50-498, STN 50-499  
Quality Assurance Program  
for the Design and Construction Phase  
of the South Texas Project



Dear Mr. Martin:

Enclosed is Revision 12 of the Quality Assurance Program Description (QAPD) for the design and construction phase of the South Texas Project (STP). This revision is being submitted in accordance with the requirements of 10CFR50.55(f)(3).

Included in this submittal are complete replacements for Part A, Houston Lighting and Power Company (HL&P) QAPD, Part B, Bechtel Energy Corporation QAPD and Part C, Ebasco QAPD.

Part A has been revised to describe changes in areas of responsibility, and to clarify the Audit Section. These changes are described in detail in Attachment A.

Part B to the QAPD has been revised to incorporate clarifications and accurately reflect the current QA Program. Details on the changes made are in Attachment B to this letter.

Part C to the QAPD reflects organizational and procedural realignments to provide consistency within Parts A, B and C of the QAPD.

These changes to Parts A, B and C do not reduce commitments made in previous revisions to the QAPD. The revised QAPD continues to satisfy criteria to 10CFR50, Appendix B. The changes described in Revision 12 to the QAPD are being implemented immediately.

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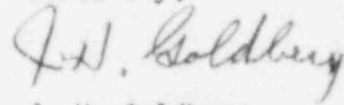
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Copies of Revision 12 to the QAPD are also being submitted to the NRC Resident Inspector at the South Texas Project site and to the NRC Document Control Desk as required by 10CFR50.55(f)(3)(i).

If you have any questions, please contact Mr. Michael E. Powell at 713/993-1328.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. H. Goldberg".

J. H. Goldberg  
Group Vice President, Nuclear

JHG/CLH/PEP:mg

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Quality Assurance Program Description  
for the  
Design and Construction of the  
South Texas Project  
Revision 12  
Principal Changes

Part A, Houston Lighting & Power Company (HL&P QAPD)

1. Section 1, Paragraph 1.4.16a  
Deleted "Manager, Nuclear Fuel" to reflect an organizational change.
2. Section 1, Paragraph 1.4.17  
Deleted "Manager, Nuclear Fuel"; those activities previously performed by the "Manager, Nuclear Fuel" in support of STP have been assumed by the "Manager, Nuclear Services" and incorporated into the the new paragraph 1.4.17.
3. Section 1, Paragraph 1.4.18  
Paragraph renumbered, previously 1.4.19.
4. Section 1, Paragraph 1.4.18  
Add "The Manager Nuclear Licensing provides the primary interface with the NRC."  
  
This is a change of responsibility previously held by the Project Quality Assurance Manager.
5. Section 1, Paragraph 1.4.19  
Paragraph renumbered, previously 1.4.20.
6. Section 1, Paragraph 1.6.1 f)  
Delete "and provide the primary interface with NRC."
7. Section 1, Paragraph 1.6.1 h)  
Replace "Support Quality Assurance Manager" with "General Supervisor, Technical Services."
8. Section 1, Paragraph 1.6 and 1.6.1  
Renumbered for consistency.

9. Section 18

Deleted "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", and replaced with: "Audits are scheduled such that recurring audit areas are audited by different organizations on successive audits when deemed appropriate. Certain selected audit areas will be retained by HL&P in order to provide continued assurance that HL&P, Bechtel and Ebasco programs are maintained as required."

Please note, relative to your contingent acceptance provided in the letter dated May 2, 1985, accepting QAPD Revision 8 and 9. HL&P currently complies with this provision to the extent deemed possible by HL&P. Clarification has been provided for the Audit Scheduling Methodology.

Changes 1 through 9 do NOT reduce HL&P's QA programmatic commitments.

Quality Assurance Program Description  
for the  
Design and Construction of the  
South Texas Project  
Revision 12  
Principal Changes

Part B, Bechtel Energy Corporation (BEC QAPD)

1. Section 1, Paragraph 1.5.1 (Page 13):  
Removed responsibility for performance of trend evaluation; aligned Part B with Part A and reflected actual responsibilities.
2. Section 2, Paragraphs 2.5.1, 2.5.2 & 2.5.3 (Page 20):  
Added (\*) asterisk and note and corrected text to agree with Construction Management scope of activities; aligned Part B with Part A.
3. Section 4 (Page 28):  
Clarified text to reflect generic project requirements that are detailed in subtier documents (PQPM).
4. Section 5 (Page 30):  
Editorial correction; to agree with PQPM text.
5. Section 6 (Page 31):  
Added text to reflect current requirements detailed in lower tier documents (PQPM).

Changes 1 through 5 do NOT reduce BEC's QA programmatic commitments.

Revised organization charts; Figure 1, Figure 3, Figure 4, Figure 6, Figure 10, Figure 11, and Figure 12 to current published charts.

Quality Assurance Program Description  
for the  
Design and Construction of the  
South Texas Project  
Revision 12  
Principal Changes  
Part C, Ebasco QAPD

Section QA-I-1

1. Table I-1.2, Page 8 of 21

- a. Under last column titled "Standard Site Procedures (SSP)", added Procedure -3, corresponding to Criterion XIV.
- b. Under column title "Quality Control Procedures (QCP-, NDE-, QC-)" deleted Procedure -100(A) and added Procedure -0003, corresponding to Criterion IX.
- c. Under column title "Site Quality Assurance Instruction (QAI-)" deleted Procedure -003, corresponding to Criterion II. Requirements of QAI-003 incorporated into QAI-018.
- d. Under column titled "Administrative Site Procedures (ASP-)", added Procedure -13, corresponding to Criterion XI and XIV.

2. Table I-1.3, pages 10, 11, 13, 15 and 21 of 21

- a. On Page 10 of 21, changed title of QCP-10.19, "Inspection of Concrete Expansion Anchors, Rock Bolts, and Core Drilling" to read: "Inspection of Anchoring Devices Installed within Concrete Structures".
- b. On Page 11 of 21, added QCP-10.31, "Inspection of Configuration Control Packages"; QCP-10.31, "Walkdown/Turnover of Safety-Related Systems, Subsystems, Areas of Components"; and QCP-10.33, "Inspection of Drilled Holes and Cored, Chipped or Cut Penetrations Through Hardened Concrete".
- c. On Page 13 of 21, deleted QAI-003, "Indoctrination, Training, Qualification and Certification of Site Quality Assurance Audit Personnel". Requirements of QAI-003 incorporated in QAI-018 "Quality Assurance Indoctrination and Training Program".
- d. On page 13 of 21, deleted QC-100, "Preparation, Control and Distribution of NDE Procedures (with Addenda A)", and added QC-0003, "Preparation, Control and Distribution of NDE Procedures for the South Texas Project".
- e. On Page 15 of 21, added ASP-13, "Start-Up Work Request Procedure".
- f. On Page 21 of 21, added SSP-3, "Construction Turnover and Release for Test".

Section QA-I-2

1. Paragraph 4.1.10, Page 11 of 13

Deleted description of the Construction Indirects Superintendent. Revised to read: "The Permanent Plant Maintenance (PPM) Superintendent reports to the Project Superintendent and is responsible for administering the maintenance program for permanent plant equipment upon receipt from the warehouse until turnover to the Client" to reflect organizational change.

2. Paragraph: 4.1.16, Page 12 of 13

Changed title and responsibilities of the System Completion Superintendent for clarification. Revised to read: "The Completion Superintendent reports to the Project Superintendent and is responsible for systems testing. He ensures construction progress in support of system testing. This includes conducting construction test efforts".

3. Paragraph 4.1.17, Page 12 of 13

Deleted description of the Second Shift Superintendents who are now designated as Assistant Superintendents. Revised to read: "The Superintendent Fabrication Shop reports directly to the Unit 1 Superintendent and is responsible for coordinating all work to be performed in the Fabrication Shop, Blast and Paint Yard in support of the construction effort" in order to describe responsibilities for the Superintendent Fabrication Shop.

4. Paragraph 6.0, Page 13 of 13

- a. Figure I-2.1 has been revised in order to reflect title change. Change "Sr Vice President Corporate Engineering & Consulting Services" to read "Sr Vice President Corporate & Consulting Engineering".
- b. Figure I-2.4 has been revised in order to reflect organizational change. Changed "Construction Indirects Superintendent" to read "Site Coordinator". Changed "Outlying Facilities Superintendent" to read "Permanent Plant Maintenance Superintendent". Changed "System Completion Superintendent" to read "Completion Superintendent". Added box: "Fabrication Shop Superintendent". Deleted box: "Second Shift Superintendent".

Section QA-III-1

1. Paragraph 2.4, Page 1 of 4

The paragraph has been revised for clarification.

- b. Line 5:

Added new sentence in order to clarify responsibility at end of paragraph to read: "The Client or his designee is responsible for preoperational testing".

2. Paragraph 3.1, Page 1 of 4

Revised second sentence for clarification.

3. Paragraph 3.7 and 3.8, Page 3 of 4

- a. Revised Paragraph 3.7 to clarify definition of Standard Quality Assurance Procedures.
  - b. Added Paragraph 3.8 to clarify definition of Standard Site Procedures.

Section QA-III-6

1. Paragraph 5.2, Page 3 of 5

- a. Revised first sentence to clarify usage of Deficiency Notices.
  - b. Subparagraph a): Inserted the words "final inspection/. . ." before the word "acceptance" for clarification.
  - c. Subparagraph d): Deleted the words "procedures or. . ." before the word "code" for clarification.

2. Paragraph 5.2, Page 4 of 5

Added a new sentence with its corresponding four subparagraphs: a), b), c) and d) in order to provide clarification for the usage of Deficiency Notices.

Section QA-III-9

Paragraph 3.10.4, Page 6 of 8

Deleted the words ". . . on the audit report" from the end of the paragraph to clarify that follow-up actions can be documented on such documents as Standard Deficiency Reports.

Section QA-III-15

1. Paragraph 1.1

a. Line 4:

Replaced the words "Initial operation" with "turnover to the Client or his designee" for clarification.

b. Line 5:

Added new sentence in order to clarify responsibilities at end of paragraph to read: "The Client or his designee is responsible for preoperational testing".

2. Paragraph 2.0

a. Numbered first sentence to be Paragraph 2.1

b. Renumbered previous Paragraphs 2.1 through 2.4 to be Paragraphs 2.1.1 through 2.1.4.

c. Added Paragraph 2.2 to clarify responsibilities, "Construction shall be responsible for the following:".

d. Renumbered previous Paragraph 2.5 to be Paragraph 2.2.1.

e. Renumbered and combined previous Paragraphs 2.6 and 2.7 to be Paragraph 2.2.2.

3. Paragraph 2.1.1, Line 9:

Replaced the words "installed, or operated" with "or Installed" for clarification.

4. Paragraph 2.2.1, Line 2

a. Replaced the words "... the initial operating status of . . ." with "... those . . ." to provide clarification.

b. Following the words "... items which are in test," deleted the words "rework, or other initial operating status, . . ." in order to provide clarification.

Section QA-III-15 (Cont.)

5. Paragraph 2.2.2

Revised to read: "Develop and implement a system for maintaining the status for all systems turned over to the Client or his designee for preoperational testing" in order to clarify responsibilities.

The changes referenced above do NOT reduce Ebasco's QA programmatic commitments.

PART A

HOUSTON LIGHTING AND POWER COMPANY  
QUALITY ASSURANCE PROGRAM DESCRIPTION

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

REVISION      12

DATE

HOUSTON LIGHTING & POWER COMPANY  
QUALITY ASSURANCE PROGRAM DESCRIPTION

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HOUSTON LIGHTING & POWER COMPANY  
QUALITY ASSURANCE PROGRAM DESCRIPTION

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## 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 quality assurance and quality control and with Ebasco Construction Inc. (ECI) for construction services 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 Ebasco (Part C). The Westinghouse quality assurance program is described in WCAP-8370, "Westinghouse Nuclear Energy Systems Division 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 Group Vice President Nuclear, reviews and approves the Project Quality Assurance Plan and has ultimate responsibility for Quality Assurance activities. The Project Quality Assurance Plan describes 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 Group Vice President, Nuclear, and Technical Services audits and vendor surveillance as described below. The Group Vice President, Nuclear, regularly meets with QA management and receives reports on the status of the QA Programs to aid him in evaluating the overall effectiveness. Technical Service audits and vendor surveillance are conducted under the direction of the Manager, Nuclear Assurance to evaluate the overall program effectiveness of HL&P Project Quality Assurance, Westinghouse and its suppliers. Technical Service 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 Group Vice President, Nuclear

The Group Vice President, Nuclear, 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 Group Vice President, Nuclear, provides technical guidance and administrative direction to:

- a. Vice President, Nuclear Plant Operations  
(Description of responsibilities is contained in Chapter 17.2, FSAR)
- b. Manager, Nuclear Assurance
- c. General Manager, Nuclear Engineering
- d. Manager, South Texas Project
- e. Manager, Nuclear Licensing
- f. Manager, Engineering Assurance

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

##### 1.4.1 Manager, South Texas Project

The Manager, South Texas Project reports to the Group Vice President, Nuclear. 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.

##### 1.4.2 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, Construction Manager, Project Controls and Site Support Manager and the Principal Engineer, Operational Support. He has the authority to "Stop Work" for cause in all activities related to design and construction of the South Texas Project.

##### 1.4.3 Project Controls and Site Support Manager

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

#### 1.4.4 Construction Manager

The Construction 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 provides direction to Site Security, Administrative Services and to the Construction organization. He has the authority to "Stop Work" for cause in all activities related to construction.

#### 1.4.5 Construction Superintendent

The Construction Superintendent reports to the Construction 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 evaluation and analysis of construction plans and schedules, work methods, craft performance, staffing, equipment utilization and progress.

#### 1.4.6 Unit/Start-up General Supervisors

The Unit/Start-up General Supervisors report to the Construction Superintendent. 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 Coordination General Supervisor interfaces with the Startup Manager to assure the proper construction turnover of systems.

#### 1.4.7 Principal Engineer, Site Engineering

The Principal Engineer, Site Engineering reports to the Deputy Project 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.

1.4.8 Supervising Project Engineers, Site

The Supervising Project Engineers, Site receive technical direction from the Principal Engineer, Site Engineering; the Supervising Project Engineer, Special Projects and Construction Support also receives project direction from the Principal Engineer, Site Engineering. The Supervising Project Engineer, Startup reports to the Startup Manager for project direction. The Supervising Project Engineers, Site direct the efforts of the Site Project Engineering organization in the performance of the owner's review of design and engineering work performed by the prime contractors.

1.4.9 Principal Engineer, Operational Support

The Principal Engineer, Operational Support reports to the Deputy Project Manager for project direction, the Manager Engineering for technical direction and to the Manager, Nuclear Licensing for licensing direction. He is responsible for coordination and implementation of the engineering program required to support the initial fuel load for the South Texas Project. He is also responsible for coordinating the interface with the NRC Senior Resident Inspector for close out of those items relating to support of the issuance of an operating license for the South Texas Project.

1.4.10 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.

1.4.11 Supervising Engineer, STP Licensing

The Supervising Engineer, STP Licensing, reports to the Manager, Engineering 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. The Chairman of the IRC, while not necessarily the Supervising Engineer, STP Licensing, is a duly qualified member of the Nuclear Licensing Department. Assignment of this responsibility will be specified in approved procedures.

1.4.12 Manager, Records Management, Document Control and Information Processing

The Manager, Records Management, Document Control and Information Processing reports to the Manager, STP. The Manager, RM/DC/IP 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.

1.4.13 Manager, Nuclear Purchasing

The Manager, Nuclear Purchasing reports to the Manager, STP for project direction and to the Vice President, Purchasing and Services 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 issued directly by HL&P.

1.4.14 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.

1.4.15 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 managing the performance of contracting activities as agent for HL&P and for direct placement and administration of required contracts not within the scope of the Architect-Engineer/Construction Manager's contract.

1.4.16 General Manager, Nuclear Engineering

The General Manager, Nuclear Engineering reports to the Group Vice President, Nuclear. He provides technical direction and administrative direction to the Manager, Nuclear Services, and is responsible for assuring that departmental activities adhere to accepted and approved standards of HL&P, State and Federal regulations.

#### 1.4.17 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 analysis performed by others. On request from the STP Project Team, the Manager, Nuclear Services, supplies nuclear fuel related support to the STP Project Team. (NOTE: All other Nuclear Services Department quality activities relative to nuclear fuel are described in Chapter 17.2 of the FSAR.)

#### 1.4.18 Manager, Nuclear Licensing

The Manager, Nuclear Licensing reports to the Group Vice President, Nuclear. 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. The Manager Nuclear Licensing provides the primary interface with the NRC.

#### 1.4.19 Manager, Engineering Assurance

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

### 1.5 Manager, Nuclear Training

The Manager, Nuclear Training reports to the Vice President, Nuclear Plant Operations. 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.

### 1.6 Manager, Nuclear Assurance

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

- e) Project Quality Assurance Manager
- f) General Supervisor, Technical Services
- g) Operations Quality Assurance Manager  
(The responsibilities of the Operations Quality Assurance Manager are described in Chapter 17.2, FSAR).

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

#### 1.6.1 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:

- e) 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.

- f) Provide programmatic direction on QA related matters to HL&P, and contractor management.
- g) Direct the onsite audit and surveillance activities; direct audits/surveillances of the Engineer/Construction Manager's QA program implementation in the design office.
- h) Coordinate activities relating to auditing and vendor surveillance in conjunction with the HL&P General Supervisor Technical Services.

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

#### 1.6.2 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.

#### 1.6.3 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; conduct 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.

#### 1.6.4 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.

1.6.5 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.

1.6.6 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 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.

1.6.7 General Supervisor, Technical Services

The General Supervisor, Technical Services is responsible for directing all HL&P Technical Service 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 General Supervisor, Technical Services 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 General Supervisor, Technical Services are:

- a) Directs the HL&P Technical Services audit program.
- b) Directs the HL&P Vendor Surveillance group.
- c) Directs the HL&P Vendor Evaluation group.

The General Supervisor, Technical Services reports on all quality assurance matters directly to the Manager, Nuclear Assurance.

1.7 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, Nuclear Assurance, presents the problem ultimately to the HL&P Group Vice President, Nuclear, 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. 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 performed by either HL&P, BEC or ESI Quality Assurance.
- 2.9 All quality related activities implemented for the South Texas Project are audited annually at a minimum, or at least once within the life of the activity, whichever is shorter. These audits are performed by either HL&P, BEC, or ESI Quality Assurance personnel. Selected areas are targeted and scheduled for more frequent auditing based on such factors as complexity, relative significance, past performance, etc. Supplemental audits will also be performed as described in Section 18.

- 2.10 The results of the South Texas Project Quality Assurance audit and surveillance activities are presented in a periodic report to the HL&P Group Vice President, Nuclear. Regular executive management review of these activities and the direct involvement of the HL&P Group Vice President, Nuclear, 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 either HL&P Quality Assurance or Bechtel Quality Assurance to ensure compliance with the BEC PQPM.

- 2.11 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.
- 2.12 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).
- 2.13 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, the 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.

Quality Assurance audits are performed by either HL&P or BEC Quality Assurance personnel 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. Quality Assurance audits and surveillances are performed by either HL&P or BEC Quality Assurance personnel 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 of 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.

Audits and surveillances are performed by either HL&P or BEC Quality Assurance personnel 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, a monitoring program consisting of audits and surveillances has been established for the South Texas Project. HL&P Project Quality Assurance also audits HL&P Corporate organizations that perform functions for the South Texas Project. Additionally, HL&P Technical Services audits 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.

Audits and surveillances are performed by either HL&P, BEC or ESI QA personnel 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 conformance 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. Audits and surveillances are performed by either HL&P or BEC Quality Assurance personnel 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, audits and surveillances are performed by either HL&P or BEC Quality Assurance personnel 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 Materials, 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 material 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. Audits and surveillances are performed by either HL&P, BEC or ESI Quality Assurance personnel to verify compliance.

## 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.

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. Special process examinations performed during the inspection verification process will be accomplished using the same procedure that was used for the initial examination. These examinations will be performed by personnel qualified in accordance with 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.

Audits and surveillances of special process activities are performed by either HL&P, BEC or ESI Quality Assurance personnel 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 or ESI Quality Assurance verify that inspection control criteria are complied with by review and approval of the inspection procedures.

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

Audit and surveillances of inspection activities are performed by either HL&P, BEC or ESI Quality Assurance personnel 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. Audits and surveillances are performed by either HL&P, BEC or ESI Quality Assurance personnel 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 procedures for control of calibration of measuring and test equipment to ensure these criteria are incorporated. Audits and surveillances are performed by either HL&P, BEC or ESI Quality Assurance personnel 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 either HL&P, BEC or ESI Quality Assurance personnel 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 review and approve these procedures. Audits and surveillances are performed by either HL&P, BEC or ESI Quality Assurance personnel 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. Either HL&P, BEC or ESI Quality Assurance personnel perform periodic audits and surveillances 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; Standard Deficiency Reports; Deficiency Notices; and Audit Deficiency Reports. Specific documents to be trended, and the frequency of trending, are identified in approved procedures. Either HL&P, BEC or ESI Quality Assurance personnel 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.

Either HL&P, BEC or ESI Quality Assurance personnel 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 N45.2.12 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 Group Vice President, Nuclear. 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 Technical Services audits are performed primarily on the HL&P Project Quality Assurance group, and Westinghouse. HL&P Project Quality Assurance is primarily responsible for audits of the Engineer/Construction Manager, constructor, subcontractors, HL&P Project team organizations, and the HL&P corporate organizations providing services to the Project. To the extent possible, audits are scheduled such that recurring audit areas are audited by different organizations on successive audits when deemed appropriate. Certain selected audit areas will be retained by HL&P in order to provide continued assurance that HL&P, Bechtel and Ebasco programs are maintained as required.

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

HL&P, BEC or ESI personnel 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<br>R.G. 1.28 (Rev. 0, 6/72)   | Quality Assurance Program<br>Requirements for Nuclear Power<br>Plants   |
| ANSI N45.2.1-1973<br>R.G. 1.37 (Rev. 0, 3/73)<br>(see notes 8 through 10)   | Cleaning of Fluid Systems and<br>Associated Components During<br>Construction Phase of Nuclear Power<br>Plants  |
| ANSI N45.2.2-1972<br>R.G. 1.38 (Rev. 0, 3/73)<br>(see Notes 11 through 16)  | Packaging, Shipping, Receiving,<br>Storage and Handling of Items for<br>Nuclear Power Plants  |
| ANSI N45.2.3-1973<br>R.G. 1.39 (Rev. 0, 3/73)<br>(see Notes 17 and 18)  | Housekeeping During the Con-<br>struction Phase of Nuclear Power<br>Plants  |
| ANSI N45.2.4-1972<br>R.G. 1.30 (Rev. 0, 8/72)<br>(see Notes 19 and 20)  | Installation, Inspection and<br>Testing Requirements for<br>Instrumentation and Electric<br>Equipment During the Construction<br>of Nuclear Power Generating<br>Stations                                |
| ANSI N45.2.5-1974<br>(see Notes 1 and 2)  | Supplementary Quality Assurance<br>Requirements for Installation,<br>Inspection and Testing of<br>Structural Concrete and Structural<br>Steel During the Construction<br>Phase of Nuclear Power Plants. |
| ANSI N45.2.6-1973<br>R.G. 1.58 (Rev. 0, 8/73)<br>As modified by positions C.5,<br>C.6, C.7, C.8 and C.10 of<br>Rev. 1 (see Note 34) | Qualifications of Inspection,<br>Examination and Testing Personnel<br>for the Construction Phase of<br>Nuclear Power Plants   |
| ANSI N45.2.8-1975<br>Reg. 1.116 (6/76)<br>(see Notes 21 through 23)   | Supplementary Quality Assurance<br>Requirements for Installation,<br>Inspection and Testing of<br>Mechanical Equipment and Systems<br>for the Construction Phase of<br>Nuclear Power Plants             |

TABLE 1  
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE  
(Continued)

|   |   |
|---|---|
| ANSI N45.2.9-1974<br>R.G. 1.88 (Rev. 2, 10/76)<br>(see Notes 24 through 26) | Requirements for Collection,<br>Storage and Maintenance of Quality<br>Assurance Records for Nuclear Power<br>Plants |
| ANSI N45.2.10-1973<br>R.G. 1.74 (Rev. 0, 2/74)                              | Quality Assurance Terms and<br>Definitions  |
| ANSI N45.2.11-1974*<br>R.G. 1.64 (Rev. 2, 6/76)<br>(see Notes 3 through 7)  | Quality Assurance Requirements for<br>the Design of Nuclear Power Plants  |
| ANSI N45.2.12-1977<br>R.G. 1.144 (Rev. 1, 9/80)<br>(see Notes 32 and 33)    | Requirements for Auditing of<br>Quality Assurance Programs for<br>Nuclear Power Plants                              |
| ANSI N45.2.13-1976<br>R.G. 1.123 (10/76)<br>(see Notes 27 through 31)       | Quality Assurance Requirements for<br>Control of Procurement of Items and<br>Services for Nuclear Power Plants      |
| ANSI N45.2.23-1978<br>R.G. 1.146 (Rev. 0, 8/80)                             | Qualification of Quality Assurance<br>Program Audit Personnel for Nuclear<br>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.

If the correlation test result shows a concrete property not meeting the specification limits and/or tolerances at the point of placement, the frequency of correlation testing shall be increased to 100 cubic yards. If two consecutive correlation tests exceed the specified limit for slump, air

TABLE 1  
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE  
(Continued)

content, or temperature, the Constructor shall document the condition, notify Bechtel Site Engineering within 24 hours of completion of the placement and shall return to control of the concrete by in-process testing at the point of placement per ANSI N45.2.5-1974.

"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 Quality Assurance 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 originator's 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 flashlight 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 Level 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.

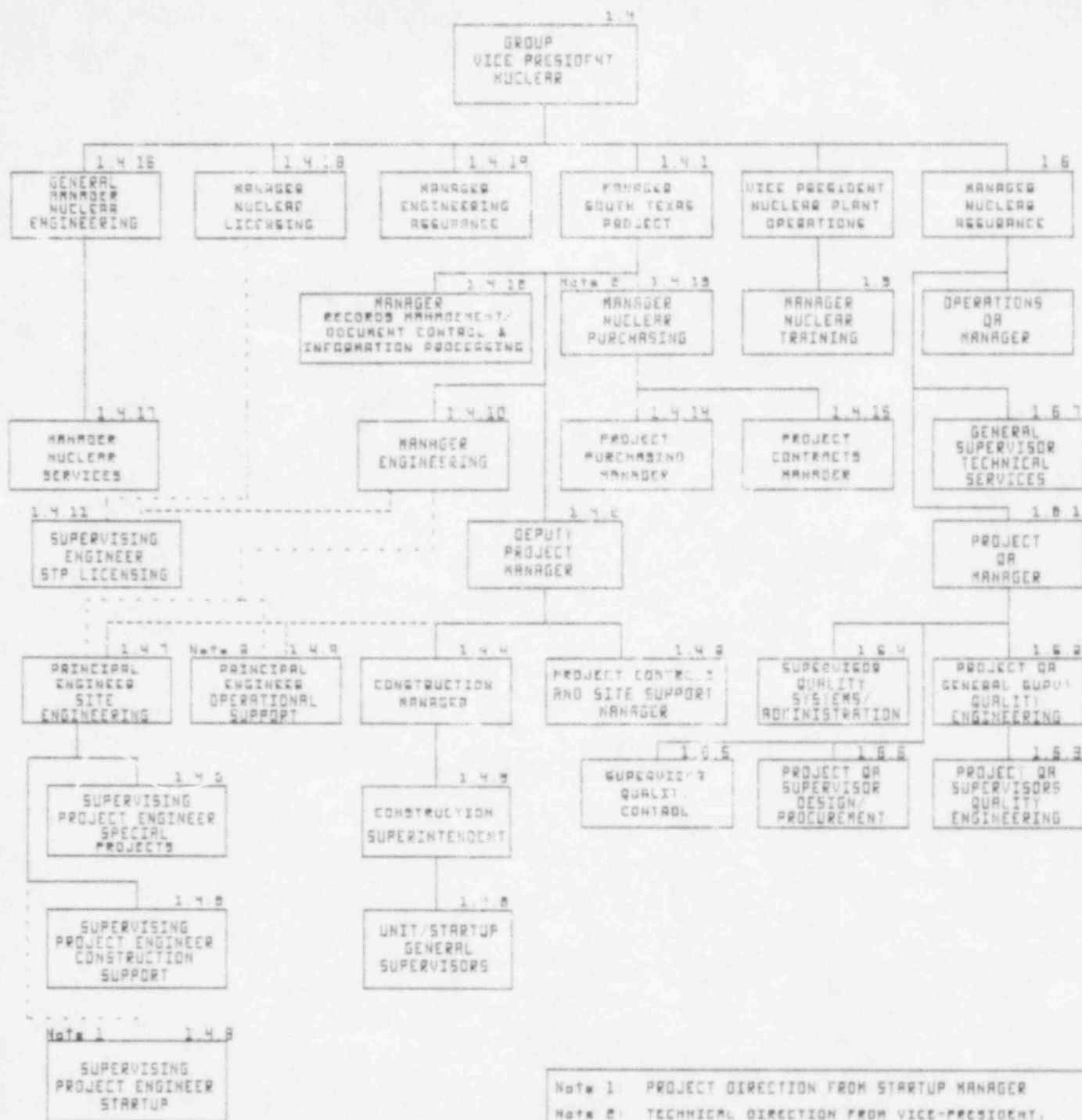
In actual practice, the audited organization will provide the auditing organization with documented corrective action including the date when the corrective action will be completed. The auditing organization will evaluate the corrective action response to determine if corrective action verification 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.

TABLE 1  
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE  
(continued)

33. ANSI N45.2.12-1977, Section 1.3 states, "In no way shall the performance of audits by an organization diminish the responsibility of the audited organization or contractor for audit of his designated portion of the quality assurance program or the quality of his product or services". For the South Texas Project all quality related activities implemented for the South Texas Project are audited annually at a minimum, or at least once within the life of the activity, whichever is shorter. These audits are performed by either HL&P, BEC, or ESI Quality Assurance personnel.
34. As an alternate, compliance with ANSI N45.2.6-1978 and R. G. 1.58 (Rev. 1, 9/80) in its entirety is acceptable.

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

- ° Project Quality Assurance Plan
- ° Project Specific Quality Assurance Procedures Manual
- ° Standard Quality Assurance Procedures Manual
- ° Technical Services 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
- ° Standard Site Procedures Manual



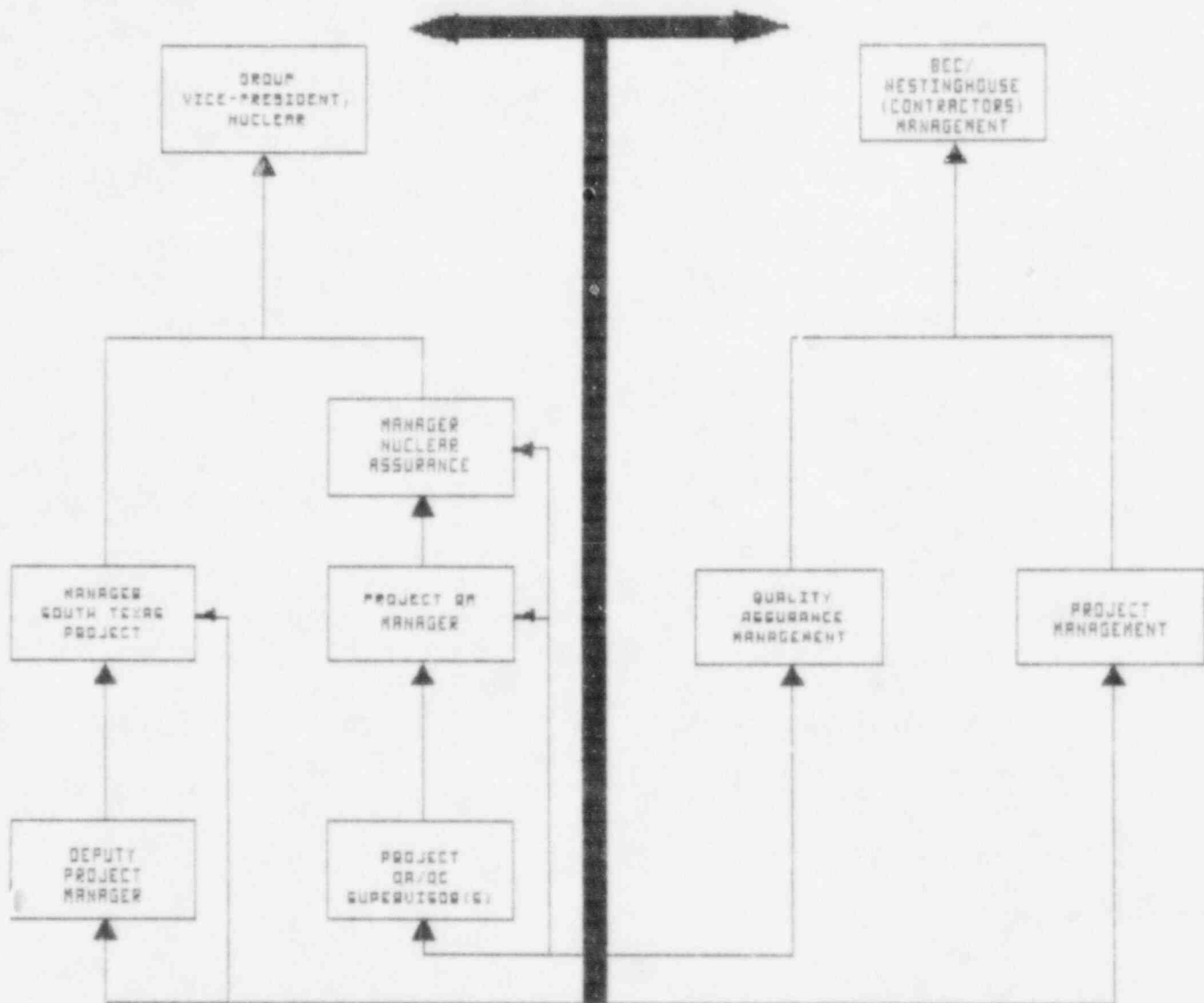
——— PROJECT AND TECHNICAL DIRECTION  
 - - - - - PROJECT DIRECTION ONLY  
 . . . . . TECHNICAL DIRECTION ONLY

Note 1: PROJECT DIRECTION FROM STARTUP MANAGER  
 Note 2: TECHNICAL DIRECTION FROM VICE-PRESIDENT, PURCHASING AND SERVICES  
 Note 3: LICENSING DIRECTION FROM MANAGER, NUCLEAR LICENSING

ORGANIZATION  
 FIGURE 1

HL & P

BEC /  
WESTINGHOUSE  
(CONTRACTORS)



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

FIGURE 2

PART B

BECHTEL ENERGY CORPORATION  
QUALITY ASSURANCE PROGRAM DESCRIPTION

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

REVISION 12

DATE

# QUALITY ASSURANCE PROGRAM DESCRIPTION

## PART B

### FOR SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION (STPEGS)

#### INTRODUCTION

This document describes the Quality Assurance Program applied by Bechtel\* to the design, procurement, and construction management of the South Texas Project. This document serves as Bechtel's portion of the Quality Assurance Program Description, the compliance document which fulfills the requirements of Chapter 17 prescribed in the "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants", Regulatory Guide 1.70, Rev. 2, September 1975. This document is periodically reviewed and revised as necessary.

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, site engineering, and quality control activities defined in this document 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 this program.

The Quality Assurance Program described in this document is consistent with the Bechtel overall goals and objectives of maintaining the competence of its service and quality of its end products at contractually required levels. This Quality Assurance Program is applied by Bechtel to those safety-related structures, systems, and components (Q-List items) identified in appropriate sections of the safety analysis report for which Bechtel has the responsibility for design, procurement, and construction management. This document does not cover preoperational testing activities.

The term "Quality Assurance" has been defined as "all those planned or systematic actions necessary to provide adequate confidence that an item or facility will perform satisfactorily in service." Quality assurance is recognized as a function of the group performing the work and not the sole responsibility of a quality assurance group.

\* The term Bechtel is employed in this document to identify the Bechtel Power Corporation and associated companies, including Bechtel Energy Corporation, which is contractually responsible for the Design and Construction Management of STPEGS.

Quality is achieved through the use of skilled personnel, adequate planning, use of suitable tools and procedures, proper definition of job requirements, and appropriate supervision and technical direction. Quality is verified through surveillance, inspection, testing, checking, and review of work activities and documentation. It is Bechtel policy that the organization or group that performs the activity (i.e., Engineering, Procurement, Construction, etc.) is responsible for the generation of a quality product. Quality control and quality verification are performed by individuals who are not directly responsible for performing the work activity. The separation of responsibilities by organization for performance of the work activities and for performance of quality control and quality verification is discussed in Section 1 of this document.

In addition, it is Bechtel policy that a quality assurance function consisting of program definition, program coordination, and the review, surveillance, and the audit of quality-related activities is assigned to a group which is independent of the organizations responsible for the work. This group called Quality Assurance is responsible for defining and coordinating the Quality Assurance Program and for monitoring and auditing program activities to verify compliance with established requirements and to review program adequacy. When the term Quality Assurance is applied to personnel titles or procedures, it refers to the personnel and practices of the Quality Assurance Group. The overall Bechtel Quality Assurance Program, which includes the activities of the organizations performing work as well as those performing quality control and quality assurance function, is also referred to as the Bechtel Quality Program.

The Bechtel Quality Program commits to comply with the requirements of NRC Regulations, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants and Fuel Reprocessing Plants," 10CFR50 Appendix B. The program also commits to comply with the quality assurance requirements of the ASME Boiler and Pressure Vessel Code, Section III, for items covered by the Code.

The Bechtel program is committed to follow the regulatory positions contained in the following documents and ANSI Standard ANSI N45.2.5:\*

- Regulatory Guide 1.28 "Quality Assurance Program Requirements (Design and Construction) (formerly Safety Guide 28) (Rev. 0, June 1972)"
- Regulatory Guide 1.30 "Quality Assurance Requirements for Installation, Inspection, and Testing of Instrumentation and Electric Equipment (formerly Safety Guide 30) (Rev. 0, August 1972)"
- Regulatory Guide 1.37 "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants (Rev. 0, March 1973)"
- Regulatory Guide 1.38 "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water-Cooled Nuclear Power Plants (Rev. 0, March 1973)"

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\*Bechtel's position, as exceptions to and interpretations of this guidance for STPEGS, is contained in Appendix A of this document.

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|-------------------------------|--|
| Regulatory Guide 1.39         | "Housekeeping Requirements for Water-Cooled Nuclear Power Plants (Rev. 0, March 1973)"   |
| Regulatory Guide 1.58         | "Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel (Rev. 0, August 1973)"   |
| Regulatory Guide 1.64         | Quality Assurance Requirements for the Design of Nuclear Power Plants, (Rev. 2, June 1976)"  |
| Regulatory Guide 1.74         | "Quality Assurance Terms and Definitions (Rev. 0, February 1974)"  |
| Regulatory Guide 1.88         | "Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records (Rev. 2, October 1976)"   |
| Regulatory Guide 1.116        | "Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems (Rev. 0-R, June 1976)"                                |
| Regulatory Guide 1.123        | "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants (Rev. 0, October 1976)"                                  |
| Regulatory Guide 1.144        | "Auditing of Quality Assurance Programs for Nuclear Power Plants (Rev. 1, September 1980)"   |
| Regulatory Guide 1.146        | "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (Rev. 0, August 1980)"  |
| ANSI Standard<br>N45.2.5-1974 | "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Steel During the Construction Phase of Nuclear Power Plants" |

The terms used in this document follow the definitions provided in ANSI N45.2.10-1973 as endorsed by Regulatory Guide 1.74, Rev. 0, 2/74, supplemented by the following additional terms and definitions applicable to this document.

1. Administrative Direction (Administrative Supervision): Responsibility for hiring, salary review, and assignment of an individual.
2. Approve: When used in context with Bechtel review of supplier documents, the word "approve" or words of like import, such as "review" and "accept", shall mean, unless the context clearly indicates otherwise, that the supplier shall, before implementing the information in the document, submit the document, obtain resolution of any comments, and obtain authorization to proceed, and shall not mean that a complete check will be performed. Authorization to proceed shall not constitute acceptance or approval of design details, calculations, analyses, test methods or materials developed or selected by the supplier and shall not relieve supplier from full compliance with contractual obligations.

3. Contractor: Supplier of construction site services, materials, or equipment. On construction management jobs, contractors under direct contract to the client may provide construction site services.
4. Coordination: Bringing together and assuring communication between independent groups, including responsibility for identification of interface problems, reconciling a position, and arriving at agreement.
5. Division Control: Technical and administrative direction of a division functional manager to his area office counterpart.
6. 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.
7. Formulate: To be responsible for coordination of effort by affected organizations and preparation of documentation describing or defining a policy procedure.
8. Material Certificate of Compliance: Verification document which certifies conformance to the requirements of the applicable material specification.
9. Monitor: To watch over, observe, or examine a work operation. Results of the observations and examination may be recorded; however, signoff responsibility is not included.
10. Project Direction: Directions or instructions concerned with project operations. Includes coordination and day-to-day direction of the activities of project entities receiving technical direction from others, but does not include authority to overrule prescribed procedures or technical decisions of such entities.
11. Project Design Office: The Division, Area, or Branch Office assigned responsibility for management of the project.
12. Q-List Items: Safety-related structures, systems, and components.
13. Quality Assurance Group: The quality assurance group consists of the Manager of Quality Assurance - Bechtel Power Management, Managers of Division Quality Assurance, and the quality assurance personnel within their department.
14. Quality Policy Statement: Corporate management direction provided in the foreword to this document.

15. Review: Examination of any form of documentation for the purpose of establishing acceptability to the requirements of the function represented by the reviewer. Reviews may range from a thorough investigation to a spot check. Reviews are generally not holdpoints, but signoff evidence of review on the documents or records traceable to the documents is required.
16. Surveillance: A broad term pertaining to and including both monitoring and witnessing.
17. Surveillance Inspection: Review, observation or inspection of supplier personnel, material, equipment, processes, and test results at random or selected stages of manufacture for the purpose of determining if an action has been accomplished or a document(s) prepared in accordance with selected requirements of a contract document(s). Surveillance inspection does not take the place of supplier quality programs or assume any responsibility for such programs or product quality. Surveillance inspection is intended to provide a degree of added confidence that supplier materials and equipment meet specific contract requirements. Such inspections will not relieve the supplier or construction contractor of any responsibility under the applicable contract, or act as waiver by Bechtel or Client of any of the conditions thereof.

For additional information, see Section 7, subsection 7.2, SURVEILLANCE INSPECTION.

18. Technical Direction: Instructions and directions defining technical requirements for an activity. This may include furnishing prescribed procedures, technical requirements, design approaches, specifications, and design details.
19. Technical Guidance: Providing advice representing a preferred method or approach to a function or activity. This may include establishing general requirements or policy but not specific procedures or instructions.
20. Witness: To watch over, observe, or examine a specific test or work operation which includes signoff responsibility.

Whenever an approved ANSI Standard or Draft (or portion thereof) is referenced herein without qualification, all requirements of the Standard as interpreted by Bechtel Quality Assurance Management must be incorporated in the program subject to the modifications contained in Appendix A of this document.

## SECTION 1

### ORGANIZATION

#### 1.1 BECHTEL ORGANIZATION

Figure 1 provides an organization chart for the Bechtel Organization. STPEGS contractual commitments are executed by Bechtel Energy Corp., a wholly owned subsidiary of Bechtel Power Corp., through the Western Power Division.

#### 1.2 BECHTEL POWER CORPORATION (BPC)

Figure 2 provides more detailed definition of the Bechtel Power Management.

Bechtel Power Corp. consists of the Bechtel Power Management Group (San Francisco), the Eastern (Gaithersburg) and Western (Los Angeles) Power Divisions and Bechtel Energy Corp.

1.2.1 Bechtel Power Management Group consists of the President, Vice President and General Managers for each division, Executive Engineer, Manager of Planning & Plant Operations, Manager of Engineering, Manager of Construction and Services, Manager of Procurement, and Manager of Quality Assurance.

1.2.2 The quality policy statement for Bechtel Power Corp. is authorized (approved for use) by the President of Bechtel Power Corp.

1.2.3 The Manager of Quality Assurance, BPC has the following primary responsibilities:

- o Develops, reviews, and approves new or revised BPC quality policy.
- o Provides guidance on quality policy across the divisional interface (including interfaces with Bechtel service organizations, such as Procurement and Material & Quality Services (M&QS)).
- o Evaluates the effectiveness of Division QA efforts and reports annually on the adequacy of the implementation of the quality program to the President of Bechtel Power Corp.

#### 1.3 BECHTEL SERVICE ORGANIZATIONS

##### 1.3.1 Procurement

Procurement is a Bechtel service organization and is responsible for the procurement of equipment, materials, and services specified by the Power Divisions. Procurement does not establish technical or quality requirements contained in procurement documents nor does it initiate or approve changes thereto. These functions are the responsibilities of Engineering. The functions of Procurement include:

1. Purchasing of equipment, materials, and services. This includes purchases for delivery to the project site and contracting where the work involves field labor.
2. Surveillance inspection of equipment, materials, and review of associated quality verification records when required by procurement documents.
3. Traffic services to control the flow of materials and provide shipping arrangements necessary for efficient delivery to the jobsite.
4. Field procurement and material handling at the project site providing a fully integrated materials operation from purchase to issuance. It includes receiving, inspection for over, short, and/or damage, warehousing and inventory control, distribution, local purchasing, and contracting. This function is the responsibility of the Senior Field Procurement Representative at the jobsite.

Figure 3 identifies the organization of Procurement, Figure 4 identifies the organization of the Procurement Supplier Quality Department. Division Procurement is supported by the Procurement Services Group, which provides policies, manuals, and procedures to all Division organizations.

The A/DO Manager of Procurement is responsible for procurement of equipment, materials, and services for projects within a designated geographical area. He reports to a designated Bechtel Power Manager for guidance. He receives technical and administrative direction from the central procurement organization.

As shown in Figure 4, the A/DO Supplier Quality Manager receives technical direction from the Manager of Procurement Supplier Quality. Administrative direction is the responsibility of the A/DO Manager of Procurement. The following activities are the responsibility of the Manager of Procurement Supplier Quality and are accomplished with the assistance of the A/DO Supplier Quality Manager:

1. Prepare, maintain, and implement the Procurement Supplier Quality Department Manual
2. Prepare the training and development program; train and qualify Procurement Supplier Quality personnel
3. Perform surveys and quality program audits at suppliers and offsite contractors as required by project and division procedures
4. Prepare and implement inspection plans

- 5) Provide qualified personnel and perform surveillance of items; review quality verification documents and release items for shipment
- 6) Review supplier QA program
- 7) Coordinate Procurement Supplier Quality Department activities with other quality functions
- 8) Monitor the adequacy of inspection plans and procedures in use by Supplier Quality personnel

### 1.3.2 Materials and Quality Services

The Materials and Quality Services Department (M&QS) is responsible for furnishing specialized metallurgical, quality control, and auditing services to Bechtel divisions. Figure 5 illustrates the organization of the Materials and Quality Services Department.

M&QS responsibilities are:

1. To develop and qualify welding and nondestructive examination (NDE) procedures
2. To qualify and certify Bechtel nondestructive examination personnel
3. To support Engineering and Construction in the preparation of special process procedures and the qualification of personnel using these procedures
4. To provide technical guidance to field welding, coating, and NDE personnel
5. To support the divisions in the evaluation of supplier and contractor welding nondestructive examination and protective coating procedures and quality program manuals for ASME components and metal structures applications
6. To prepare and maintain the Bechtel Quality Assurance Manual for ASME Nuclear Components (BQAM-ASME) and provide liaison with the ASME and authorized inspection agencies in matters associated with compliance with the ASME B&PV Code, BQAM-ASME, and the control of the ASME code Symbol Stamps
7. To assist Quality Assurance in audits of Bechtel field construction which includes compliance with the Quality Assurance Manual for ASME, Section III, Nuclear Components and Bechtel and contractor field welding, nondestructive examination, and protective coatings programs
8. To assist Procurement with surveys, audits, and evaluations of selected materials and component suppliers and contractors

9. To consult with Engineering, Procurement, Construction, and Quality Assurance on quality control and failure analysis problems involving materials, welding, protective coatings, and nondestructive examination
10. To support Engineering in the preparation of specifications for piping, metal structures, ASME Code components, protective coatings, and the selection of materials

#### 1.4 WESTERN POWER DIVISION (WPD)

1.4.1 The WPD management organization is comprised of the Vice President and General Manager, Vice President and Deputy General Manager, Vice President and Manager of International Business Development & Project Operations, Vice President and Manager of Domestic Business Development & Project Operations, Manager of Division Functions, Manager of Division Quality Assurance, and Managers of Public Relations and Legal Counsel. The WPD also sponsors the San Francisco Area Office and the Houston Branch Office. Figure 6 illustrates the organization of the WPD. Figure 6A reflects the Houston Branch Office organization.

1.4.2 The WPD General Manager is responsible for Bechtel Quality Program functions implemented within the division and authorizes (approves for use) Division Quality Policies.

#### 1.4.3 Division Quality Assurance

The Manager of Division Quality Assurance provides technical and administrative direction to the Quality Assurance Group within the division. Figure 7 reflects the WPD Quality Assurance Organization.

The Manager of Division Quality Assurance is responsible for:

1. Formulating Division Quality Assurance Policies where necessary to implement or supplement quality policy prescribed by the BPC
2. Approving quality assurance procedures and instructions which define responsibilities and functions of quality assurance personnel within his division
3. Approving quality-related procedures and manuals prepared by departments and projects within his division for conformance to quality assurance policies
4. Formulating audit programs and conducting audits and reviews to assure Bechtel management and clients that the quality assurance programs of the division and its projects conform with policies and requirements of Bechtel and the client. Identifying the need for corrective action and assuring follow-up

5. Providing periodic reports to the Division Manager and the BPC - Manager of Quality Assurance, on the status and adequacy of division and project programs and advising of any problems requiring special attention
6. Providing and maintaining a qualified and suitably trained staff of quality assurance engineers to carry out required project and staff functions
7. Formulating programs for maintaining the professional competence of personnel within his organization and providing assistance in training and indoctrination programs for division management, engineering, and construction personnel whose activities affect quality
8. Coordinating the Quality Assurance Program within the Division through formulation of Division Quality Policy, reviewing and approving departmental quality procedures, direction of the corrective action program, development of project quality assurance programs, and coordinating quality-related activities of the Division with outside services

#### 1.4.4 Division Engineering

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

The Chief Engineers are responsible for assigning the engineers, designers, and draftsmen required to perform engineering functions within their respective disciplines on projects and for maintaining a staff of specialists and other support personnel to provide technical guidance to the projects. Chief Engineers provide administrative and technical direction to the engineers in their respective disciplines.

In addition to its design responsibilities, the Engineering Department is responsible for:

1. Preparing quality program related Engineering procedures and instructions
2. Developing and conducting quality program related indoctrination and training programs for Engineering Department personnel
3. Preparing specifications for supplier, contractor, or constructor quality assurance program requirements

#### 1.4.5 Division Construction

The Manager of Division Construction provide technical and administrative direction to the Construction Department personnel. The Manager of Division Construction is 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.

#### 1.4.6 Division Support Services

The Manager of Division Support Services is responsible for divisional supervision and guidance of various support functions, including Repro- and Micro-graphics, Document Control, and Procurement.

#### 1.4.7 Division Procurement

The A/DO Manager of Procurement is responsible for coordinating divisional requirements and needs with the Central Procurement Organization and providing administrative and technical direction to the Project Procurement Managers. Also, provides administrative direction to the A/DO Manager of Supplier Quality.

### 1.5 STPEGS ORGANIZATION AND FUNCTIONS

The Project Manager is responsible for project direction to reflect the contract, client requirements, Bechtel policies, and project procedures. The Project Manager is the leader of the Bechtel STPEGS team, including the Project Engineering Manager, Project Procurement Manager, Project Manager of Construction, Project Quality Assurance Manager, and Project Cost/Schedule Manager. He provides direction to the Project Team to assure satisfactory performance. The STPEGS Team Organization and its relationship to the division management team is shown in Figure 3.

#### 1.5.1 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.
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 Manager of Division Quality Assurance 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 Supplier Quality - quality 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 Project Quality Assurance Manager 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 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.

The STPEGS Quality Assurance Organization is shown in Figure 9.

### 1.5.2 Project Engineering

The Project Engineering Manager (PEM) is responsible for the conduct of engineering on the STPEGS. The PEM may be assisted by one or more Project Engineers. The PEM provides project direction to the Group Supervisors. He is responsible for ensuring that engineering work under Bechtel cognizance is carried out in accordance with the project direction received from the Bechtel Project Manager and the technical direction received from the Engineering Manager.

The Group Supervisors are responsible for the quality and technical adequacy of the engineering work performed under their guidance and receive their technical direction in these matters from the Chief Engineers for their respective disciplines. The Group Supervisors are assigned a team of engineers, designers, and draftsmen by their respective Chief Engineers. The Project Engineering Manager, Project Engineers, group supervisors, engineers, designers, and draftsmen comprise the engineering team. The STPEGS engineering team organization is shown in Figure 10. The project engineering team is responsible for all Bechtel engineering design work performed by and for the project and for checking functions performed on the project. Special design support is furnished to the project engineer by specialty groups. The Project Engineer is responsible for such special design work conducted off the project and for requiring that it be subjected to the same degree of checking and control as that conducted on the project. Key design work is also reviewed off the project by personnel on the staff of the Chief Engineer.

The project engineering team has the following responsibilities:

1. Prepare calculations, drawings, and specifications which constitute the engineering designs
2. Assure that drawings, specifications, procedures and instructions produced conform to project requirements, Bechtel standards, applicable industry standards, regulatory agency requirements, and the design bases as defined in Safety Analysis Reports
3. Prepare specifications for Supplier and Constructor/ Contractor(s) Quality Assurance Program
4. Establish the need for procurement surveillance inspection and audit, and monitor results of same
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)
7. Indoctrinate Engineering personnel in the use of Engineering procedures
8. Provide support to Construction management relative to storage and maintenance of permanent plant equipment

### 1.5.3 Project Construction Management

The Project Manager of Construction is responsible for the project field construction performance. He is responsible for assuring that construction activities are performed in accordance with the design requirements as established by project engineering and other applicable requirements.

STPEGS 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.

### 1.5.4 Project Procurement

The Project Procurement Manager receives technical and administrative direction from the A/DO Manager of Procurement, Houston and project direction from the Project Manager. He provides direction for the STPEGS procurement activities and project direction to the Project Supplier Quality Supervisor.

The Project Supplier Quality Supervisor reports to the A/DO Supplier Quality Manager for technical and administrative direction and receives project direction from the Project Procurement Manager. The functions of the Project Supplier Quality Supervisors are:

1. Coordinate project procurement surveillance inspection activities with project engineering and Procurement Supplier Quality
2. Comment on technical specifications prior to issuance for bids
3. Initiate supplier suveys, Supplier Quality assignments, and coordinate supplier audits with procurement Supplier Quality
4. Review and accept procurement surveillance inspection reports
5. Give project direction on project Supplier Quality assignments to the Bechtel Supplier Quality Representative

STPEGS procurement organization is shown in Figure 12.

Field procurement functions are performed by the Field Procurement Supervisor at the Jobsite. He receives technical and administrative direction from the Division Field Procurement Manger and project direction from the Project Manager of Construction through the Material Control Manager.

## SECTION 2

### QUALITY ASSURANCE PROGRAM

#### 2.1 SCOPE

The program described in this document is applied to the design, procurement, and construction management of those structures, systems, and components (items) whose satisfactory performance is required to prevent accidents which may cause undue risk to the health and safety of the public or to mitigate the consequences of such accidents if they were to occur. These items are defined as safety related and are identified in the safety analysis report for STPEGS.

#### 2.2 POLICY

The Bechtel Quality Program described in this document assigns the responsibility for quality to the organization responsible for performing the work and includes as a basic requirement that individuals responsible for verifying and checking are independent of the individual or group responsible for performing the work. Additionally, independent review, audit, and surveillance are performed by individuals not affiliated with the organizational entities responsible for performance of the work.

The President of Bechtel Power Corp. is responsible for the overall quality policy. The quality policy statement for BPC is authorized (approved for use) by the President. The Managers of Division Quality Assurance assist in the development, revision, and additions/deletions to the BPC quality policies. Coordination of the Quality Program within BPC is the responsibility of the BPC, Manager of Quality Assurance. All changes to BPC quality policies must be reviewed and approved by the BPC Manager of Quality Assurance.

Western Power Division quality policies and quality assurance department procedures are formulated by the Manager of Division Quality Assurance with policy guidance from the BPC, Manager of Quality Assurance. Division quality policies are authorized for use by the Vice President and General Manager - WPD.

The Quality Program and Quality Assurance practices for STPEGS are formulated by the Project Quality Assurance Manager, approved by the Manager of Division Quality Assurance or designee and implemented through the Project Quality Program Manual, the Project Quality Assurance Procedures and various department/group procedures. The implementing procedures are approved for policy and program compliance by the Manager of Division Quality Assurance or a designee (See Table I). The STPEGS quality program follows applicable division policies and procedures, suitably modified to meet the scope of STPEGS, including delineated HL&P and project requirements.

The Project Quality Assurance Manager is responsible for coordinating the development of the project quality program and assuring that appropriate approvals are obtained. Project and division Quality Assurance personnel monitor and/or audits project program activities for compliance with approved procedures and policies. Quality Assurance personnel have the responsibility and authority to carry out these functions, including identification of program problems, initiation of action to resolve such problems, and final verification that the action was taken and the problem satisfactorily solved.

The Project Quality Program includes program documents and procedures which define the responsibility and authority of each group within the project and identifies documents to be prepared and their distribution. Bechtel project communication is assured through the close physical relationship of project participants and the requirements for formal documentation and reporting.

Communication between the Houston Lighting & Power QA organization and Bechtel depends on contractual relationships and complies with various interface agreements. The Project Quality Assurance Manager is the focal point for quality program communication. Formal quality assurance program reporting is performed either through the Project Manager or directly by the Project Quality Assurance Manager. In either case, the Project Quality Assurance Manager is responsible for coordinating preparation of quality program communication. Day-to-day communication on problems involving engineering, procurement, and construction may be carried out directly between the Bechtel group responsible for the activity and appropriate utility personnel. However, the Project Quality Assurance Manager is furnished copies of this correspondence, as appropriate.

Supplier and contractor quality control includes provision of specifications by Engineering requiring suppliers and contractors to execute appropriate quality programs; surveillance inspection of suppliers by the Procurement Supplier Quality Department, or by Quality Control for onsite contractors; and surveillance and audit of these activities by Quality Assurance personnel, the Procurement Supplier Quality Department staff, and/or Materials and Quality Services.

Control of construction activities performed directly by Bechtel includes in-process technical guidance and monitoring of the work by field engineering personnel who are independent of direct construction craft supervision; quality verification inspection and surveillance and audits by Quality Assurance personnel supplemented by Materials and Quality Services personnel.

Quality-related activities, such as inspection and test, are performed with appropriate equipment and under suitable environmental conditions.

## 2.3 STOPWORK

The program provides Quality Assurance personnel with stopwork authority over certain portions of project activity, and this authority is delineated in procedures. In addition, control of further processing of unacceptable work is provided by appropriate hold and release points as follows:

1. Design. Unsatisfactory work with respect to design documents prepared by Bechtel is controlled through the independent review process (prescribed by written procedures) and the refusal of the checker/reviewer to sign off the acceptance of the document which blocks its further processing and issue for use. Each non-Bechtel design document for which project engineering has an interface and review responsibility is logged upon receipt and has affixed a standard Bechtel stamp which signifies the status of the document when it is returned to the originator. Any status other than permission to proceed automatically sets in motion follow-up and close-out actions.

2. Procurement. Bechtel control over Supplier work is as follows: the Procurement Supplier Quality Representative, when required by procurement documents, must authorize supplier release for shipment (for purchased items) and may recommend stoppage of work on selected activities through designated contractual channels in situations which, if uncorrected, would render the item unacceptable for release. In cases of gross deficiencies or violations, procurement documents provide contractual relief, including termination, and these measures can be used when necessary.
3. Construction. Quality Control has two primary mechanisms to control further processing of unacceptable work. These are the nonconforming material control system and the authority to refuse acceptance of completed work. Quality Control has authority to recommend stoppage in situations which, if uncorrected, would render the item nonconforming or unacceptable. In cases of contractor work, Quality Control exercises controls similar to Procurement in 2. above.

## 2.4 PROGRAM DOCUMENTATION

Western Power Division Quality policies,\* procedures, and instructions are contained in the documents listed in Table I. Appendix B of this report lists the Division Quality Policies for STPEGS work and identifies their scope and relationship to 10 CFR 50 Appendix B.

Figure 13 is a graphic presentation of the relationship of documents that comprise the quality program for STPEGS. Each of these documents is authorized by the division or department manager responsible for the activity. (Copies of Bechtel standard documents in Table I are available for review by regulatory authorities and HL&P, and controlled copies of those designated by an asterisk are available upon request through HL&P to cognizant regulatory bodies.)

Division and Department procedures and practices form the basis for the Quality Assurance Program on STPEGS. The STPEGS Project Quality Program Manual references the procedures and manuals which comprise the Project Quality Program. The procedures and instructions contained in these manuals, are supplemented where necessary by specific work instructions and checklists. These project manuals are controlled and maintained by the project team.

STPEGS has the responsibility for preparing and maintaining documentation defining project design criteria and applicable codes, standards, and regulatory requirements. Further, STPEGS has the responsibility for preparing and maintaining organization charts and documentation defining interface responsibilities among various Bechtel groups and other major non-Bechtel project participants, such as HL&P and Westinghouse Electric Corporation.

\* These policies define what is required and who is responsible for preparing procedures and instructions to implement the requirements. Specific methods for accomplishing the requirements are not included; however, essential features of the program are prescribed.

## 2.5 PERSONNEL

Bechtel personnel participating in the Quality Program are provided with specific indoctrination and training covering the project procedures applicable to their work. This is accomplished by reading applicable procedures, general discussions of specific procedures and individual training by project supervision and staff specialists. Similar programs are employed for indoctrination of individuals assigned to staff and specialist groups. Records are maintained showing completion of indoctrination and training. Indoctrination and training is conducted in accordance with written procedures.

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

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

The basic qualification requirements for supervisory and project quality functions, such as Project Quality Assurance Manager, Project Quality Assurance Engineer, Project Quality Control Engineer, etc., are an advanced degree with two or more years of appropriate supervisory and quality-related experience or a bachelor's degree with five or more years of appropriate experience. Additional pertinent (technical) experience is considered in lieu of a bachelor's degree. Records are maintained showing qualifications of key management, supervisory, and project personnel in quality groups.

The following specific qualification requirements are applied:

1. Personnel performing pressure boundary and structural welding and nondestructive examination are required to meet applicable qualification requirements of ASME Code, SNT-TC-1A-80\*, or other appropriate codes and standards.
2. Quality Control Personnel - Quality Control personnel performing surveillance inspection of contractors work will be qualified in accordance with the provisions of Regulatory Guide 1.58, Rev. 0 (as interpreted by the positions contained in Appendix A of this document) or SNT-TC-1A-80\*, as applicable.
3. Audit Personnel - Personnel performing audits will be qualified in accordance with the appropriate requirements of ANSI N45.2.23-1978, as endorsed by Regulatory Guide 1.146, Rev. 0, 8/80.

\* Instances of recommendations within SNT-TC-1A-80 ('should') will be considered mandatory requirements ('shall'). This exception will be reflected in appropriate implementing procedures.

4. Procurement Supplier Quality Representatives - A formal training program, developed by the Procurement Supplier Quality Department, is required for Supplier Quality Representatives assigned nuclear plant purchase orders. This program is defined in the Bechtel Procurement Supplier Quality Manual (PSQM) and conforms to the applicable requirements of ANSI N45.2.6-1973, as endorsed by Regulatory Guide 1.58, Rev. 0, 8/73, as interpreted by the positions contained in Appendix A of this document.

## 2.6 PROGRAM CONTROL

Personnel performing quality assurance and quality control functions are provided with several means for controlling adherence to the quality program requirements. These include:

1. Various levels of approvals described in Sections 1 and 2.2 of this document.
2. Stopwork as described in Section 2.3 of this document.
3. Inspection and review hold points for engineering documents, supplier work and documentation, and construction activities as described in various sections of this document.
4. Nonconformance and corrective action procedures as described in Sections 15 and 16 of this document.

In all the above instances, decision of the assigned individual performing the quality assurance function is controlling, subject only to appeal by the line organization through their management and to the cognizant quality function management. In any case, personnel performing quality assurance and quality control functions have the authority to identify quality problems and initiate action leading to their solution.

Resolution of disputes which are not resolved at lower levels is as follows:

The final authority on project quality program matters rests with the Project Quality Assurance Manager, subject only to appeal by the Project Manager to the Manager of Division Quality Assurance.

The final authority on division quality program matters rests with the Manager of Division Quality Assurance. The final authority on BPC quality policy rests with the BPC - Manager of Quality Assurance. In either case, the authority is subject only to appeal to the Division Vice President and General Manager and the President of Bechtel Power Corporation, respectively.

## 2.7 PROGRAM EVALUATION

The following reports and activities provide information to the BPC-Manager of Quality Assurance, from which he prepares a report to the President of Bechtel Power Corporation evaluating the adequacy of the quality assurance program:

1. Quarterly reports by the Manager of Division Quality Assurance, the Manager of Procurement Supplier Quality, and the Manager of Materials and Quality Services (including their summary of quality problems and audits)

2. The results of Managers of Division Quality Assurance quality program coordination meetings, conducted at least semiannually
3. Audits or reviews of quality activities in the Divisions and support services as directed by the BPC-Manager of Quality Assurance

The above-listed reports and activities are also used to recommend action on the part of the Manager of Division Quality Assurance, develop new policies, or other action as deemed appropriate by the BPC-Manager of Quality Assurance.

## 2.8 MANAGEMENT REVIEW

Management reviews of the status and adequacy of this quality assurance program are accomplished through periodic reports and presentations by Quality Assurance Management personnel to their respective managers, and through reviews of quality assurance management audit reports. Meetings are held on a regular basis at both BPC and division management level. Meeting at the BPC level are coordinated by the office of the BPC Manager of Quality Assurance, and the division level meetings are conducted by the Manager of Division Quality Assurance.

The Western Power Division Quality Assurance Program, including support service organization Quality assurance Programs, are reviewed annually by individuals outside the quality assurance function. These reviews are performed by management above or outside the QA organization for BPC and Division Management. The results of these reviews are documented and submitted to division and corporate management.

Management reports contain summary data on the status of outstanding audit and corrective action items and identify the status of other significant quality program activities which may include items such as training and qualification programs; development of standard procedures, work plans, and other documents; status of industry standards; and other external issues of interest. These reports and discussions combined with other reports on overall division performance are used by BPC and division management above the level of Manager of Division Quality Assurance to assess the scope, implementation, and adequacy of the STPEGS quality assurance program.

The status of the STPEGS quality assurance program is reported regularly to cognizant management by the Project Quality Assurance Manager. These reports identify quality problems and summarize results of project quality assurance activities. Project quality program status also is identified and evaluated through management audit reports which are conducted in accordance with the provisions of Western Power Division Quality Assurance Department Procedures. Audit reports are reviewed by cognizant quality assurance management and copies are submitted to division management and cognizant department management. The Manager of Division Quality Assurance is responsible for monitoring these reports and other information received from STPEGS such as 50.55(e) reports and Part 21 reports, and for summarizing this information in reports to division management and the BPC-Manager of Quality Assurance. The Project Quality Assurance Manager's report of STPEGS includes review and evaluation of reports of HL&P and NRC audits and reviews.

## 2.9 PREOPERATIONAL TESTING AND STARTUP

The quality program described in this report covers design, procurement, and construction activities. HL&P is responsible for the quality program during the preoperation testing and startup phase. As defined in the scope of work for STPEGS, Bechtel, in conjunction with HL&P, performs advance planning for control of managerial and technical interfaces between Bechtel, HL&P, Westinghouse Electric Corp. (NSSS Supplier), and other contractors during preoperational testing and startup.

## SECTION 3

### DESIGN CONTROL

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

Design criteria are assembled by the project during the initial stages of design. These criteria include the criteria contained in safety analysis reports and other STPEGS requirements. The design criteria are maintained current and serve as a basis for preparation of the final design.

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

Essentially all engineering documents are prepared by project personnel and include drawings, specifications, design analyses, system descriptions, and technical reports. They are verified or checked in accordance with Engineering Department Procedures. Project Group Supervisors (Figure 10) are responsible for all engineering work performed within their discipline and for approval of engineering documents prepared within their groups. Procedures and instructions for verification and checking of drawings, calculations, and specifications are included in the procedures governing the preparation of these documents or in separate procedures or instructions. These procedures identify the positions responsible for verification or checking and require that design errors are identified and followed up through correction. Verifiers and checkers on the project are required to verify the incorporation of required corrections. Documents cannot be released without verification or checking.

When design verification or checking is accomplished by an individual, it is performed by a person other than the originator or the immediate supervisor of the originator, who has adequate qualifications to have originated the work. If, in an exceptional circumstance, the originator's 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 ANSI N45.2.11-1974, as endorsed by Regulatory Guide 1.64, Rev. 2, 6/76, as interpreted by the positions contained in Appendix A of this document, 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.

Design work, including verification or checking, of specialist external to the project, such as M&QS, Geotechnical, Hydraulics, and Stress is performed in accordance with project procedures or specialist group procedures meeting the requirements of this document. Such work must be reviewed and accepted by responsible project personnel for applicability to STPEGS.

Key design documents for systems and structures important to safety are subject to design verification, which may be accomplished by:

- a. Critical design reviews, either individual or interdisciplinary
- b. Alternate calculations, or
- c. Qualification testing

Design verification is performed for the following key documents: system descriptions, flow diagrams, piping and instrument diagrams, control logic diagrams, electrical single-line diagrams, structural systems for major facilities, site arrangement, and equipment location drawings. Specifications, calculations, and computer programs in support of the key documents are verified. Documentation of the design verification is provided by a design verification report signed by the appropriate individual.

When design verification is accomplished by an interdisciplinary design review, the review team will be composed of individuals knowledgeable of the type of system or structure and the requirements thereof. They may or may not have participated indirectly in the design of that particular system or structure. An individual who has participated directly in the design shall not be responsible for the independent design verification of this discipline.

The above description of design verification of key design documents satisfies the requirements specified by ANSI N45.2.11-1974, as endorsed by Regulatory Guide 1.64, Rev. 2, 6/76, as interpreted by the positions contained in Appendix A of this document.

Design documents other than key design documents, identified above, shall be checked for technical correctness and conformance to design input requirements.

Engineering Department Procedures establish the extent of checking, the duties of the checker, and the extent of his responsibility for which he attests with his signature or initials. The signature or initials of the checker and date affixed on the design document in accordance with the Engineering Department Procedure satisfies the requirements specified by ANSI N45.2.11-1974, as endorsed by Regulatory Guide 1.64, Rev. 2, 6/76, as interpreted by the positions contained in Appendix A of this document. Traceability of characteristic signatures and initials to the individual will be provided.

BPC designated Chief Engineers coordinate and assist in the preparation of certain generic "standard" and "guide" documents. Standard documents include design standards, standard details, standard specifications, and technical topical reports. Guide documents include design guides, guide key documents, and guide specifications. Generic "standard" and "guide" documents which are pre-engineered to a level suitable for STPEGS adoption are subject to checking, review, and design verification as described in this Section. Standard or guide documents which have been qualified by a design verification need only be verified by STPEGS for their applicability to project requirements. The acceptability of any significant changes to the qualified standard document must also be verified and documented.

As a matter of policy, Bechtel uses accepted industrial standards, specifications, and materials. Prototype testing is encouraged for equipment suppliers whose components have not previously demonstrated adequate performance. Prototype testing is not normally applicable to STPEGS design work; however, selected design details may be verified by test. When prototype testing is used for design verification, the test requirements are specified by Bechtel.

Design changes, including field changes, are subjected to design control measures commensurate to those applied to the original design. Checking and review of design changes are performed by the Project Engineering team to the same level as that of the original design. Changes to design requirements or completed designs produced by Project Engineering, which may be proposed by suppliers, contractors, or Bechtel construction, must be reviewed and accepted by Project Engineering.

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.

In all cases, approval of the proposed design change by project engineering is required prior to fuel load for STPEGS.

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.

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

All procurement actions for Q-List items and services, including off-the-shelf items and bulk commodities, whether performed by design office or field procurement groups, employ technical and quality requirements established by project engineering.

Project engineering prepares (or provides) the technical and quality requirements appearing in procurement documents. These activities are governed by the same policies and procedures as those applied to design documents. Engineering and procurement department procedures delineate the sequence of quality-related action to be accomplished in preparation, review, approval, and control of procurement documents and changes thereto.

Project engineering is responsible for assuring that applicable regulatory requirements, design bases, supplier quality assurance program requirements, and other requirements which are necessary to obtain and verify quality are included or referenced in the procurement documents.

Specifications for suppliers and contractors are prepared by the project engineering team based on the project quality program requirements and generic or guide specifications. Project safety-related specifications are reviewed for appropriate quality program requirements by Project Quality Assurance.

Procurement documents include specific technical specifications for the equipment and services to be furnished which define specific codes, standards, tests, inspections, and records to be applied or furnished. The procurement documents also include quality assurance requirements either in separate specifications which define requirements for the supplier's quality assurance program or by incorporating appropriate requirements in the technical specifications and associated documents. Quality programs may be specified by invoking the appropriate sections and elements of ANSI N45.2-1971, as endorsed by Regulatory Guide 1.28, Rev. 0. 6/72, appropriate supplementary ANSI Quality Assurance Standards, and the ASME Boiler and Pressure Vessel Code, as applicable, or by incorporating requirements equivalent to those of these standards. The procurement documents also establish provisions for surveillance, inspection, and audits (including access to the supplier's and subsupplier's facilities and records for audit), provide for extension of the applicable requirements to subtier procurements, include provisions for control and approval of supplier nonconformances, and establish requirements for preparation and delivery of documentation. Specific requirements for documents which must be submitted for review, approval, and/or verification are provided.

Engineering Department Procedures provide for establishing quality assurance requirements in procurement documents. Technical quality requirements are reviewed by technical personnel. Programmatic aspects are reviewed by Quality Assurance as described above, and the review also assures that the document was prepared, reviewed, and approved in accordance with the approved procedures. Procurement documents normally contain general acceptance criteria. These are reviewed by suppliers, contractors, or Bechtel Quality Control upon receipt of the documents to verify and supplement acceptance criteria.

Evidence of review and approval of procurement documents is available for verification.

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

The documented instructions and procedures governing this program are identified in Section 2.

Procedures and manuals governing the activities of organizations and groups performing quality-related functions include procedures for the preparation and review of instructions, procedures, and drawings.

Documented instructions from Project Engineering to Construction, contractors, and suppliers is in the form of engineering specifications and addenda or change notices thereto, drawings, and drawing change notices. These documents contain, reference, or require procedures and instructions, as appropriate, and provide necessary acceptance criteria. When approved by Project Engineering, these documents are released for construction work.

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

Procedures for construction activities are contained in the project procedure manual. These procedures describe, define, or specify administrative and functional requirements for performing construction activities. Procedures of this nature include training of personnel; jobsite housekeeping; storage, maintenance, and handling of items; document control; changes to design documents; reviewing supplier engineering documents; and field requisitioning of items and services, as applicable to the scope of work.

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.

The requirements, procedures, and instructions for the Quality Control activities are contained in the Project Procedures Manual. The elements of this manual include qualifications, indoctrination, certification, and training; inspection, examination, and test control; control of nonconforming items; field procurement control; control of measuring and test equipment; documentation and records control; final inspection and turnover; and constructor and contractor control.

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

## SECTION 6

### DOCUMENT CONTROL

The program documents identified in Section 2 provide means for document control. These include procedures providing Engineering, Procurement Supplier Quality, and Construction controls for the review, approval, and release of documents and changes thereto.

Documents pertaining to quality-related items, as identified in this paragraph, are required to be controlled. The documents listed in Table I are on controlled distribution. Instructions, procedures, specifications, drawings, procurement documents, quality plans, design calculations, design criteria, field change requests, safety analysis reports, and inspection test procedures are identified by control registers or index lists. Nonconformance reports, audit finding reports, supplier deviation disposition request, standard deficiency reports, documentary evidence of design reviews, memoranda, and correspondence are identified by logs which provide for traceability of closeout action.

Document control centers for STPEGS are set up in the Design Office and the jobsite. Controlled documents are released, received, controlled, and distributed through these centers.

Engineering Department procedures prescribe the requirements for preparation, control, and distribution of design documents. Approved drawings and specifications prepared by Project Engineering are issued to organizations and individuals responsible for performing the work and to those responsible for inspection\*. Control registers, issued periodically, identify the drawings, specifications, and other design output documents and their current status.

Transmittal forms are employed to forward drawings and specifications and require that signed receipts be returned from the addressee or by controlled entry of the acknowledgement into the computerized data base.

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.

Supplier-submitted documents, such as drawings, specifications, procedures, manuals, and other data, are controlled through the use of control logs which provide identification and status of supplier documents. Transmittal forms are used to return and show approval status of evaluated supplier documents.

Bechtel Procurement Supplier Quality Representatives are informed as to the current status of supplier documents, and copies of applicable supplier documents are formally transmitted to the construction site with provision for receipt acknowledgement.

\* Bechtel Procurement Supplier Quality Representatives receive copies of the transmittal notices listing the documents and their approval status but normally do not receive copies of the documents. These are available at the supplier's plant for the Supplier Quality Representative.

The project construction organization at the jobsite employs standard prescribed procedures for control of the distribution of approved drawings, specifications, and other documents. These procedures include provisions for field receipt, review and distribution of approved documents, and for appropriate marking or destruction of obsolete documents.

Approved changes are promptly included in governing documents or controlled change notices provided for interim revision. Changes may not be implemented without appropriate documented approvals. When a specified number of change notices have been issued or after a designated period of time, change notices must be incorporated in the governing document.

Controls to ensure that work activities are conducted in accordance with the necessary procedures or other documents take several forms. These controls include the following:

1. Procurement documents
2. Appropriate department or group manuals and procedures
3. Engineering compliance monitored by Quality Assurance
4. Supplier compliance monitored by Procurement Supplier Quality
5. Construction compliance monitored by Quality Control and Quality Assurance

The Bechtel surveillance inspection program includes procedures governing the initial inspection visit which are designed to identify necessary documentation and verify that the controls are in place for preparation and approval of procedures prior to performance of work governed by the procedure. Construction inspection planning includes identification of documents required, and these must be available for use prior to performing inspections governed by the procedure.

Control of documents in the design office and at the jobsite are regularly audited by Quality Assurance personnel. In addition, Quality Control assures that construction work is performed in accordance with current approved design documents as an integral part of their quality verification inspection program.

## SECTION 7

### CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

#### 7.1 SUPPLIER EVALUATION AND SELECTION

Files of suppliers and contractors are maintained by Procurement. These files identify suppliers and contractors who have demonstrated their ability to provide quality material, equipment, or services, or who have been established as capable by survey. Suppliers' and contractors' quality history files contain information on scope of services and capability, and results of recent shop surveys and audits. Periodic reports identifying data contained in quality history files are issued by Procurement Supplier Quality to interested groups within the divisions.

The Materials and Quality Services Department reviews welding and nondestructive examination procedures for work involving compliance with the ASME Boiler and Pressure Vessel Code and for fabrication of metal structures and protective coating procedures. Materials and Quality Services reviews and evaluates these documents and provides Procurement with information for summary listings of the approved vendor information on file. This information is available to STPEGS for assistance in identification and evaluation of qualified sources.

Procurement Supplier Quality Department procedures include provisions for source surveys which may be used to supplement data in a supplier's quality history file. Requests for source survey are initiated by Purchasing or Engineering in cases where inadequate historical data is available to evaluate the supplier's capability to produce the commodity.

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

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

In some instances it may be necessary to place a contract without fully satisfying these criteria. For these cases, the criteria shall be met prior to start of related work activities.

The quality program evaluation may be achieved by review of controlled program manuals previously submitted and evaluated by responsible Bechtel personnel; manuals and procedures submitted to Bechtel, or made available for Bechtel review in the bidders' facilities in connection with the specific procurement; or an evaluation of performance on previous Bechtel procurements.

In addition, supplier program evaluation may be based on review of the supplier's quality history, source survey results, or analysis of bid for responsiveness to quality program requirements contained in the procurement documents.

For work covered entirely by ASME Boiler and Pressure Vessel Code, Section III requirements, possession of the appropriate Certificate of Authorization constitutes an acceptable minimum requirement for bidder qualification. When an award is made, appropriate sections of 10 CFR 50 Appendix B, shall apply.

Evaluation of suppliers of standard off-the-shelf items which are produced to a manufacturer's standard quality program is based on published data (catalogues, etc.) for conformance to engineering requirements and the use of historical quality performance data and source surveys.

## 7.2 PROCUREMENT SURVEILLANCE

For purchased items, the primary responsibility for quality rests with the supplier. Technical control of supplier work is provided by Project Engineering through review of specified supplier documents, including drawings and procedures. Engineering is also responsible for providing or accepting supplier-proposed resolutions to discrepancies encountered. Inspection of supplier's work is the responsibility of supplier's inspection department. Bechtel Procurement Supplier Quality Representatives perform surveillance inspection of supplier's work which may include specific measurements and examinations performed by the Supplier Quality Representative but generally includes monitoring and witnessing of inspections and tests performed by the supplier's quality control organization. Bechtel Supplier Quality Representatives frequently spot-check the dimensions, surface finish, and protective coatings, visually examine welds, review test reports and radiographs, and other details.

Project Engineering identifies procurements (both design office and field) requiring source surveillance inspection and audit. Procurement may recommend additional items. Manufactured or fabricated Q-List items, such as vessels, heat exchangers, pumps, piping subassemblies, valves, electrical panels, etc., are included in surveillance inspection and audit programs. Items which are typically excluded from the surveillance inspection program include standard off-the-shelf items and bulk commodities where required quality can be adequately determined by receipt inspection or post-installation checkout or test. Also excluded are materials where important physical and chemical properties are independently verified on samples taken at the supplier's facilities or at the jobsite.

For Q-List items, Bechtel Procurement Supplier Quality Representatives perform their surveillances in accordance with quality plans and instructions. These plans are prepared by Procurement Supplier Quality based on instructions in the Procurement Supplier Quality Department Manual and may be modified by Project Engineering. They provide for identification of witness and hold points, identification of the examinations and tests which are selected to be witnessed by the Bechtel Supplier Quality Representative, and documentary evidence of completion of each witness and hold point operation, test, or examination. A supplier may not proceed with the work beyond a hold point without written agreement of waiver of hold points from Procurement Supplier Quality based on agreement from Project Engineering and the PQAE.

It is the responsibility of the Supplier Quality Representative to verify, to the extent required by his quality plan, that the supplier has met the quality requirements contained in the procurement documents before the material or equipment is released for shipment. This responsibility of the Supplier Quality Representatives is met through surveillance, which includes observations and checks at random of selected intervals (or points) of materials of construction, in-process fabrication, heat treatment, welding, examination, testing, dimensions, preparation for shipment, marking, tagging, and quality verification. Bechtel Supplier Quality Representatives do not perform nondestructive examinations or tests on material and equipment at suppliers' plants. Such examinations and tests are performed by the supplier and selectively witnessed or otherwise monitored by the Supplier Quality Representative.

Typical quality plans have sections that describe the scope and define application, establish responsibilities, describe preplanning activities to be performed prior to making initial contacts with a supplier, describe the activities to be performed during the initial, progressive, and final surveillance visits, and describe reporting requirements.

Procurement surveillance may be performed by resident or area Supplier Quality Representatives assigned to several suppliers. Reports documenting surveillances performed, tests witnessed, and discrepancies observed are prepared by the Supplier Quality Representative and distributed in accordance with project procedures. Bechtel Supplier Quality Representatives are responsible for assuring that their surveillances of material, equipment, and specified documentation conform to the requirements of the quality plan and/or instructions and for releasing inspected items for shipment. Bechtel Supplier Quality Representatives have the authority to refuse release of nonconforming material.

Consistent with the complexity of the surveillance assignment, the Supplier Quality Representative will review with the supplier the requirements of the applicable quality plan. During the initial visit, the Supplier Quality Representative will discuss the following:

1. The quality requirements of the procurement documents
2. The applicable requirements of the governing codes and standards
3. The requirements for Bechtel Engineering approvals
4. The requirements for Bechtel surveillance at principal subsupplier plants
5. The requirements for qualification of welders, nondestructive examination personnel, and inspection, examination, and testing personnel
6. The requirements for Bechtel Supplier Quality witness and hold points, including release for shipment
7. The requirements for complete and accurate supplier quality verification documentation prior to release for shipment
8. The supplier's responsibilities for the quality of subtier items

In addition, the Supplier Quality Representative will establish witness and hold points in accordance with the guidelines established by the applicable quality plans and procurement documents. During the course of progressive surveillance, the Supplier Quality Representative has the prerogative to make other surveillances and witness other examinations and tests necessary to determine the supplier's compliance with the requirements of the procurement documents.

Surveillance of jobsite contractors is the responsibility of Quality Control utilizing Quality Control Instructions and Inspection Records provided by procedures contained in the Project Procedures Manual.

The Constructor at STPEGS is responsible for monitoring the effectiveness of his inspection program.

### 7.3 RECEIVING INSPECTION

Receiving inspection practices conform to the requirements of ANSI N45.2.2-1972 as endorsed by Regulatory Guide 1.38, Rev. 0, 3/73, as interpreted by the positions contained in Appendix A of this document. These are performed in accordance with Quality Control Instructions by Quality Control personnel.

Documentary evidence that the item conforms to procurement documents, required to be available at the jobsite prior to installation, or use as a conforming item, includes as follows:

1. For Bechtel procured\* and inspected items not covered by ASME Boiler and Pressure Vessel Code requirements, a certificate of conformance\*\* (signed by an authorized representative of the supplier identifying the specific technical requirements met by the item by referencing the appropriate Bechtel specification and other governing codes and standards) and acknowledgement that the Bechtel Procurement Supplier Quality Representative has reviewed the required documentation and has released the item. This may be obtained by having the certificate signed by the Bechtel Supplier Quality Representative to verify that he has reviewed applicable supplier documentation supporting the certificate and released the items, or by receipt of a separate teletype or report from the Supplier Quality Representative indicating that his inspection is complete and the item has been released. Receipt of the certificate of conformance and the Bechtel Procurement Supplier Quality Representative release constitutes documentary evidence that materials and equipment conform to procurement requirements and may be installed. If the balance of the documentation package required by the procurement documents is received prior to or with the shipment, the certificate of conformance may be waived.

\* Also applies to cases of Bechtel client (applicant) procured items for which Bechtel is acting as agent for the client.

\*\* The certificate of conformance conforms to ANSI N45.2.13-1976, as endorsed by Regulatory Guide 1.123, Rev. 0, 10/76, as interpreted by the positions contained in Appendix A of this document.

2. For Bechtel procured and inspected items covered by ASME Boiler and Pressure Vessel Code requirements, the same requirements prevail as above, plus the appropriate Code Data Report.
3. For Bechtel procured and noninspected items, all quality verification documentation required to be submitted with the procurement documents must be reviewed and verified (as a part of receiving inspection) at the jobsite by Quality Control personnel or Procurement Supplier Quality personnel.
4. For nuclear steam supply system supplier furnished items, appropriate certification from the NSSS supplier in accordance with his quality program
5. For cases when procurement documents do not require the supplier to furnish quality verification documentation, satisfactory receiving inspection results constitute the necessary documentary evidence that items conform to procurement documents.

Standard off-the-shelf items are visually inspected for identification and condition at receipt.

Complete quality verification record packages are requested for delivery prior to, or with, the shipment. Documented control measures, with provisions for follow-up, are provided to expedite receipt of quality verification packages which are delayed beyond the time of shipment. Completed quality verification records packages received at the construction site are checked for completeness and traceability by quality control personnel or Procurement Supplier Quality personnel and audited by Quality Assurance. Project Engineering may elect to have selected quality verification documentation delivered to the design office for review by so specifying in procurement documents.

#### 7.4 SUPPLIER AUDITS

The supplier control program provides for periodic audits of selected suppliers' quality assurance programs as described in section 18. Design contractor and consulting program work is monitored by Project Engineering.

## SECTION 8

### IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Identification requirements are determined during the generation of specifications and design drawings. Procurement documents provide the requirements for identification of purchased items.

Parts, components, subassemblies and equipment, and partially fabricated items may be identified by stenciled or etched markings, strip marking, imprinted tape, color coding, and tags. Large quantities of small items, unless specifically required by code or standard, may be identified as to heat, batch, lot, or specification by applying markings to bags, bins, tanks, or other suitable containers. Identification of installed or assembled items requiring traceability may be transferred to inspection records or as-built documents if desired and is required if markings are hidden or subject to obliteration during fabrication or installation.

Organizations receiving materials, parts, or components verify that these are properly identified and are accompanied by appropriate documentation. Provisions are made for handling and storing items to retain identification and to prevent intermixing.

## SECTION 9

### CONTROL OF SPECIAL PROCESSES

The requirements of the ASME Boiler and Pressure Vessel Code are invoked, as applicable, in the Bechtel program. Special processes requiring procedure and/or personnel qualification beyond those required by the code are identified in technical specifications by reference to appropriate industry codes and standards, where available, or by specific identification in the technical specification. Supplier and contractor special process qualification data are subject to review by Bechtel.

Special processes performed in the construction of STPEGS, including welding, nondestructive examination, protective coating, cleaning and flushing, are imposed on the constructor by applicable specifications. The requirements for welding and nondestructive examination comply with applicable portions of the ASME Boiler and Pressure Vessel code, American Welding Society Standards, and the Society of Nondestructive Testing (SNT-TC-1A-80 and supplements), as applicable. Cleaning and flushing procedures and personnel qualifications conform to the requirements of ANSI N45.2.1-1973, as endorsed by Regulatory Guide 1.37, Rev. 0, 3/73, as interpreted by the positions contained in Appendix A of this document.

Other unique special processes or work operations identified by Westinghouse Electric Corp., the nuclear steam system supplier or Project Engineering are properly qualified and performed by trained personnel in accordance with specified technical requirements.

Current qualification records of procedures, equipment, and personnel are maintained at the jobsite. Active files are maintained in the design office, and copies of qualification records covering special processes and procedures are provided to the jobsite. STPEGS maintains up-to-date lists of personnel qualifications and/or applicable equipment qualifications for special processes. Controls are provided to assure that personnel qualification records are regularly reviewed, and the appropriate requirements for requalification are implemented. Implementation of these controls is verified by Quality Control personnel and audited by Quality Assurance with the assistance of Materials and Quality Services.

## SECTION 10

### INSPECTION

As described in Section 7, suppliers' and contractors' programs are subject to surveillance by Bechtel Procurement Supplier Quality Representatives and Quality Control Engineers as applicable.

The responsibilities for inspection of Bechtel construction work are identified in Sections 1 and 2. Quality verification inspection, witness of testing activities, and evaluation of test results are performed by Quality Control personnel who are independent of site engineering and craft supervision. Quality Control Engineers receive administrative and technical direction from the Project Quality Control Engineer. The overall inspection program is monitored by resident construction site Quality Assurance personnel and audited by Division Quality Assurance.

Inspection, witness of testing activities, and evaluation of test results are performed in accordance with procedures contained in the Project Procedures Manual supplemented by construction quality control instructions, or work operations and planning documents. Inspection planning includes receiving inspection, construction and installation inspection, and testing.

Quality control instruction and inspection records are prepared to cover onsite receiving, maintenance, installation, testing, and contracted work activities performed during the construction phase. These are the controlling documents used by Quality Control Engineers for performance of onsite quality verification activities. These identify what inspections are required, the inspection acceptance/rejection criteria, how and by whom the inspections are to be performed, and the sequence. They are available prior to inspection.

Inspection and acceptance criteria are derived from engineering design documents, supplier information, and construction procedures. Standard inspection instructions to be used on STPIGS are approved by the Project Quality Control Engineer.

In addition, all work covered by the ASME Boiler and Pressure Vessel Code, Section III, is also subject to independent inspection by authorized Code Inspectors in accordance with the Code rules.

Inspection procedures or instructions and records provide the following information:

1. Reference to applicable documents such as drawings, specifications, and procedures
2. Identification of prerequisites and special process control requirements, such as personnel, procedure, or equipment qualification

3. Identification of characteristics to be inspected
4. Individuals or groups responsible for performing the inspection
5. Acceptance criteria (explicit or by reference) obtained from specifications, drawings, supplier instructions, and construction standards
6. A description of the method of inspection and equipment to be used or reference to an appropriate procedure
7. Identification of frequency of inspection or sampling plan
8. Record of results of the inspection, including any special documentation, and sign-off by the inspector
9. Verification that all inspection operations are complete and acceptable

The personnel qualification procedures include provisions to maintain and periodically review records of inspectors' qualifications to ensure that they are kept current.

Inspections of modifications, repairs, and replacements are performed either in accordance with the original inspection procedure, instruction or plan, or special procedures or plans appropriate to the work activity.

## SECTION 11

### TEST CONTROL

Tests required to qualify, demonstrate, or assure quality of procured items or completed construction are defined in engineering drawings, specifications, or test procedures.

Construction tests are an extension of construction inspection. Construction testing is conducted to demonstrate that the equipment installation is complete and that the electrical systems are properly wired. Test plans or procedures, and test reports and records are used to demonstrate that completed tests have met test objectives.

System cleaning, flushing, inspection and control settings, and performance demonstration are part of the preoperational and startup test program. Preoperational and startup tests are under the control of HL&P. Bechtel startup engineers may provide assistance to HL&P in the preparation of startup procedures and supervision of startup tests. Bechtel startup engineers are independent of the construction and HL&P's operating organization and are qualified to collect, analyze, and evaluate test results in accordance with the requirements of ANSI N45.2-1971, as endorsed by Regulatory Guide 1.28, Rev. 0, 6/72.

## SECTION 12

### CONTROL OF MEASURING AND TEST EQUIPMENT

The Bechtel Quality Control Program provides for calibration, maintenance, and control of measuring and test equipment used in construction. Procedures provide for unique identification of each instrument or equipment item requiring calibration or checking, establishment of calibration schedules based upon the elapsed time or usage cycles, and provisions for identification of calibration status by tags, labels, or markings applied to the item. Records are maintained to show the status of items under the calibration program.

Inspection procedures require that the inspector check calibration labels or tags as well as apparent proper functioning of the instrument prior to use to assure that the calibration period has not lapsed and the equipment is in proper working order.

The identification of measuring and test equipment used in performing tests is entered in the test records when the validity of the test result is critically dependent on the accuracy of the test equipment.

Calibration standards are traceable to nationally recognized standards, or the basis for calibration is properly documented. Calibration standards have an uncertainty (error) requirement of no more than 1/4 of the tolerance of the intended use of the equipment being calibrated. A greater uncertainty (error) is acceptable when limited by the state of the art.

Provisions for contractor's control of measuring and test equipment are included in procurement documents by specifying ANSI N45.2-1971, Section 13. The Bechtel surveillance inspection program of contractor's activities includes review of this element in the contractor's program. Contractors are required to apply practices similar to those described for the Bechtel program.

Performance and adequacy of supplier, constructor, contractor, and Bechtel construction programs for control of measuring and test equipment are verified by surveys or audits performed by Bechtel Procurement Supplier Quality, Quality Control, or Quality Assurance personnel, as applicable.

## SECTION 13

### HANDLING, STORAGE AND SHIPPING

The requirements for packaging, marking, and shipping are specified in procurement documents for Q-List items by reference to ANSI N45.2.2-1972 or by provision of specific technical requirements which meet the intent of this standard.

Procedures for equipment and system cleaning and flushing and cleanliness control conform to the appropriate requirements of ANSI N45.2.1-1973 as endorsed by Regulatory Guide 1.37, Rev. 0, 3/73, as interpreted by the positions contained in Appendix A of this document.

For supplier, constructor, or contractor work, special handling, storage, shipping, and preservation requirements are identified in technical specifications which either provide, or require the vendor or contractor to provide, the required procedures and instructions. The packaging, handling, and shipping practices of the suppliers are subject to review by Bechtel Procurement Supplier Quality Representatives at the source prior to shipment for compliance with requirements defined in procurement documents.

At the construction site, materials and equipment are received, inspected, stored, and maintained in accordance with standard field procedures supplemented by special procedures and requirements issued by project engineering or furnished by suppliers. Materials and equipment are physically inspected upon arrival at the jobsite and moved into prescribed storage areas or to the installation site if adequate protection is available. Immediate movement to the installation site is permitted if it would eliminate multiple handling and is compatible with the construction schedule. Special environmental conditions, such as inert gas, specific moisture content levels, and temperature levels prescribed in procedures or specifications, are controlled at the site.

Procedures are provided, as appropriate, for handling special items and for the care and maintenance of material handling equipment. Otherwise, standard material handling methods are used to ensure care and protection against physical damage. Special handling instructions and procedures for major or special items are included in procedures reviewed by Project Engineering or Bechtel construction specialists. Personnel responsible for handling these major or special items will be qualified to the extent required by these special handling instructions and procedures. Preparation for and performance of rigging operations involving major equipment, such as reactor vessels, steam generators, and pressurizers, are witnessed by Bechtel construction rigging specialists.

## SECTION 14

### INSPECTION, TEST, AND OPERATING STATUS

Construction procedures and inspection instructions provide for identification of inspection status of receipt inspection or work-in-process by using work sequence plans, inspection records, physical locations, tags, markings, or other devices compatible with the item, system, or operation being inspected or tested. Progress of work is entered in records, and status identification is changed to reflect current conditions. At the completion of construction, a tagging system is employed to visually indicate the operating status of equipment and systems which are in test or rework. Records of test results are prepared and maintained.

Work is performed according to prescribed sequences required to assure quality, and in accordance with the provisions contained in this report. Inspection points may be deferred or waived without generation of a nonconformance report only when specifically provided for in the governing procedure. Inspection points can be deferred only when the element can be inspected at a later time in the sequence and a later hold point exists. In these cases, the inspection records or checklists are not completed until the inspection point is picked up at a later date. If physical control of the item is required to prevent its inadvertent use or installation beyond the point where the inspection can be performed, the item is tagged or otherwise identified and conditionally released with a limit placed on future work operations.

Procedures or instructions include identification of the individuals or groups responsible for application and removal of status indicators.

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

Suppliers and contractors are required to advise Bechtel of all nonconformance from procurement documents or Bechtel-approved designs for which the recommended disposition is "repair" or "use as is." Bechtel reserves the right to accept or reject the disposition. Bechtel requires suppliers to submit proposed repair procedures for major nonconformances for approval by project engineering prior to their use. Reports of nonconformances identified by Bechtel personnel are prepared by the supplier, Bechtel Procurement Supplier Quality Representatives, or Project Engineering to assure complete and adequate documentation. Copies of completed nonconformance reports are forwarded to the jobsite prior to, or with, the release of the item; or identification of outstanding nonconformances are included in the Supplier Quality Representative's release.

Nonconformances discovered during Bechtel receiving inspection or construction activities are controlled and documented in accordance with a standard Quality Control procedure. The procedure provides for identification and documentation of the nonconformance and control of the item, identifies the authority for approval of proposed resolution, and provides for documentation of reinspection results. Important elements of the procedure include requirements to:

1. Tag and segregate whenever practical.
2. Determine interim disposition by field organizations.
3. Have Project Engineering approve dispositions.
4. Provide conditional release of nonconforming items upon approval of Quality Assurance.
5. Review completed nonconformance reports by Quality Assurance to establish need for corrective action. Repetitive nonconformances are reported to higher levels of management for review and resolution on a generic basis.

The authority for disposition of nonconforming items follows the rules for approval of design changes described in Section 3 of this document. 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.

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 program also provides for the participation of the ASME Authorized Inspector for nonconformance dispositions on Code covered items.

## SECTION 16

### CORRECTIVE ACTION

The corrective action program provides procedures for prompt identification and correction of conditions adverse to quality which may require corrective action. Corrective action, when initiated, shall be documented. A decision that corrective action is not required need not be documented.

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

Corrective action involving design documents, investigation of cause, and actions taken to preclude recurrence is applied to errors detected after the design document is issued for use. Such errors, detected after the design document is issued for use, are formally documented and are reviewed for corrective action. These are documented by design change notices, revision block entries, or reports, such as supplier discrepancy reports, field nonconformance reports, startup reports, or feedback from utilities during operation of the plant. Significant problems are also reviewed for programmatic corrective action by Quality Assurance.

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

## SECTION 17

### QUALITY ASSURANCE RECORDS

The requirements of ANSI N45.2-1971, as endorsed by Regulatory Guide 1.28, Rev. 0, 6/72 are applied to Bechtel activities. Records produced as a result of the quality program are prepared and maintained by project groups, suppliers, and contractors as their work is being performed.

Project engineering records are retained by the project engineering team as work is performed. It is normal practice to microfilm documents at regular intervals, unless duplicate copies are available at an alternate location. Provisions for collection of completed records in the design office, or at the jobsite, and the criteria for storage and retention recommended in ANSI N45.2.9-1974, as endorsed by Regulatory Guide 1.88, Rev. 2, 10/76, as interpreted by the positions contained in Appendix A are applied to quality records.

Documentation of the design review process is prepared and maintained in accordance with Section 3 of this document. Design changes may be issued on an interim basis by means of change notices. However, these are ultimately incorporated in revisions to the governing documents, unless the change is a limited waiver (e.g., "use as is" on a nonconformance report) which does not generally apply to the design document. Copies of released drawings, specifications, technical reports, and similar documents are placed in Engineering office files, Construction office files, and submitted to HL&P. At the completion of engineering, final copies of these records are provided to HL&P. Bechtel Engineering retains control of design calculations and analyses. These are available for review by HL&P and appropriate regulatory bodies.

Supplier records which identify as-built status and verify quality of the work are requested from the supplier and placed in construction site quality record files. In some instances, with the agreement of Bechtel and HL&P, suppliers are permitted to retain custody of certain records if retention procedures and storage facilities are adequate and access is provided to HL&P.

Completed quality verification records, including nonconformance reports for "repair" and "use as is" dispositions, are placed in quality record files. HL&P and appropriate regulatory groups are provided access to these files while they remain in Bechtel custody. At the completion of the Bechtel assignment, these files are turned over to HL&P.

The requirements and guidelines for receipt, control, and retention of permanent quality assurance records contained in ANSI N45.2.9-1974, as endorsed by Regulatory Guide 1.88, Rev. 2, 10/76, as interpreted by the positions contained in Appendix A of this document and ASME Boiler and Pressure Vessel Code, Section III, are employed for the control of construction site quality record files. Identification of the records and method of turnover to HL&P are established for STPEGS through agreement between Bechtel and HL&P.

## SECTION 18

### AUDITS

A comprehensive program of audits is conducted by STPEGS covering the various project activities to assure applicable portions of the Quality Assurance Program are adequately and effectively implemented.

The STPEGS audit program includes both monitoring by Quality Assurance Personnel of daily activities conducted at the construction site or design office as well as formal periodic team audits performed by individuals independent of project activities being audited. The combination of project and division Quality Assurance management audits of Bechtel activities satisfies the requirement for annual audits of the applicable elements of the Quality Assurance program. Audit activities include the following:

1. Audits of Project Engineering activities by Quality Assurance personnel. These audits are planned, scheduled, and documented. Results are reported to the Project Engineer, Project Manager, and the immediate functional supervisor of the Design Office Project Quality Assurance Engineer.
2. Audits of field Construction activities (including contractors for Bechtel Construction Management jobs) by Quality Assurance personnel. These audits are planned, scheduled, and documented. Results are reported to the Project Manager of Construction, Project Manager, and the immediate functional supervisor of the Site Project Quality Assurance Engineer.
3. Audits of Supplier activities by the Procurement Supplier Quality Department.
4. Audits of Project Engineering, Procurement, Construction, and Quality Control activities by Quality Assurance audit teams under the direction of the Manager of Division Quality Assurance, assisted by Materials and Quality Service specialists and others as required. These audits are conducted at least annually and results are reported to the management of the function audited, cognizant project management, and division management. A summary of the results of these audits is reported by the Manager of Division Quality Assurance to the BPC-Manager of Quality Assurance.
5. Audits of division engineering technical staff and services activities performed on an annual basis under the direction of the Manager of Division Quality Assurance. These audits cover those groups doing design and/or review outside direct control of the Project Engineer. Results of these audits are reported to the manager or supervisor of the function audited and division management. A summary of the results of these audits is reported by the Manager of Division Quality Assurance to the BPC-Manager of Quality Assurance.

6. Audits of Procurement and Materials and Quality Service activities conducted annually by Quality Assurance personnel under the direction of the BPC-Manager of Quality Assurance. These audits are conducted for the benefit of all divisions, and division Quality Assurance personnel participate in the audits. Results of these audits are reported to cognizant management of the audited group, quality assurance management in each division, and the BPC-Manager of Quality Assurance.

The purpose of the audit program is to assure compliance with all aspects of the QA program. Specifically, the audit program includes:

1. Audits conducted to assure that specialists, consultants, suppliers, constructor, and contractors are following their required programs for activities affecting quality, including activities associated with site features which affect plant safety.
2. Audits of all quality-related procedures. Such procedures include essential steps in the preparation, review, and control of design output documents; preparation, review, and control of procurement documents; indoctrination and training programs; and requests for proposals and evaluation of bids.

Audit frequencies vary, depending upon the nature and importance of the activity being performed and results achieved. The preceding listing provides information on frequency of management audits. Audits of activities are initiated early enough in the project cycle to assure effective implementation of the Quality Assurance Program, typically within three to six months after the start of work on activities affecting quality, and continue at regular intervals throughout the duration of the activity.

Audit findings are documented, reviewed with supervision having responsibility in the audit area, and reported to management; management audit reports include assessment of overall program implementation and direct attention to significant problem areas.

Audit programs include provisions for identification of deficiencies, determination that corrective action is defined, and follow-up to verify that timely corrective action has been taken and is effective. Audits include selective review and evaluation of quality-related procedures, instructions, work practices, and examination of items and records. Records of audits are available to STPEGS.

## APPENDIX A

### BECHTEL POSITION ON QA NRC REGULATORY GUIDES AND ANSI STANDARDS

| Page | Title  |
|------|--|
| A-2  | Regulatory Guide 1.30, Revision 0, August 1972 (ANSI N45.2.4-1972, IEEE 336, Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations)           |
| A-3  | Regulatory Guide 1.37, Revision 0, March 1973, (ANSI N45.2.1-1973, Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants)  |
| A-4  | Regulatory Guide 1.38, Revision 0, March 1973 (ANSI N45.2.2-1972, Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants [During the Construction Phase])   |
| A-5  | Regulatory Guide 1.39, Revision 0, March 1973 (ANSI N45.2.3-1973, Housekeeping During the Construction Phase of Nuclear Power Plants)  |
| A-6  | Regulatory Guide 1.58, Revision 0, August 1973 (ANSI N45.2.6-1973, Qualifications of Nuclear Power Plant Inspection, Examination, and Testing Personnel)   |
| A-9  | Regulatory Guide 1.64, Revision 2, June 1976 (ANSI N45.2.11-1974, Quality Assurance Requirements for the Design of Nuclear Power Plants)   |
| A-11 | Regulatory Guide 1.88, Revision 2, October 1976 (ANSI N45.2.9-1974, Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants)   |
| A-12 | ANSI N45.2.5-1974, Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants  |
| A-13 | Regulatory Guide 1.116, Revision 0-R, June 1976 (ANSI N45.2.8-1975, Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants) |
| A-14 | Regulatory Guide 1.123, Revision 0, October 1976 (ANSI N45.2.13-1976, Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants)  |
| A-15 | Regulatory Guide 1.144, Revision 1, September 1980 (ANSI N45.2.12-1977, Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants)  |

Regulatory Guide 1.30, Revision 0, August 1972 (ANSI N45.2.4-1972, IEEE 336, Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations)

The requirements of the referenced standard will be applied to the Bechtel Quality Program for construction of safety-related items as interpreted in the regulatory position as modified and interpreted below.

- 1) 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.
- 2) 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.

## APPENDIX A

Regulatory Guide 1.37, Revision 0, March 1973 (ANSI N45.2.1-1973, Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants)

The requirements of the referenced standard as modified in the regulatory position will be applied to cleaning activities specified or applied by Bechtel to safety-related items as modified and interpreted below.

- 1) 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.
- 2) 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 N45.2.1-1973.
- 3) Section 3.1.2, Bechtel interprets the lighting level of 100 footcandles to be guidance. It is Bechtel'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 flashlight supplemented by other lighting as he deems necessary.

Regulatory Guide 1.38, Revision 0, March 1973 (ANSI N45.2.2-1972, Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants [During the Construction Phase])

The requirements of the referenced standard as modified and interpreted in the regulatory position will be applied to the Bechtel Quality Program during the construction phase as described in Section 13 of this report, subject to the following clarifications and as modified and interpreted below.

- 1) 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 a level C area rather than a level B.

- 2) 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."

- 3) 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.
- 4) 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.
- 5) In Section 8, the control of documentation and records shall be in accordance with Section 17 of this document.
- 6) Appendix, A3.4.2, 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.

Regulatory Guide 1.39, Revision 0, March 1973 (ANSI N45.2.3-1973, Housekeeping During the Construction Phase of Nuclear Power Plants)

The requirements of the referenced standard will be applied to the Bechtel Quality Program for construction of safety-related items except as modified or interpreted below.

- 1) 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.
- 2) 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.

## APPENDIX A

Regulatory Guide 1.58, Revision 0, dated August 1973 (ANSI N45.2.6-1973, Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel)

The requirements of the referenced standard, as modified and interpreted in the regulatory position will be applied to the Bechtel Quality Program during the construction phase as described in Section 2.5 of this document, subject to the following clarifications:

- 1) Section 3.4, "Level III Personnel Capabilities," of ANSI N45.2.6-1978 specifies the capability requirements of Level III personnel. In addition, the individual should be capable of reviewing and approving inspection, examination, and testing procedures and of evaluating the adequacy of such procedures to accomplish the inspection, examination, and test objectives.
- 2) Section 3.5, "Education and Experience-Recommendations," of ANSI N45.2.6-1978 states that the education and experience specified are recommendations and that other factors may provide reasonable assurance that a person can competently perform a particular task. The set of recommendations has been reviewed by the NRC staff and found to be acceptable with one exception. In addition to the recommendations listed under Section 3.5 for Level I, II, and III personnel, the candidate should be a high school graduate or have earned the General Education Development equivalent of a high school diploma. Since only one set of recommendations is provided for the education and experience of personnel, commitment to comply with the regulatory positions of this guide in lieu of providing an alternative to the recommendations of the standard means that the specified education and experience recommendations of the standard will be followed.
- 3) Section 4, "Performance," of ANSI N45.2.6-1978 states: "When a single inspection or test requires implementation by a team or group, personnel not meeting the requirements of this Standard may be used in data-taking assignments or in plant or equipment operation provided they are supervised or overseen by a qualified individual participating in the inspection, examination, or test." These personnel should have sufficient training to ensure an acceptable level of competence in the performance of their activities.
- 4) An important concept that is not addressed directly in ANSI N45.2.6-1978, ANST (sic) Recommended Practice No. SNT-TC-1A-1975 (sic), or the ASME Boiler and Pressure Vessel Code is that occupational radiation exposure should be maintained as low as is reasonably achievable (ALARA). In all cases where inspection, examination, and testing personnel may be exposed to radiation fields during their activities in restricted areas, these personnel should receive instruction in radiation protection and radiation-dose-reduction considerations related to work they are expected to

## APPENDIX A

perform. Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As Is Reasonably Achievable," describes techniques, features, and recommendations to maintain occupational exposures ALARA.

- 5) Section 2.2, "Determination of Initial Capability," and Section 2.3, "Evaluation of Performance," of ANSI N45.2.6-1978 deal with the use of evaluation of job performance and determination of initial capability to perform the job. Use of the measures outlined in these sections to establish that an individual has the required qualifications in lieu of required education and experience should result in documented objective evidence (i.e., procedures and record of written test) demonstrating that the individual indeed does have "comparable" or "equivalent" competence to that which would be gained from having the required education and experience.
- 6) As an alternate, compliance with ANSI N45.2.6-1978 as specified by Regulatory Guide 1.58 (Revision 1, 9/80) in its entirety is acceptable.
- 7) Revise Table I of ANSI N45.2.6-1973 in accordance with the attached Table I (page A-8).

### NOTE:

Regarding inspection, test, and examination during fabrication before receipt at the construction site, Bechtel fulfills this requirement by specifying applicable requirements of ANSI N45.2.6 or the equivalent (the Standard N45.2.6 may not be listed as a requirement in procurement document) tailored to the nature of the procurement and commensurate with the degree of skill and qualification necessary for inspection, test, and examination. For example, on simple inspections using go-no-go techniques or simple linear measurements within broad tolerance bands, the requirements of ANSI N45.2.6 would not apply; a satisfactory equivalent being routine inspection instructions and personnel assignments by supervision.

TABLE 1  
MINIMUM LEVELS OF CAPABILITY FOR PROJECT FUNCTIONS

| Project Function   | Level |      |       |
|--|-------|------|-------|
|  | L-I   | L-II | L-III |
| Recording inspection, examination, and testing data  | X     | X    | X     |
| Implementing inspection, examination, and testing procedures   | X     | X    | X     |
| Planning inspections, evaluations, and tests; setting up tests, including preparation and setup of related equipment |       | X    | X     |
| Evaluating the validity and acceptability of inspection, examination, and testing results                            |       | X    | X     |
| Reporting inspection, examination, and testing results   |       | X    | X     |
| Supervising equivalent or lower level personnel  |       | X    | X     |
| Qualifying lower level personnel   |       | X    | X     |
| Evaluating the adequacy of specific programs used to train and test inspection, examination, and testing personnel   |       |      | X     |
| Reviewing and approving inspection examination, and test procedures  |       |      | X     |
| Evaluating the adequacy of activities to accomplish inspection, examination, and test objectives                     |       |      | X     |

Regulatory Guide 1.64, Revision 2, June 1976 (ANSI N45.2.11-1974, Quality Assurance Requirements for the Design of Nuclear Power Plants)

The requirements of the referenced standard as modified by the regulatory position will be applied to Bechtel Quality Program for safety-related items.

The following interpretations of the standard serve to clarify the Bechtel program in relation this regulatory guide.

- 1) 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 Quality Assurance 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 used in verification of the final design.
- 2) 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.
- 3) 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 Bechtel 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.

- 4) 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 Bechtel 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.
- 5) 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.

Regulatory Guide 1.88, Rev. 2, October 1976 (ANSI N45.2.9-1974, Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants).

The requirements of the referenced standard, as modified and interpreted in the regulatory position, will be applied to the Bechtel Quality Program during the design and construction phase, as described in Section 17 of this document, subject to the following clarifications:

- 1) 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.
- 2) Section 1.4, Definitions. Authenticated Records - those records which are clearly identified as a statement by the individual or organization holding responsibility. Hand-written signatures are not required if the document or printout is clearly identified as a statement by the reporting individual or organization.
- 3) 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.

## APPENDIX A

### ANSI N45.2.5-1974, Quality Assurance Requirements for Installation, Inspection, and Testing of Structural concrete and Structural Steel during the Construction Phase of Nuclear Power Plants

The requirements of the referenced standard will be applied to the Bechtel Quality Program for construction of safety-related items as follows:

- 1) 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).
- 2) 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.

If the correlation test result shows a concrete property not meeting the specification limits and/or tolerances at the point of placement, the frequency of correlation testing shall be increased to 100 cubic yards. If two consecutive correlation tests exceed the specified limit for slump, air content, or temperature, the Constructor shall document the condition, notify Bechtel Site Engineering within 24 hours of completion of the placement and shall return to control of the concrete by in-process testing at the point of placement per ANSI N45.2.5-1974.

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

Regulatory Guide 1.116, Revision O-R, June 1976 (ANSI N45.2.8-1975, Supplementary Quality Assurance Requirements of Installation, Inspection and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants).

The requirement of the referenced standard as modified and interpreted in the regulatory position will be applied to the Bechtel quality program for construction of safety-related items except as modified and interpreted below:

- 1) 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.
- 2) 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.
- 3) 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.
- 4) Section 3.5(e), Site Conditions. This requirement will be applied only if subsequent correction of adjacent nonconformances could damage the item being installed.
- 5) 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.

Regulatory Guide 1.123, Revision 0, October 1976 (ANSI N45.2.13-1976, Quality Assurance Requirements for control of Procurement of Items and Services for Nuclear Power Plants).

The requirements of the referenced standard as modified and interpreted in the regulatory position will be applied to the Bechtel Quality Program during the design and construction phases except as modified and interpreted below:

- 1) 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 by Bechtel.
- 2) 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.
- 3) Section 4.2.a of the Standard - When evaluation of a supplier is based solely on historical supplier data, these data will primarily include Bechtel'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 to Bechtel; however, such data are normally available only to those involved in plant operations.
- 4) 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.
- 5) Bechtel'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 Bechtel 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.

## APPENDIX A

Regulatory Guide 1.144, Revision 1, September 1980 (ANSI N45.2.12-1977, Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants)

The requirements of this standard will be applied to the Bechtel Quality Program as modified and interpreted below:

- 1) ANSI N45.2.12-1977, Section 1.3 states, "In no way shall the performance of audits by an organization diminish the responsibility of the audited organization or contractor for audit of his designated portion of the quality assurance program or the quality of his product or services." For the South Texas Project all quality related activities implemented for the South Texas Project are audited annually at a minimum, or at least once within the life of the activity, whichever is shorter. These audits are performed by either HL&P, BEC, or ESI Quality Assurance personnel.
- 2) 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.

BECHTEL  
PLAN OF ORGANIZATION

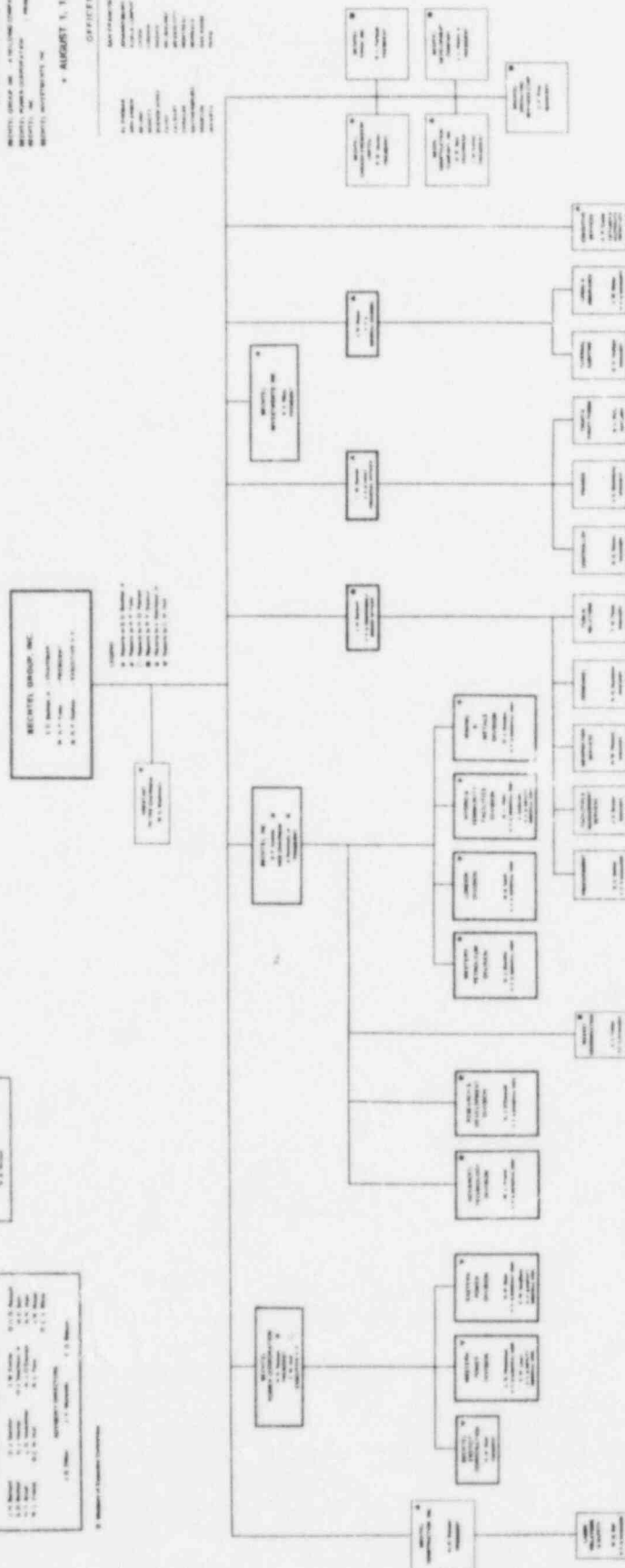
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AUGUST 4, 1985

100

| Study 1 (N = 100)   |                    | Study 2 (N = 100)  |  |
|---------------------|--------------------|--------------------|--|
| Gender              | 50 Male, 50 Female | 50 Male, 50 Female |  |
| Age                 | 18-25              | 18-25              |  |
| Education           | High School        | High School        |  |
| Occupation          | Student            | Student            |  |
| Religion            | Christian          | Christian          |  |
| Marital Status      | Single             | Single             |  |
| Income              | \$10,000-\$20,000  | \$10,000-\$20,000  |  |
| Health Status       | Good               | Good               |  |
| Smoking Status      | Non-smoker         | Non-smoker         |  |
| Alcohol Consumption | Occasional         | Occasional         |  |
| Exercise Frequency  | Regular            | Regular            |  |
| Stress Level        | Low                | Low                |  |
| Life Satisfaction   | High               | High               |  |
| Overall Health      | Excellent          | Excellent          |  |



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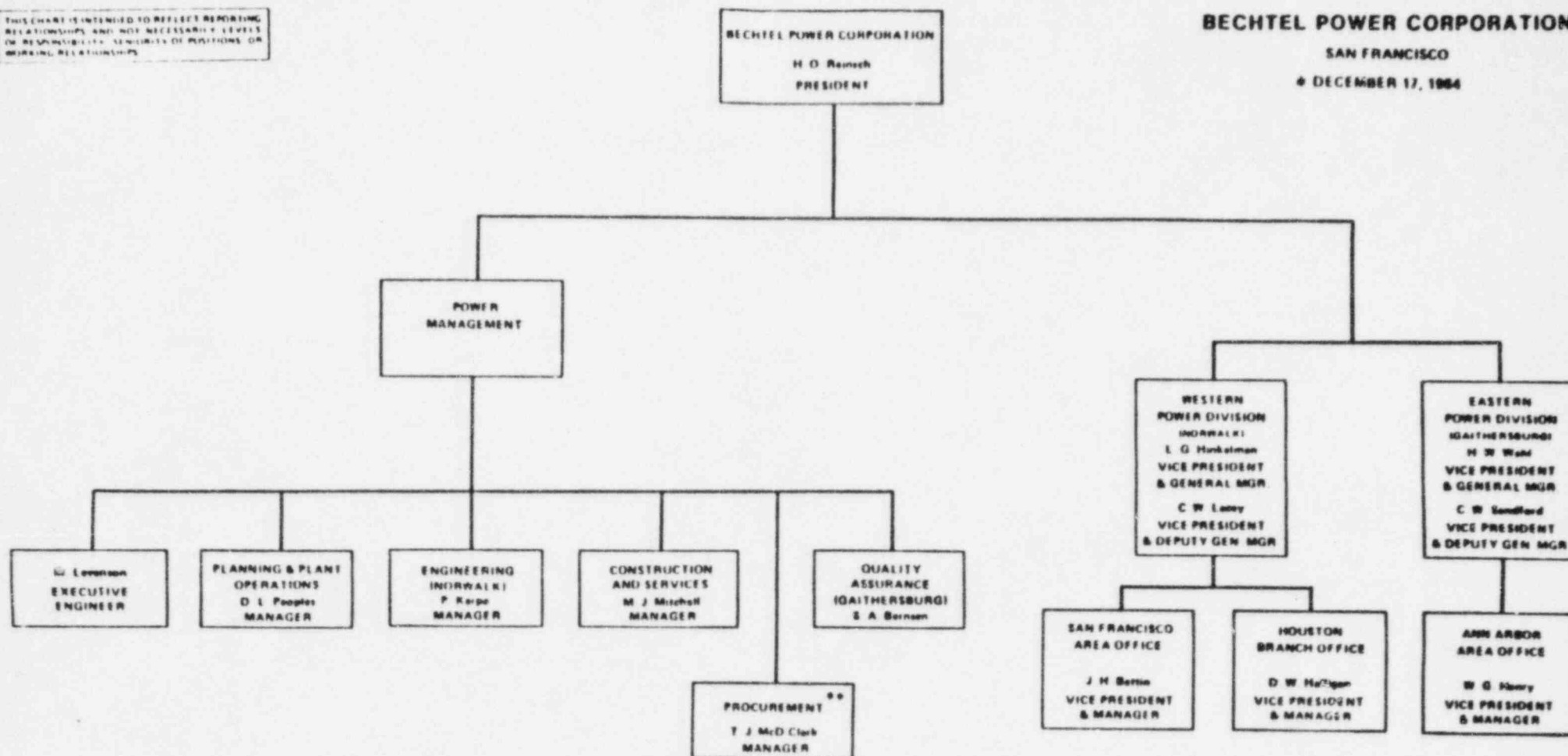
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Journal of Internal Medicine 247: 111–117

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OR RESPONSIBILITIES, SENIORITY OF POSITIONS OR  
WORKING RELATIONSHIPS.

# BECHTEL POWER CORPORATION

SAN FRANCISCO

\* DECEMBER 17, 1984



## NOTE

ALL PERSONNEL BASED IN HOME OFFICE, DIVISION OFFICE,  
AREA OFFICE, OR BRANCH OFFICE UNLESS OTHERWISE INDICATED

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

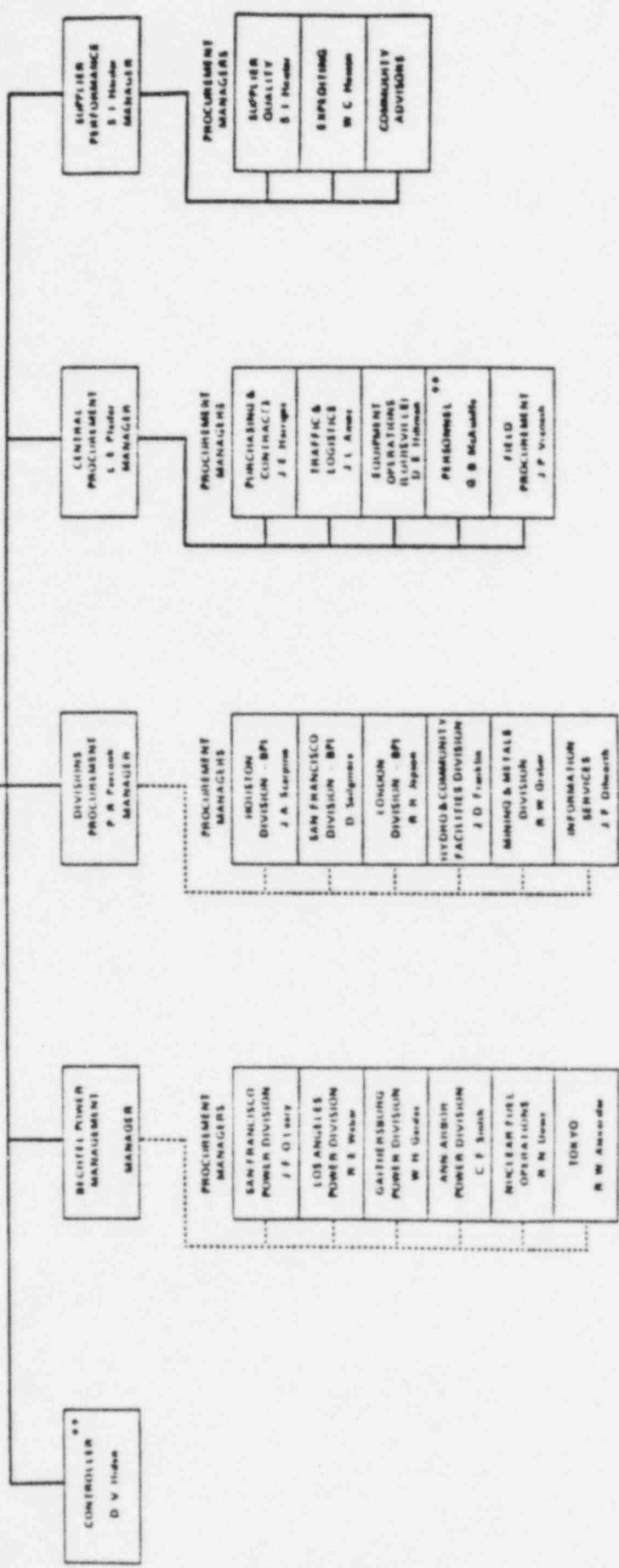
\* REPLACES CHART DATED JUNE 17, 1983

STPEGS - QAPD  
PART B  
Figure 2

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PROCUREMENT  
VIC'S ASSISTANT  
AND MANAGER  
S. B. Fisher  
DEPUTY MANAGER

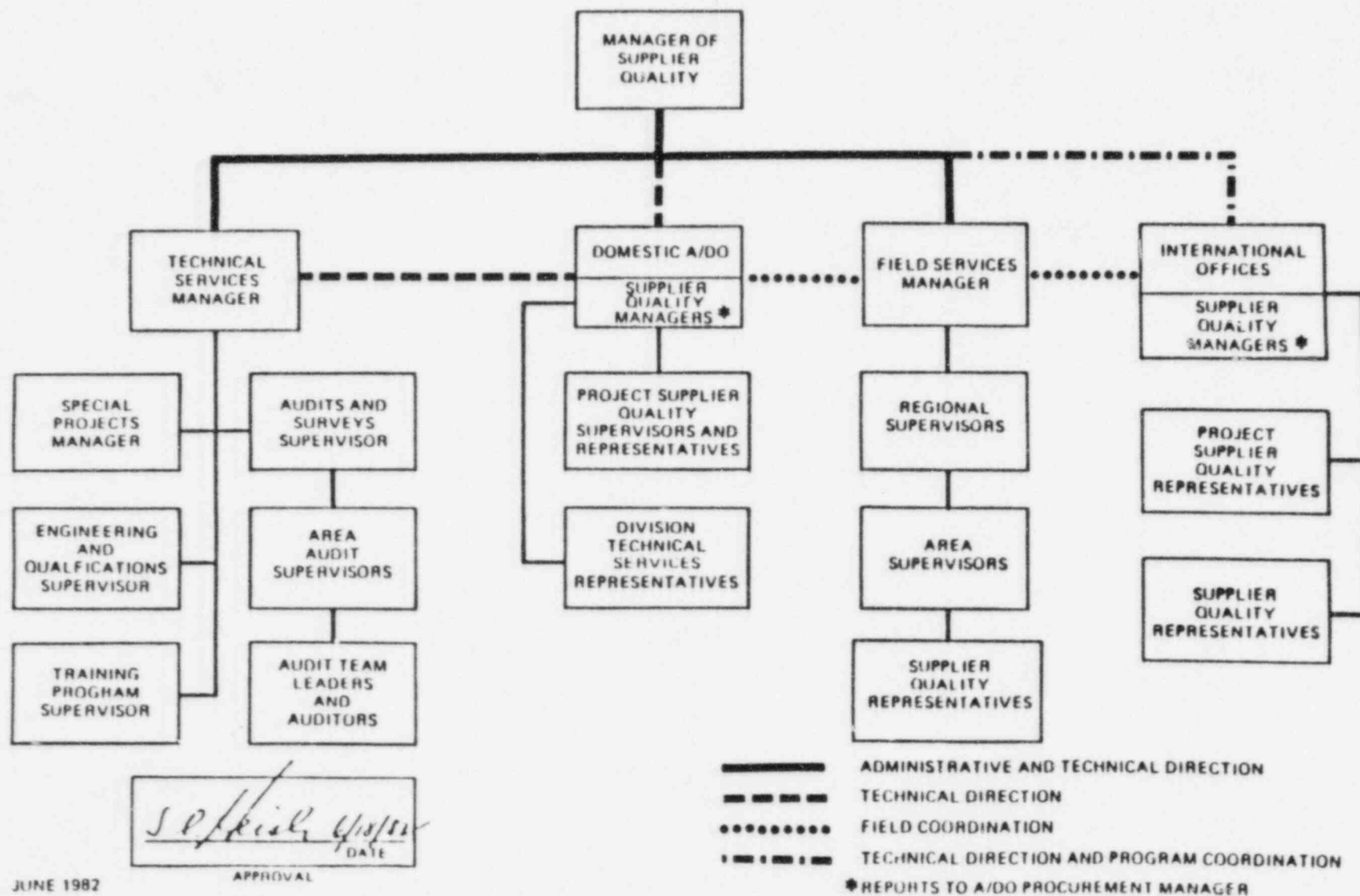
PROCUREMENT  
SAN FRANCISCO  
OCTOBER 1, 1963



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

\*\*\*\*\* FUNCTIONAL REPORTING  
\*\* RELIEVES FUNCTIONAL GUIDANCE FROM THE  
APPLICABLE SAN FRANCISCO SIMVOLS ORGANIZATION  
\* REPLACES CHART DATED AUGUST 28, 1962

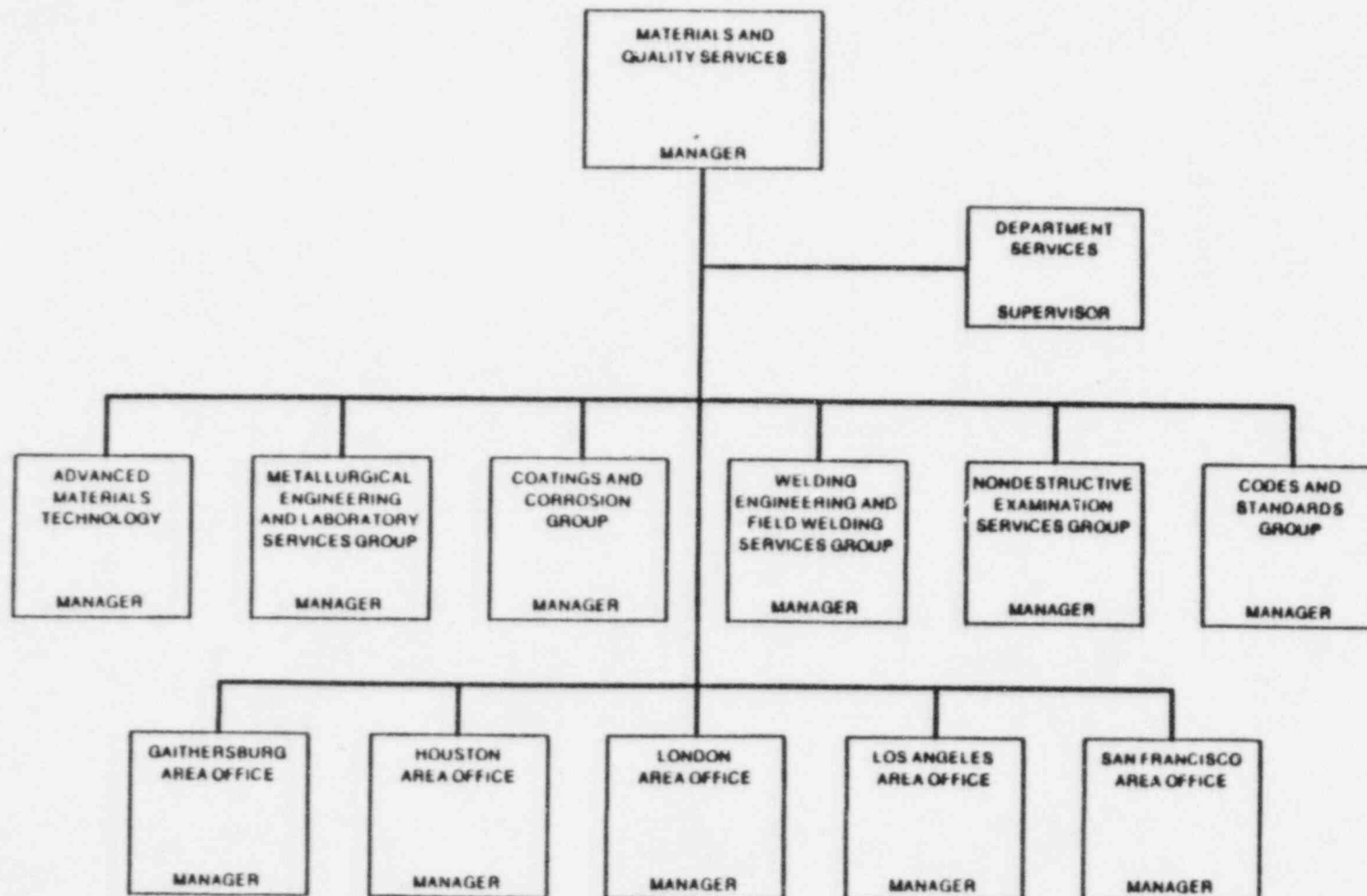
# PROCUREMENT SUPPLIER QUALITY DEPARTMENT ORGANIZATION



JUNE 1982

THIS CHART IDENTIFIES REPORTING RELATIONSHIPS FOR ORGANIZATIONS THAT MAY PERFORM ACTIVITIES IN ACCORDANCE WITH THIS MANUAL AND IS NOT INTENDED TO IDENTIFY ALL FUNCTIONAL ORGANIZATIONS OR GROUPS.

## MATERIALS AND QUALITY SERVICES



# WESTERN POWER DIVISION

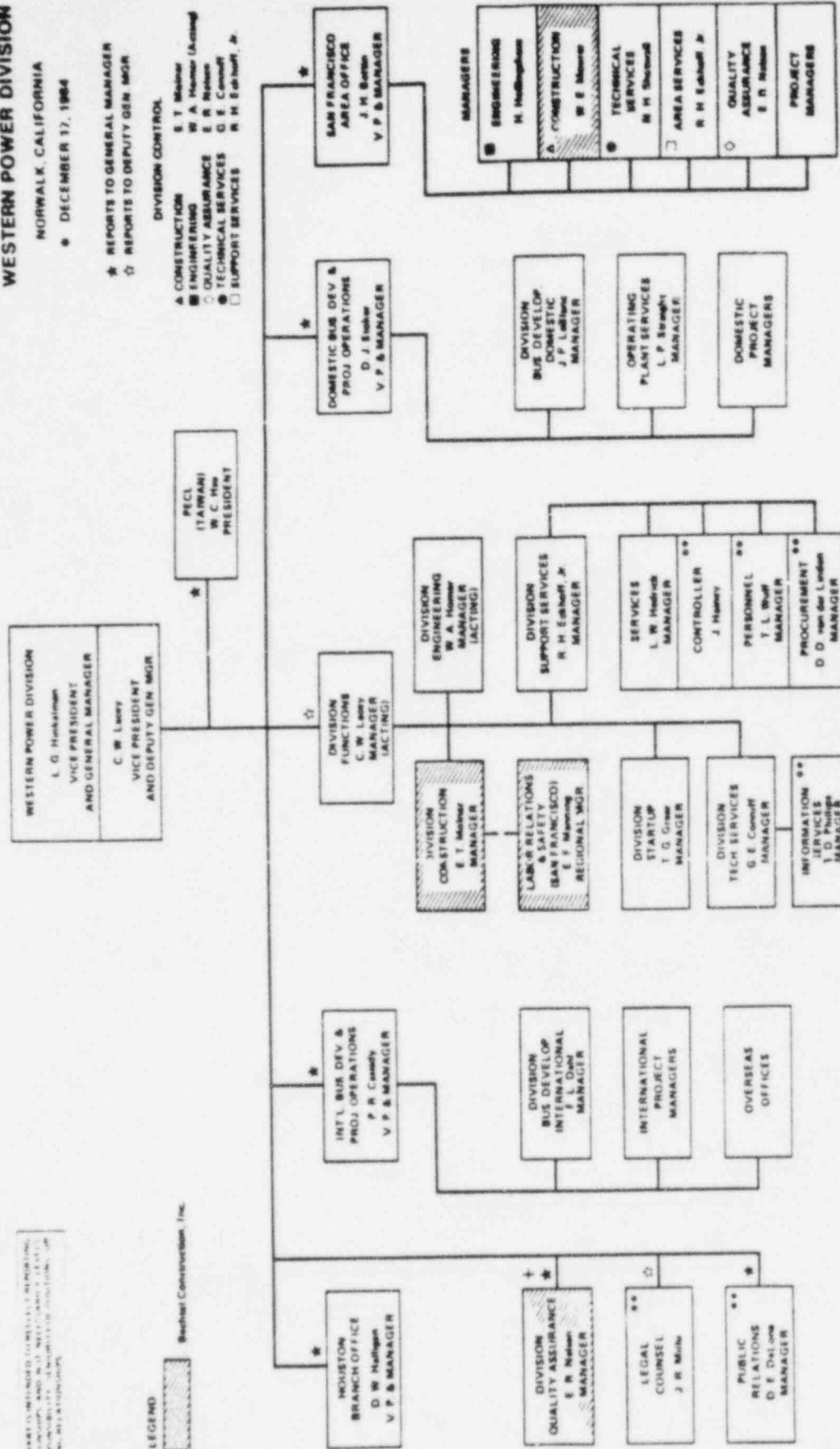
NORWALK, CALIFORNIA

★ DECEMBER 17, 1984

- ★ REPORTS TO GENERAL MANAGER
- ☆ REPORTS TO DEPUTY GEN. MGR

## DIVISION CONTROL

- ▲ CONSTRUCTION
- ENGINEERING
- QUALITY ASSURANCE
- TECHNICAL SERVICES
- SUPPORT SERVICES
- E T Meiner
- W A Homan (acting)
- E R Nelson
- G E Connors
- R H Schmitt, Jr.



- + QUALITY ASSURANCE MANAGER FOR BPC & BCI
- \*\* RECEIVES FUNCTIONAL GUIDANCE FROM THE APPLICABLE SAN FRANCISCO SERVICE ORGANIZATION
- ☆ REPLACES CHART DATED FEBRUARY 22, 1984

WP 1

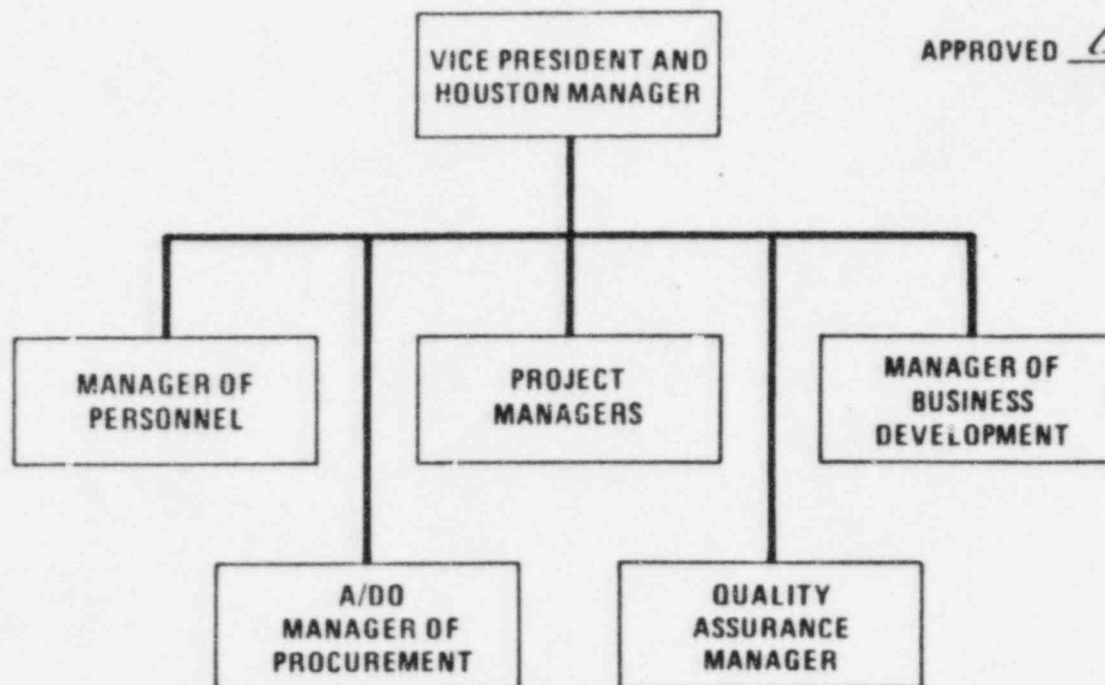
SYNOPSIS - OAPO  
PART B  
Figure 8

NOTE  
ALL PERSONNEL BASED IN DIVISION HOME OFFICE UNLESS OTHERWISE INDICATED

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WORKING RELATIONSHIPS.

# HOUSTON OFFICE PLAN OF ORGANIZATION

APPROVED *D. W. Helligoy*



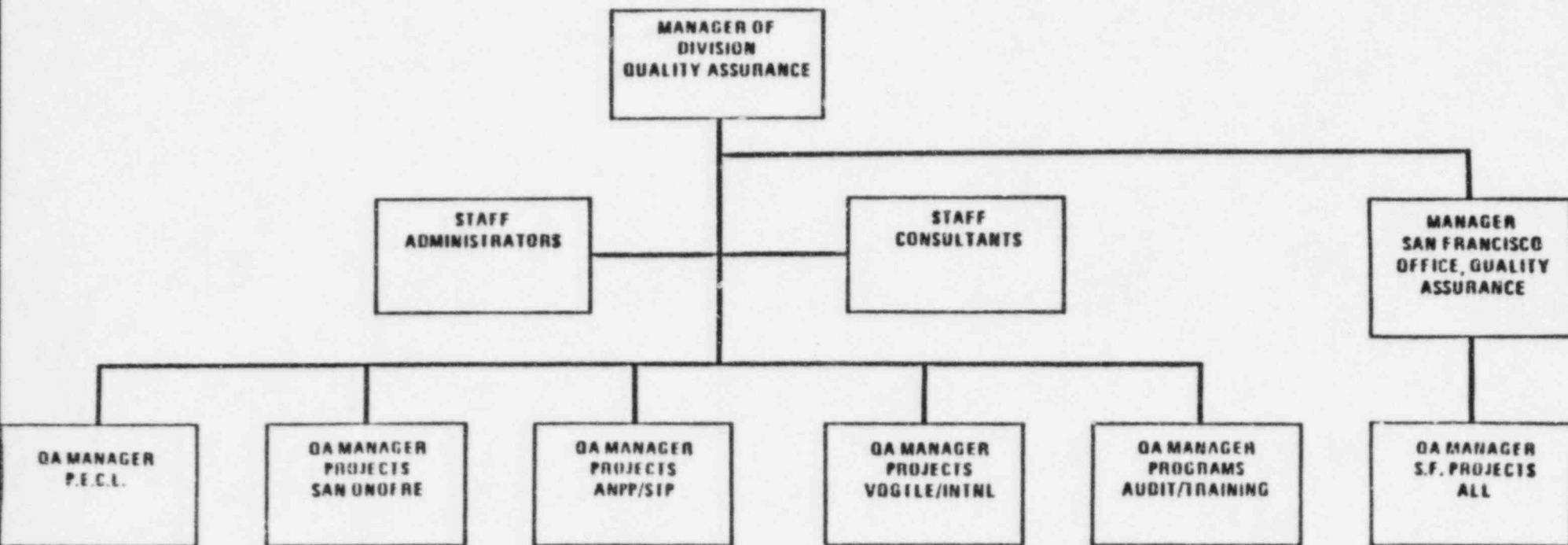
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WESTERN POWER DIVISION  
PLAN OF ORGANIZATION  
QUALITY ASSURANCE

SEPTEMBER 1984

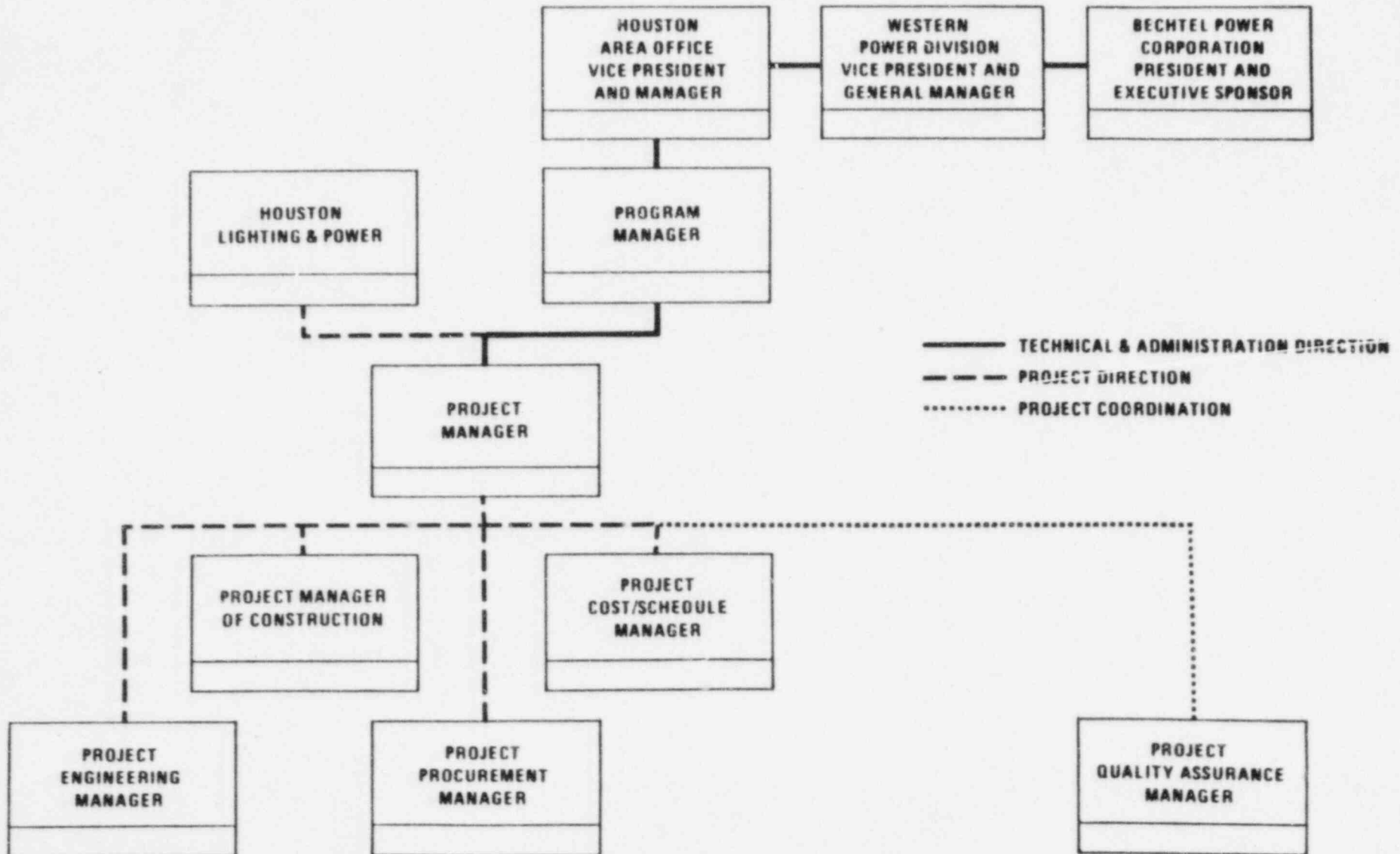
APPROVED

*E.R. Nelson*  
*SCF*



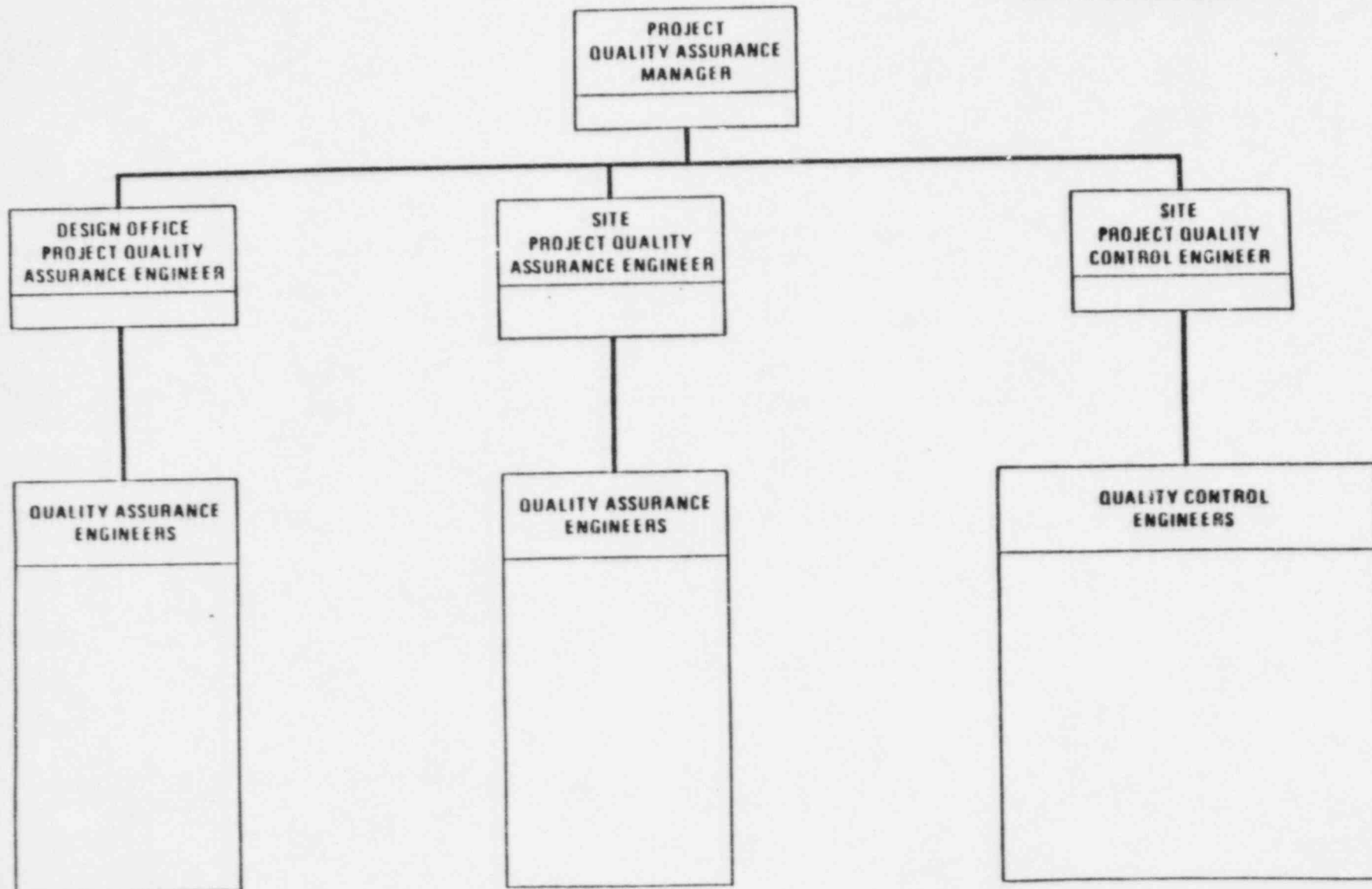
STPEGS - QAPD  
PART B  
Figure 7

# **SOUTH TEXAS PROJECT MANAGEMENT ORGANIZATION**

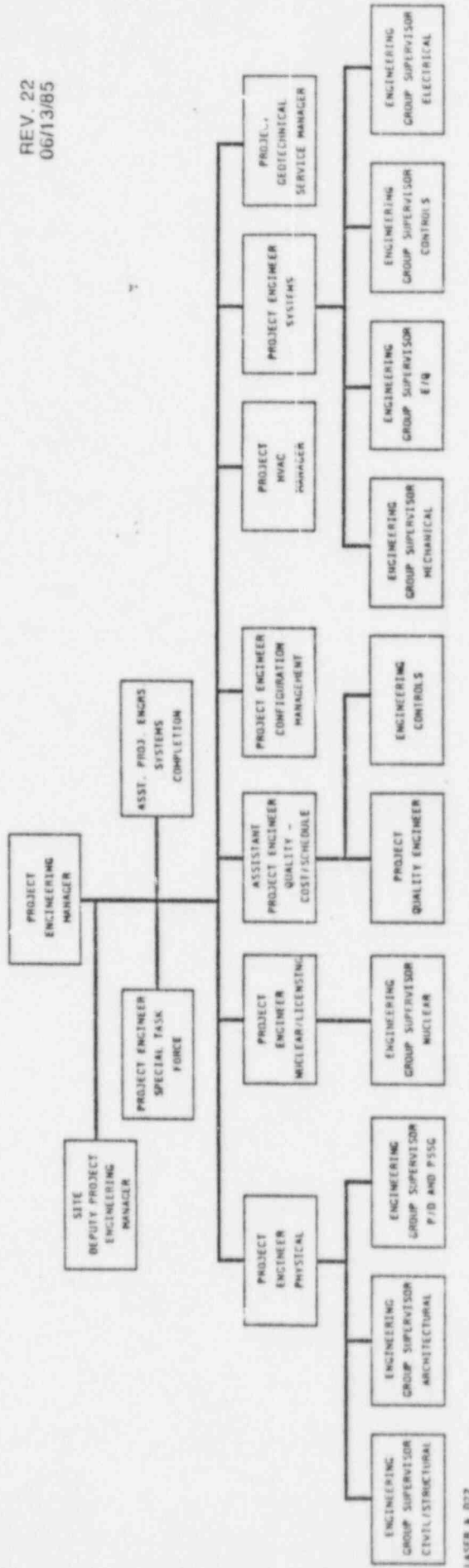


# **SOUTH TEXAS PROJECT QUALITY ASSURANCE ORGANIZATION**

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WORKING RELATIONSHIPS

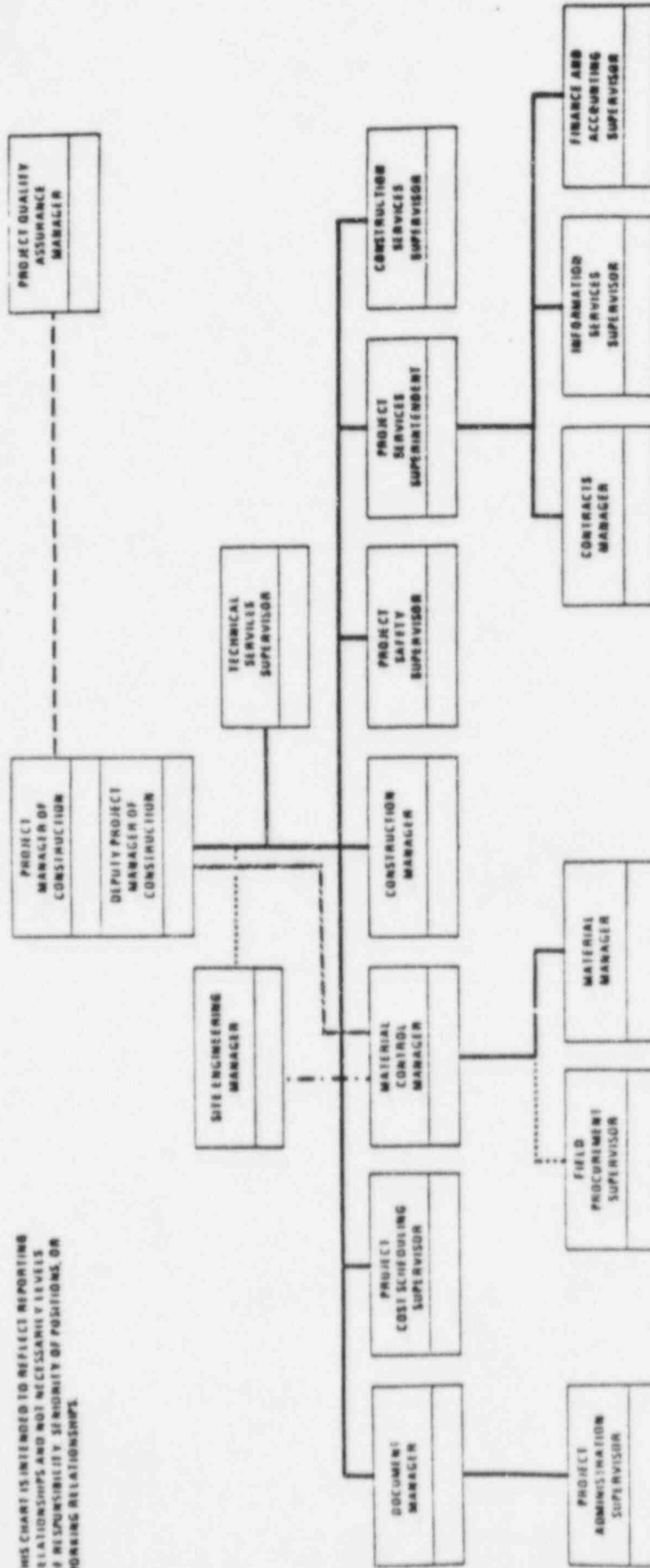


SOUTH TEXAS PROJECT  
BECHTEL ENERGY CORPORATION — JOB NO. 14926  
ENGINEERING ORGANIZATION CHART



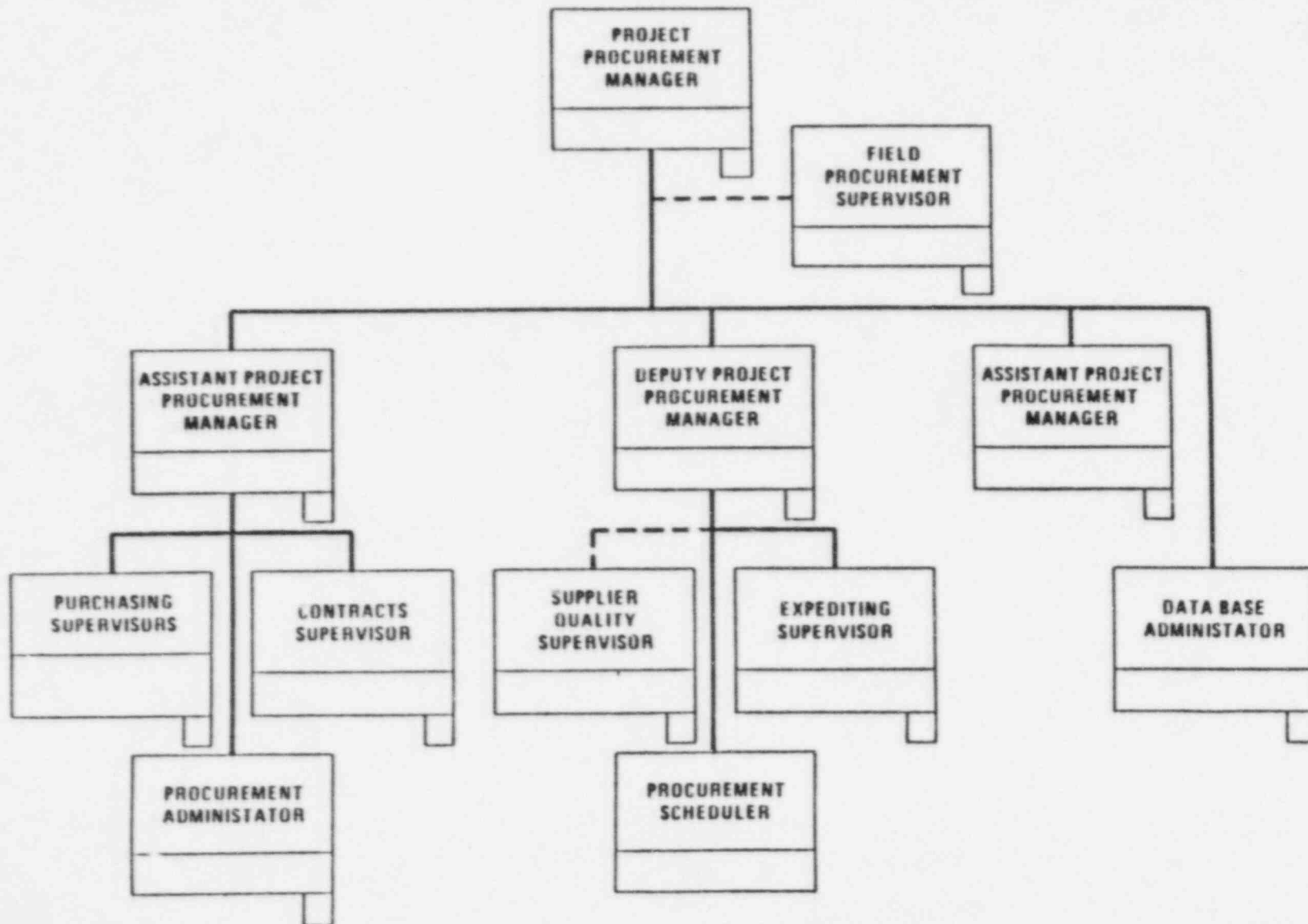
# SOUTH TEXAS PROJECT CONSTRUCTION MANAGEMENT ORGANIZATION CHART

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WORKING RELATIONSHIPS.

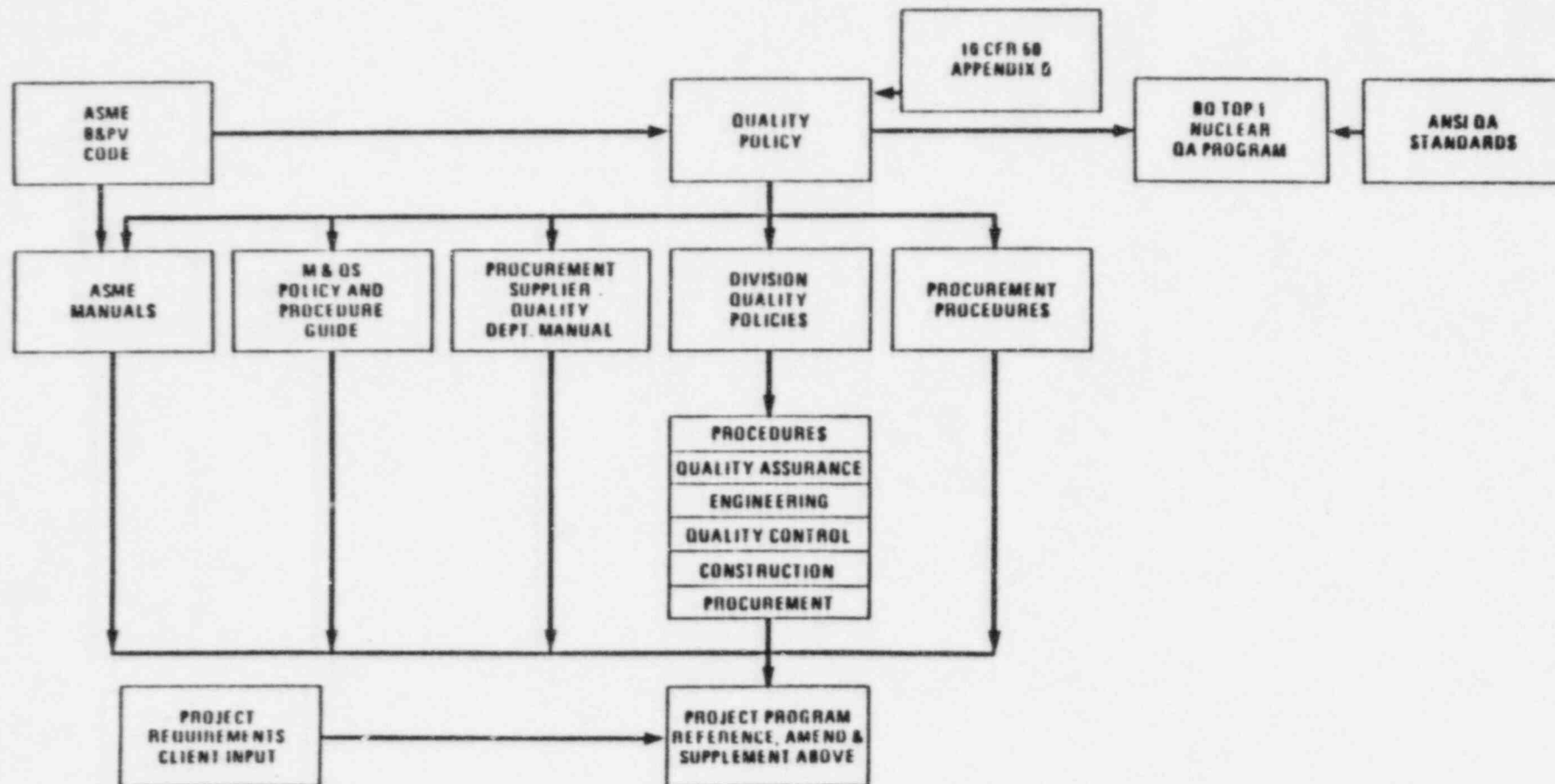


LEGEND:  
ADMINISTRATIVE & TECHNICAL  
PROJECT COORDINATION  
PROJECT DIRECTION  
ADMINISTRATIVE & PROJECT  
DIRECTION  
TECHNICAL DIRECTION

SOUTH TEXAS PROJECT  
BECHTEL ENERGY CORPORATION – JOB NO. 14926  
PROCUREMENT ORGANIZATION



## QUALITY PROGRAM DOCUMENTS





## SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

TABLE 1

SECTION REV. 4

PAGE 1 OF 1

## BECHTEL QUALITY PROGRAM DOCUMENTS

| <u>DOCUMENT</u>  | <u>ORIGINATING<br/>AUTHORITY</u>           | <u>REVIEW FOR QA POLICY<br/>AND PROGRAM REQUIREMENTS</u> | <u>AUTHORIZING<br/>APPROVAL</u>                                      | <u>CONTENTS</u>   |
|--|--|--|--|---|
| * BECHTEL QUALITY ASSURANCE MANUAL- ASME NUCLEAR COMPONENTS (SQAM- ASME III) | MANAGER C&S/R&E                            | QA-BPC**<br>DIVISION<br>QUALITY ASSURANCE<br>MANAGER     | PRESIDENT AND<br>APPROPRIATE<br>AUTHORIZED CODE<br>INSPECTION AGENCY | POLICIES AND PROCEDURES FOR<br>OVERALL BECHTEL PROGRAM<br>APPLICABLE TO ASME WORK   |
| QUALITY ASSURANCE PROCEDURES   | PROJECT<br>QUALITY ASSURANCE<br>MANAGER    | N/A  | DIVISION<br>QUALITY ASSURANCE<br>MANAGER                             | PROCEDURES FOR CONDUCTING<br>PROJECT QUALITY ASSURANCE<br>ACTIVITIES  |
| ENGINEERING DEPARTMENT PROCEDURES AND INSTRUCTIONS                           | DESIGNATED<br>INDIVIDUALS                  | DIVISION QUALITY ASSURANCE MANAGER***                    | MANAGER DIVISION<br>ENGINEERING***                                   | DEFINITION OF RESPONSIBILITIES<br>AND PROCEDURES FOR DESIGN,<br>DESIGN REVIEW AND DOCUMENT<br>CONTROL IN THE ENGINEERING<br>DEPARTMENTS |
| PROCUREMENT MANUALS (QUALITY PROGRAM RELATED)                                | PROCUREMENT                                | QA-BPC**   | COGNIZANT<br>PROCUREMENT<br>MANAGERS                                 | PROCEDURES FOR HOME OFFICE AND<br>FIELD PROCUREMENT NECESSARY TO<br>FOLLOW TPO QUALITY POLICY   |
| * PROCUREMENT SUPPLIER QUALITY MANUAL  | MANAGER<br>PROCUREMENT<br>SUPPLIER QUALITY | QA-BPC**   | MANAGER<br>PROCUREMENT SUPPLIER<br>QUALITY                           | PROCUREMENT SUPPLIER<br>QUALITY PROCEDURES  |
| MAQS PROCEDURE AND POLICY GUIDES (QUALITY PROGRAM RELATED)                   | MANAGER MAQS                               | QA-BPC**   | MANAGER MAQS   | POLICIES AND PROCEDURES FOR<br>PERFORMING MAQS FUNCTIONS  |
| TECHNICAL SUPPORT PROCEDURES MANUAL  | TECHNICAL SERVICES                         | DIVISION QA MANAGER                                      | MANAGER TECHNICAL<br>SERVICES  | RESPONSIBILITIES AND PROCEDURES<br>FOR PROJECT SUPPORT GROUPS   |
| PROJECT MANUALS PROCEDURES (QUALITY PROGRAM RELATED)                         | COGNIZANT<br>PROJECT TEAM<br>MEMBER        | PQAE   | COGNIZANT<br>MANAGERS  | NOTE 2  |
| STANDARD QUALITY ASSURANCE PROCEDURES  | HL&P QA                                    | PQAE QAS   | COGNIZANT<br>QA MANAGER  | 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 QUALITY ASSURANCE PROGRAM DESCRIPTION (QAPD). REVIEW AND APPROVAL AUTHORITY FOR SUCH MODIFICATIONS ARE DEFINED WITHIN THE QAPD.

03-05-85

PART C

EBASCO  
QUALITY ASSURANCE PROGRAM DESCRIPTION

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

REVISION 12

DATE

# The Light company

Houston Lighting & Power

## THINGS TO DO TODAY



| NAME |  | DATE | CLOSED | OPEN |
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