

PART A

HOUSTON LIGHTING AND POWER COMPANY  
QUALITY ASSURANCE PROGRAM DESCRIPTION

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

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HOUSTON LIGHTING & POWER COMPANY  
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Table of Contents

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	Organization	6
2.0	Quality Assurance Program	16
3.0	Design Control	18
4.0	Procurement Document Control	20
5.0	Instructions, Procedures and Drawings	22
6.0	Document Control	23
7.0	Control of Purchased Material, Equipment and Services	24
8.0	Identification and Control of Materials, Parts and Components	26
9.0	Control of Special Processes	27
10.0	Inspection	28
11.0	Test Control	29
12.0	Control of Measuring and Test Equipment	30
13.0	Handling, Storage and Shipping	31
14.0	Inspection, Test and Operating Status	31
15.0	Nonconforming Materials, Parts or Components	32
16.0	Corrective Action	32
17.0	Quality Assurance Records	33
18.0	Audits	33

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QUALITY ASSURANCE PROGRAM DESCRIPTION

List of Tables

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

List of Figures

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

## QUALITY ASSURANCE PROGRAM DESCRIPTION

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

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

HL&P has contracted with Westinghouse Electric Corporation (Westinghouse) for the design, fabrication and quality assurance services for the nuclear steam supply system and with Bechtel Energy Corporation (BEC) for plant Design, procurement, engineering, construction management, quality assurance services and other related services, including quality assurance services for Westinghouse items upon receipt at the Project site. HL&P has contracted with Ebasco Services, Inc. (ESI) for 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:

- a. Manager, Nuclear Fuel
- b. 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 Fuel

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

1.4.18 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.

1.4.19 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.

1.4.20 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:

- a) Project Quality Assurance Manager
- b) General Supervisor, Technical Services
- c) 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:

- a) Develop and administer QA policies, goals, objectives, and methods which ensure the proper planning, development, implementation, coordination and administration of the Project Quality Assurance Plan.

- b) Provide programmatic direction on QA related matters to HL&P, and contractor management, and provide the primary interface with NRC.
- c) Direct the onsite audit and surveillance activities; direct audits/surveillances of the Engineer/Construction Manager's QA program implementation in the design office.
- d) Coordinate activities relating to auditing and vendor surveillance in conjunction with the HL&P Support Quality Assurance Manager.

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

- 2) 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'). 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.

Audits 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. Cases may arise in which audits may be required by either the Corporate or Project audit groups in the primary area of responsibility of the other group.

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

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

TABLE 1  
ANSI STANDARD AND REGULATORY GUIDE COMPLIANCE  
 (Continued)

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

Exception Notes

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

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 1.54, 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.

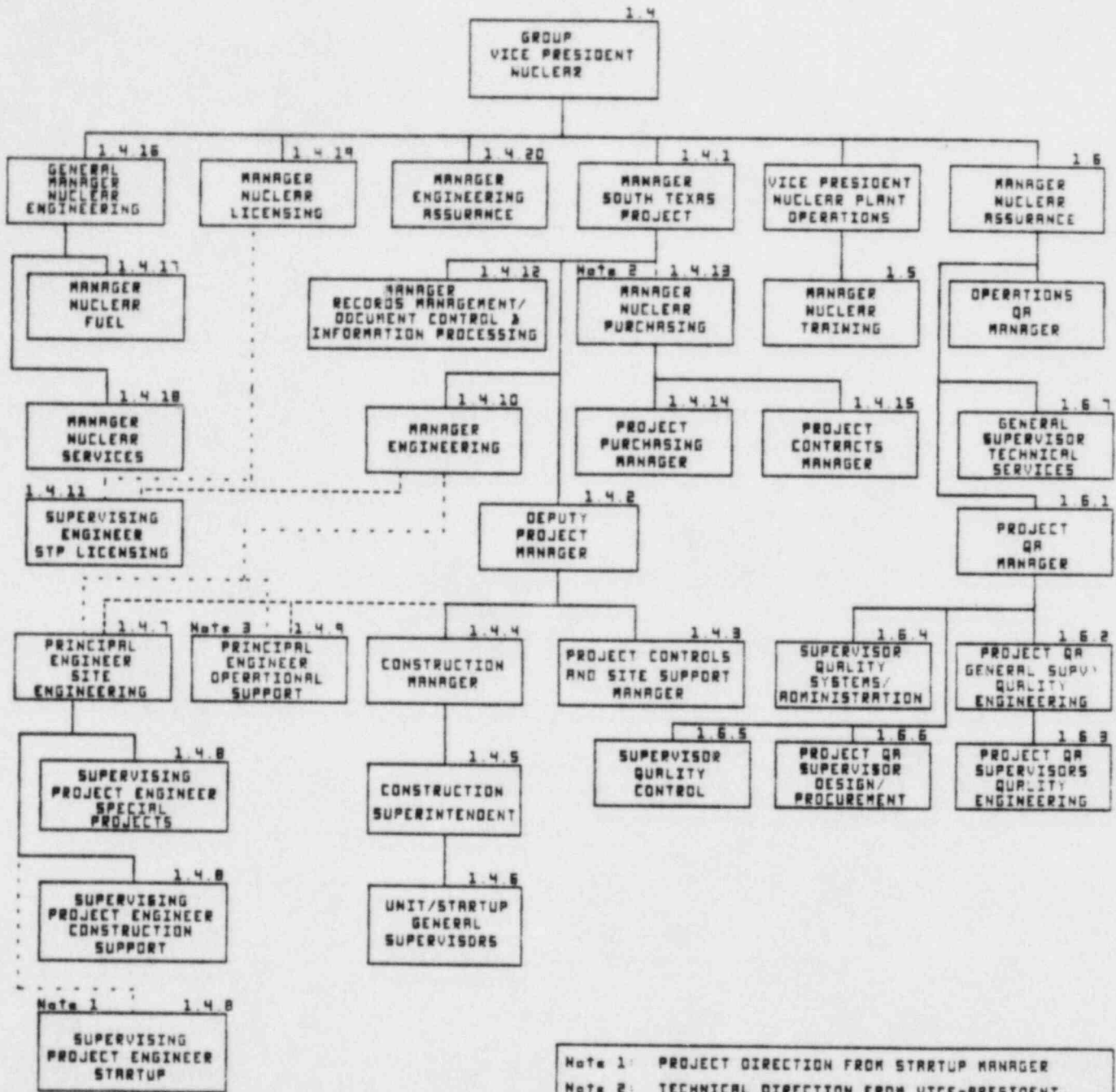
In actual practice, the audited organization will provide the auditing organization with documented corrective action including the date when the corrective action will be completed. The auditing organization will evaluate the corrective action response to determine if corrective action verification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



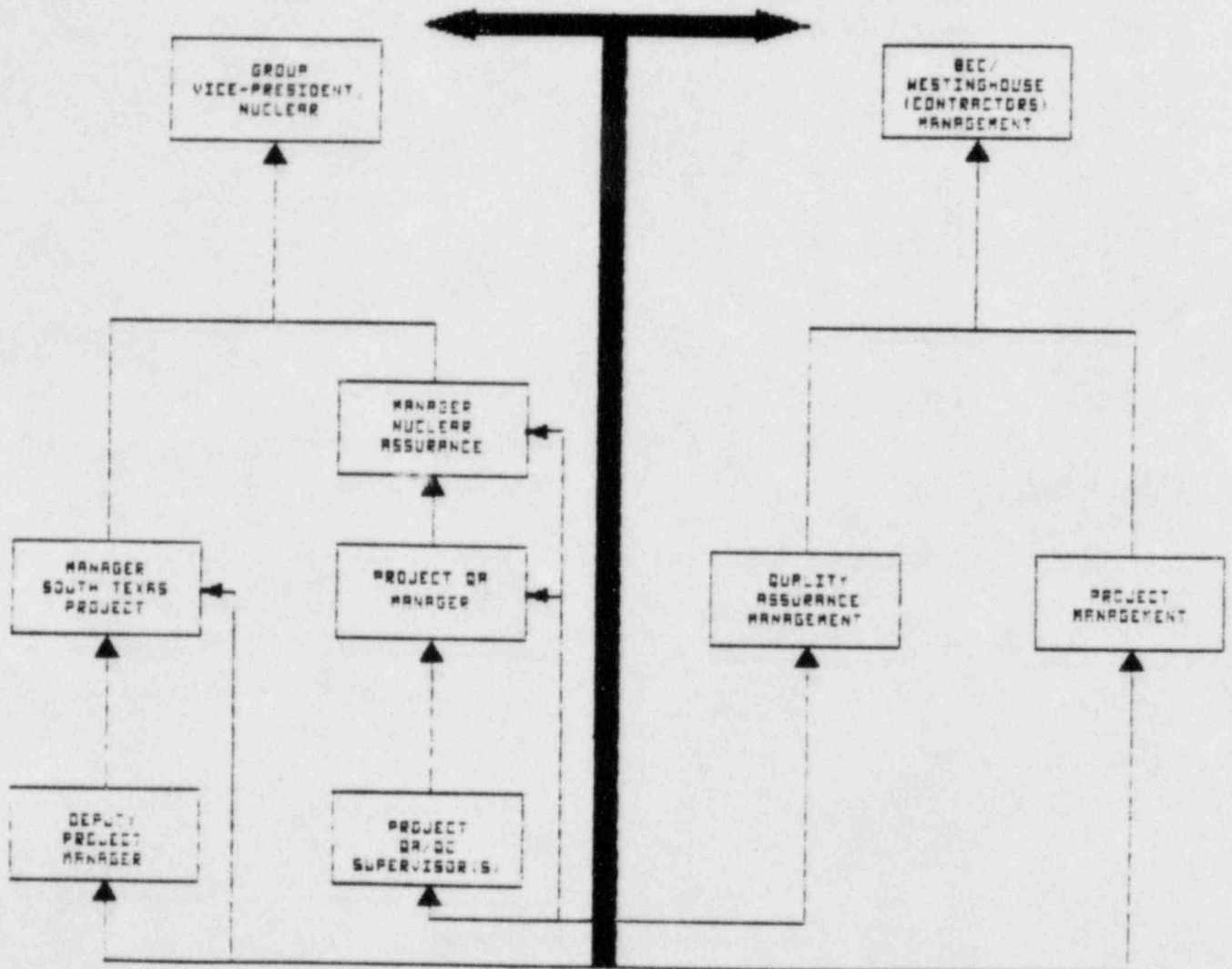
\_\_\_\_\_ PROJECT AND TECHNICAL DIRECTION  
 - - - - - PROJECT DIRECTION ONLY  
 . . . . . TECHNICAL DIRECTION ONLY

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 11

DATE May 1, 1985

# 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)"

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

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 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 8.

#### 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 determine trends, identify significant deficiencies, and recommend appropriate corrective action.

The field quality assurance program includes the capability to perform:

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

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

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

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 Engineers and design office Quality Control staff and supervision will be qualified in accordance with the provisions 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 or SNT-TC-1A-80, as applicable.
3. Audit Personnel - Personnel performing audits will be qualified in accordance with the appropriate requirements of ANSI N45.2.12-1977, as endorsed by Regulatory Guide 1.144, Rev. 1, 9/80, as interpreted by the positions contained in Appendix A of this document.

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.

While the project engineering team is responsible for preparation of specifications for supplier, contractor quality assurance programs, these specifications are based upon program policy formulated by Quality Assurance and guidance provided in approved Engineering Department Procedures and standard engineering specifications. The specifications are reviewed for appropriated 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 prepared by Construction and 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.

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.

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.

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\* 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 STPEGS 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, instrument and control settings, and performance demonstration are part of the preoperational and startup test program. Preoperational and startup testing is 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 cleanness 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.

## APPENDIX A

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.

## APPENDIX A

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.

**GENERAL**  
1.1 Major Divisions  
1.2 Major Divisions  
1.3 Major Divisions  
1.4 Major Divisions

**ORGANIZATION SYSTEMS SECTION 1**  
1.1 Major Divisions  
1.2 Major Divisions  
1.3 Major Divisions  
1.4 Major Divisions

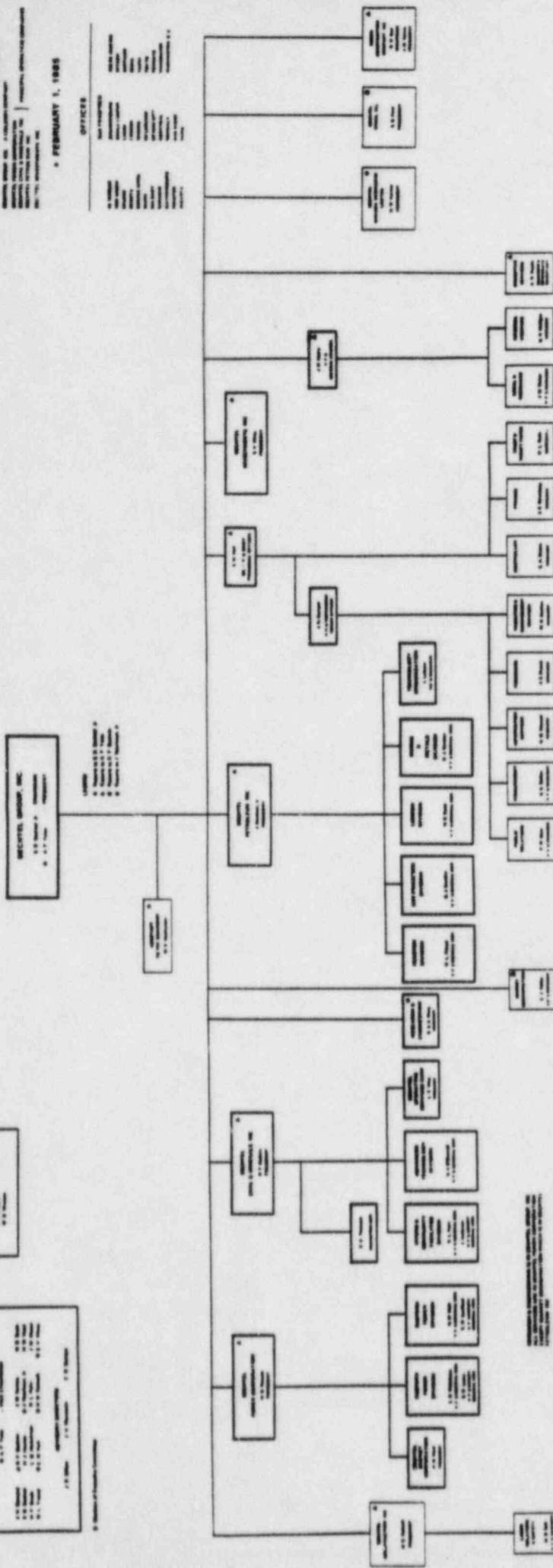
**BECKTEL**  
PLAN OF ORGANIZATION

**CENTRAL BECKTEL COMPANIES**  
1.1 Major Divisions  
1.2 Major Divisions  
1.3 Major Divisions  
1.4 Major Divisions

FEBRUARY 1, 1985

**OFFICERS**

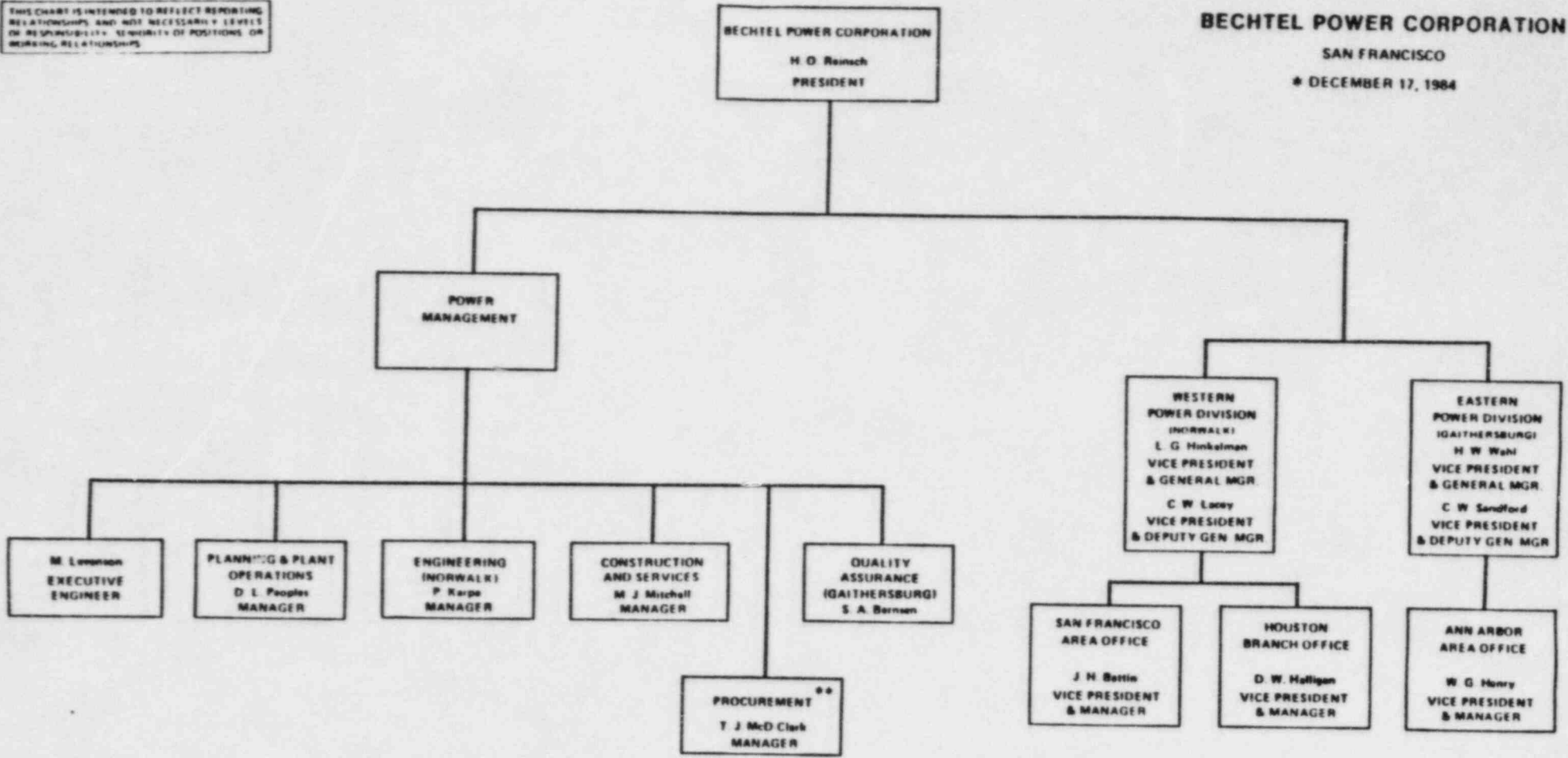
1.1 Major Divisions  
1.2 Major Divisions  
1.3 Major Divisions  
1.4 Major Divisions



**STPEGS - OAMP**  
**PART B**  
Figure 1

THIS CHART IS INTENDED TO REFLECT REPORTING RELATIONSHIPS AND NOT NECESSARILY LEVELS OF RESPONSIBILITY, 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

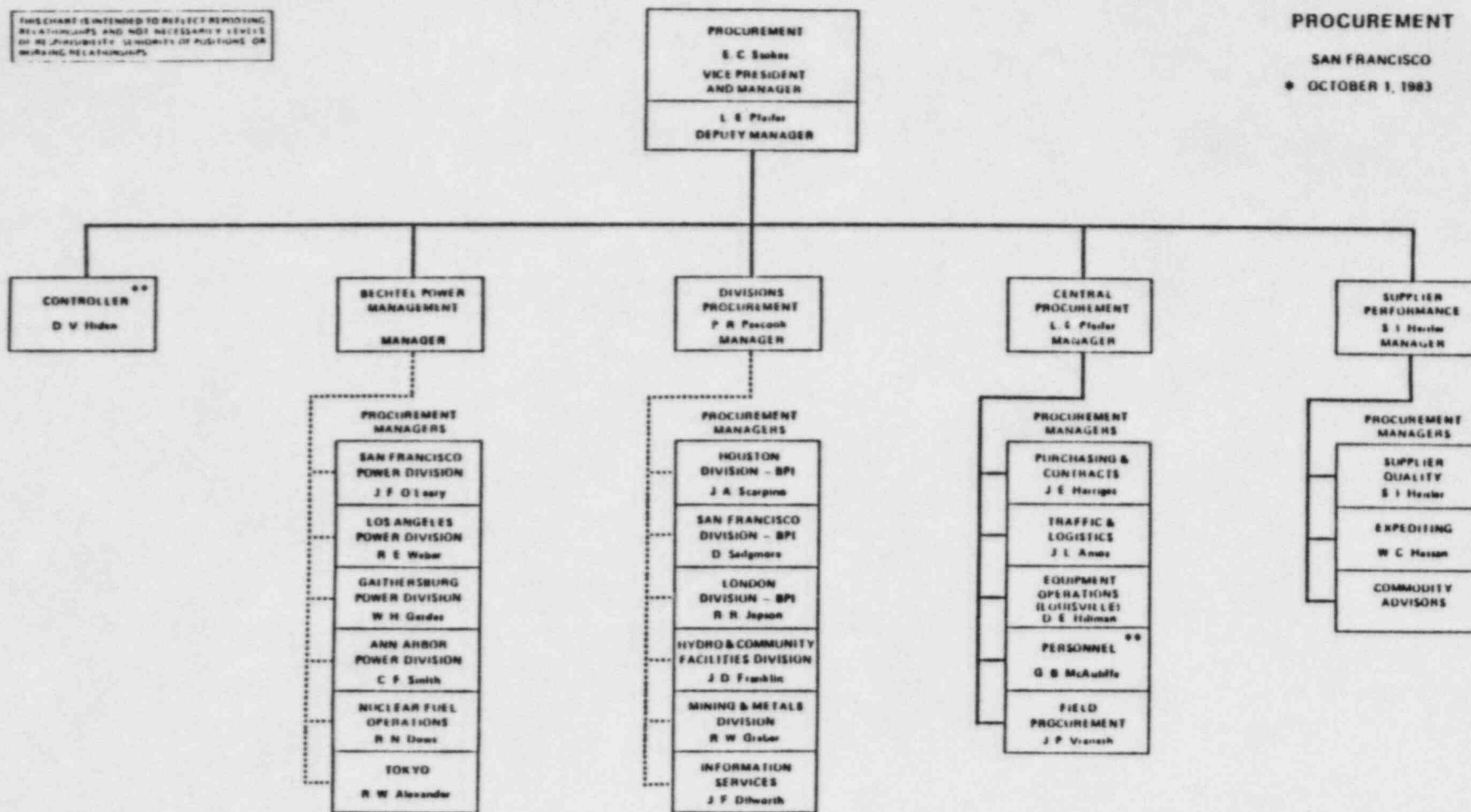
STPEGS - QAPD  
 PART B  
 Figure 2

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

# PROCUREMENT

SAN FRANCISCO

♦ OCTOBER 1, 1983



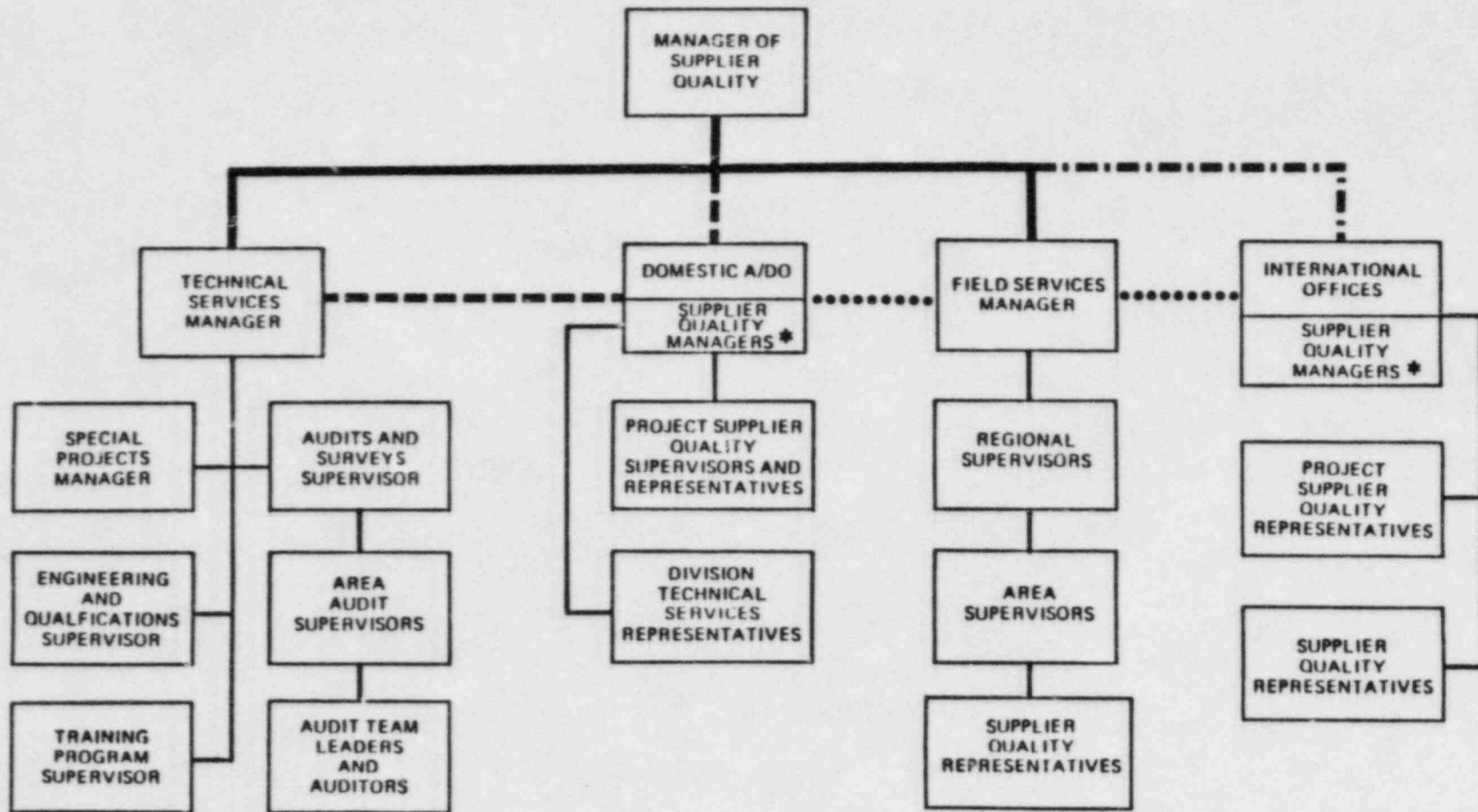
NOTE:  
PERSONNEL ASSIGNED TO DIVISIONS ARE LOCATED AT DIVISION HEADQUARTERS. ALL OTHER PERSONNEL ARE BASED IN HOME OFFICE UNLESS OTHERWISE INDICATED.

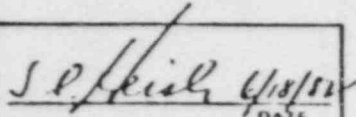
----- FUNCTIONAL REPORTING

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

♦ REPLACES CHART DATED AUGUST 25, 1982

# PROCUREMENT SUPPLIER QUALITY DEPARTMENT ORGANIZATION



  
 DATE

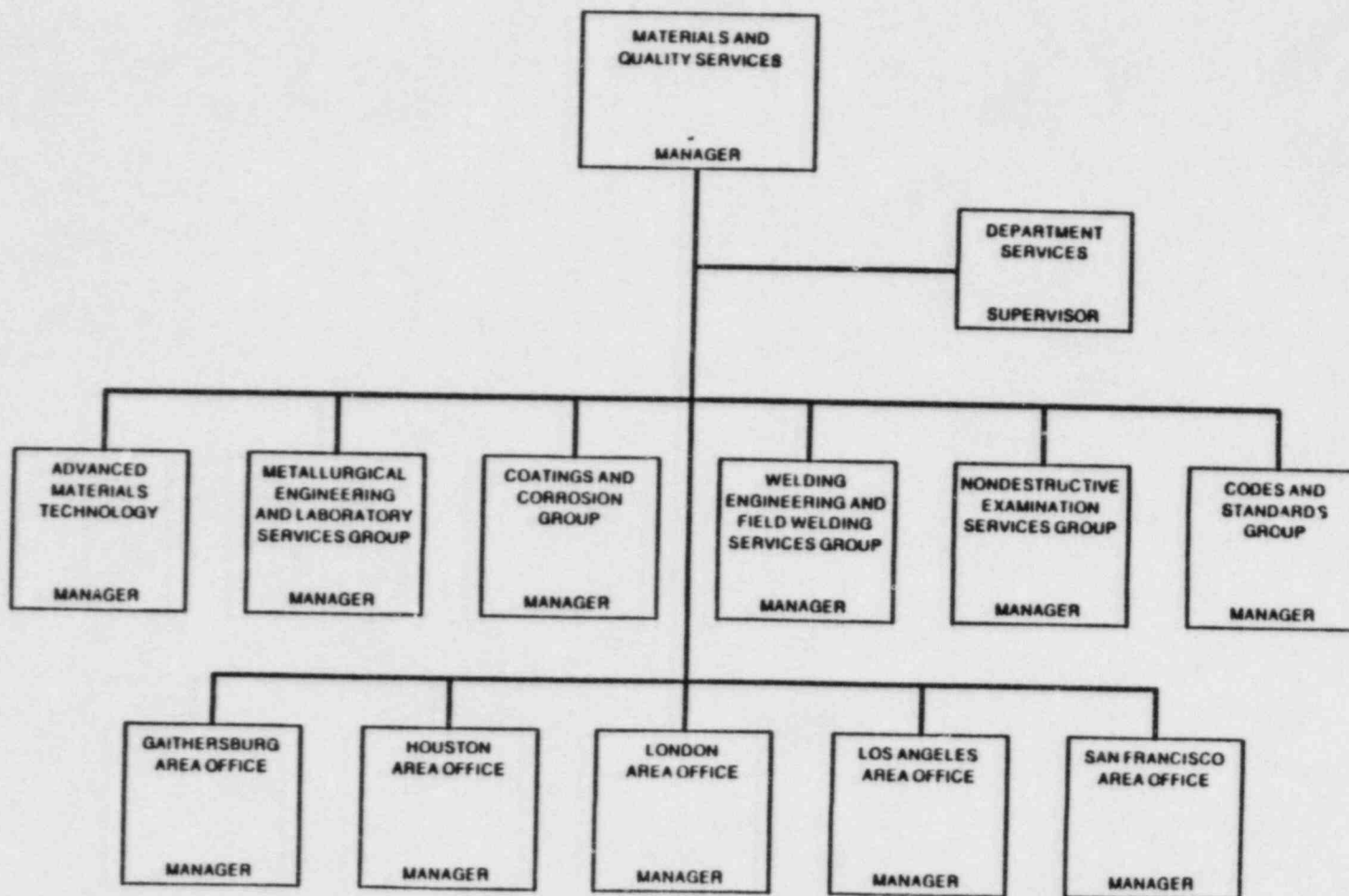
APPROVAL

JUNE 1982

- ADMINISTRATIVE AND TECHNICAL DIRECTION
- - - - - TECHNICAL DIRECTION
- ..... FIELD COORDINATION
- . - . - TECHNICAL DIRECTION AND PROGRAM COORDINATION
- \* REPORTS TO A/DO PROCUREMENT MANAGER

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

THIS CHART IS INTENDED TO REFLECT REPORTING RELATIONSHIPS ONLY. IT DOES NOT INDICATE THE NUMBER OF PERSONNEL OR THE NATURE OF RELATIONSHIPS.

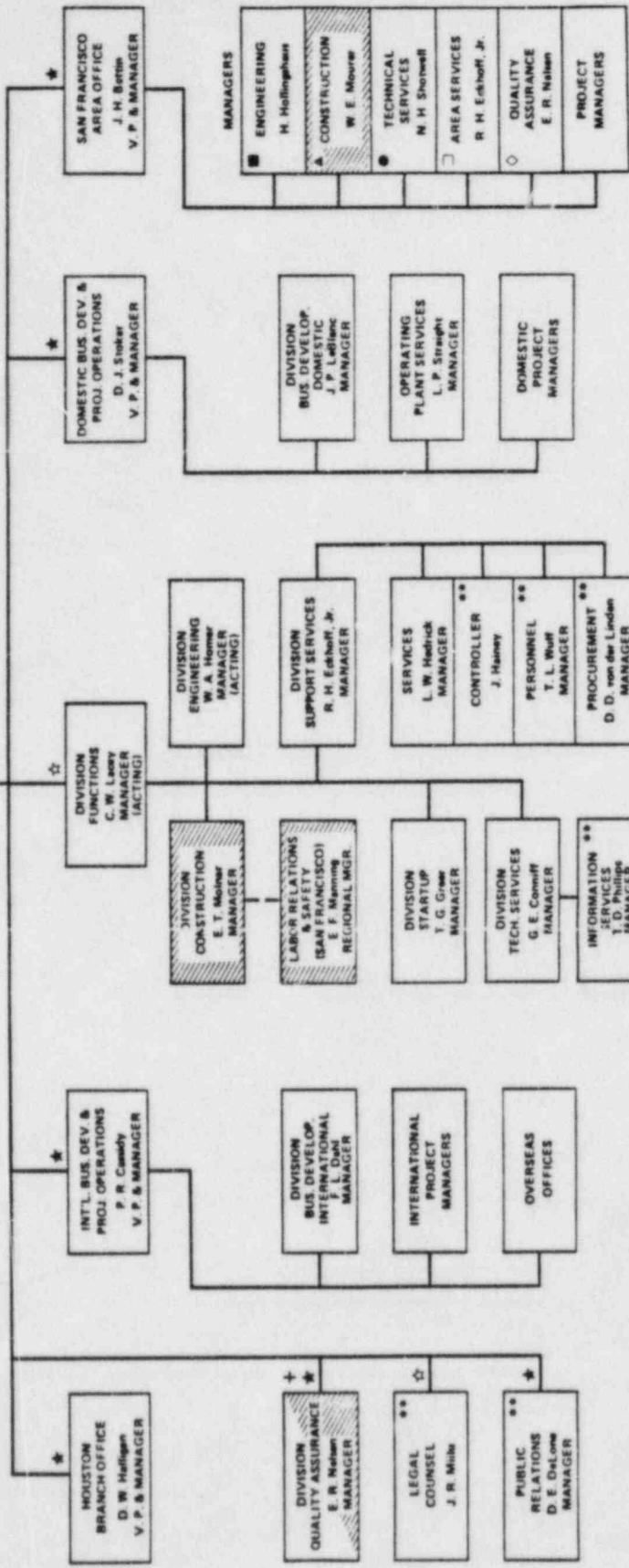
★ REPORTS TO GENERAL MANAGER  
 ☆ REPORTS TO DEPUTY GEN. MGR.

**LEGEND**  
 [Hatched Box] Bechtel Construction, Inc.  
 [Solid Box] WESTERN POWER DIVISION

**WESTERN POWER DIVISION**  
 L. G. Hinkelman  
 VICE PRESIDENT  
 AND GENERAL MANAGER

C. W. Leavy  
 VICE PRESIDENT  
 AND DEPUTY GEN. MGR.

PECL (TAINMAN)  
 W. C. Hise  
 PRESIDENT



**LEGEND**  
 [Hatched Box] Bechtel Construction, Inc.  
 [Solid Box] WESTERN POWER DIVISION

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

**DIVISION CONTROL**  
 ▲ CONSTRUCTION: E. T. Mohler  
 ■ ENGINEERING: W. A. Homer (Acting)  
 ○ QUALITY ASSURANCE: E. R. Nelson  
 ● TECHNICAL SERVICES: G. E. Conroy  
 □ SUPPORT SERVICES: R. H. Eckhoff, Jr.

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

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

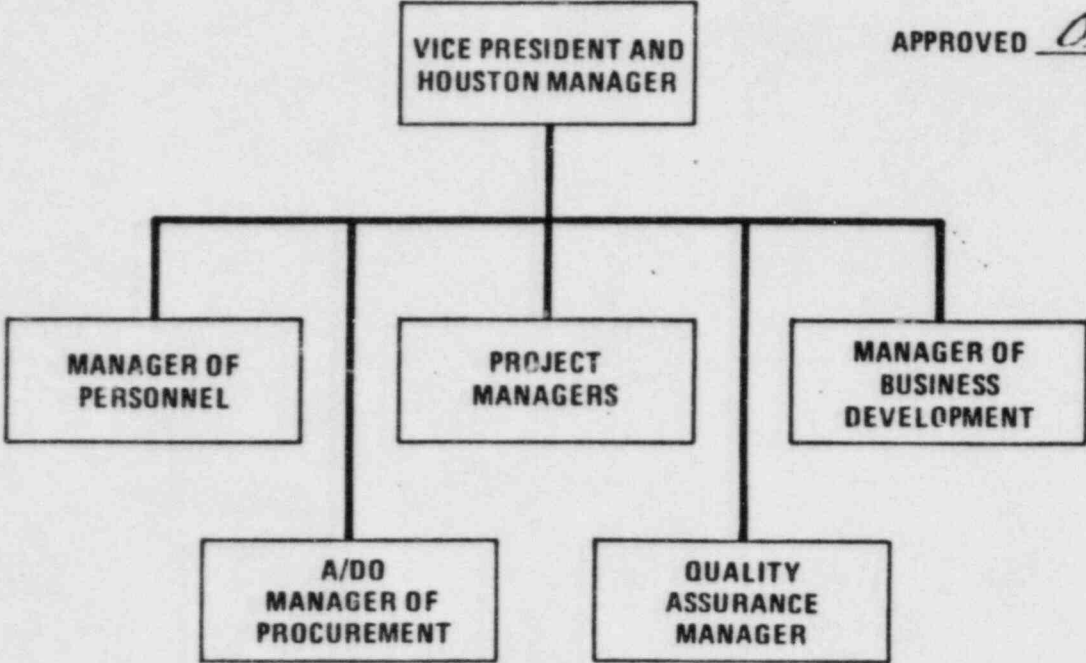
STPEGS - QAPD  
 PART B  
 Figure 6

WP1

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

HOUSTON OFFICE  
PLAN OF ORGANIZATION

APPROVED *O. W. Holligan*



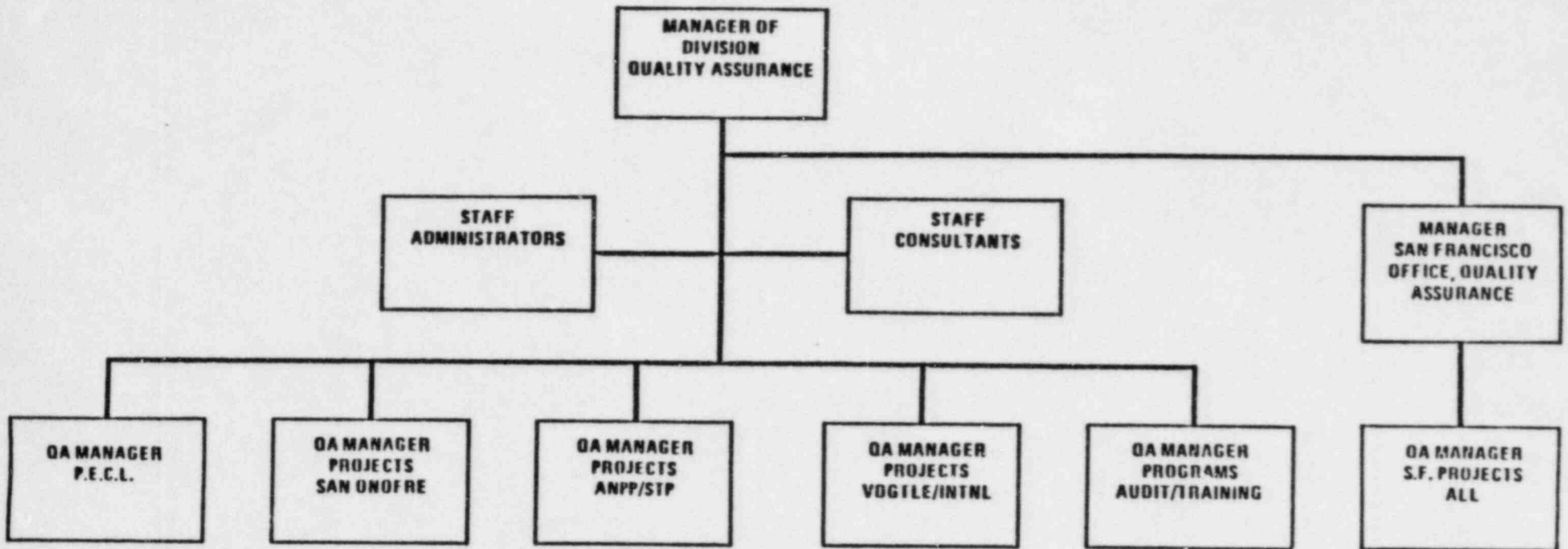
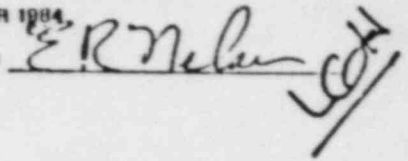


THIS CHART IS INTENDED TO REFLECT REPORTING RELATIONSHIPS AND NOT NECESSARILY LEVELS OF RESPONSIBILITY, SENIORITY OF POSITIONS, OR WORKING RELATIONSHIPS.

WESTERN POWER DIVISION  
PLAN OF ORGANIZATION  
QUALITY ASSURANCE

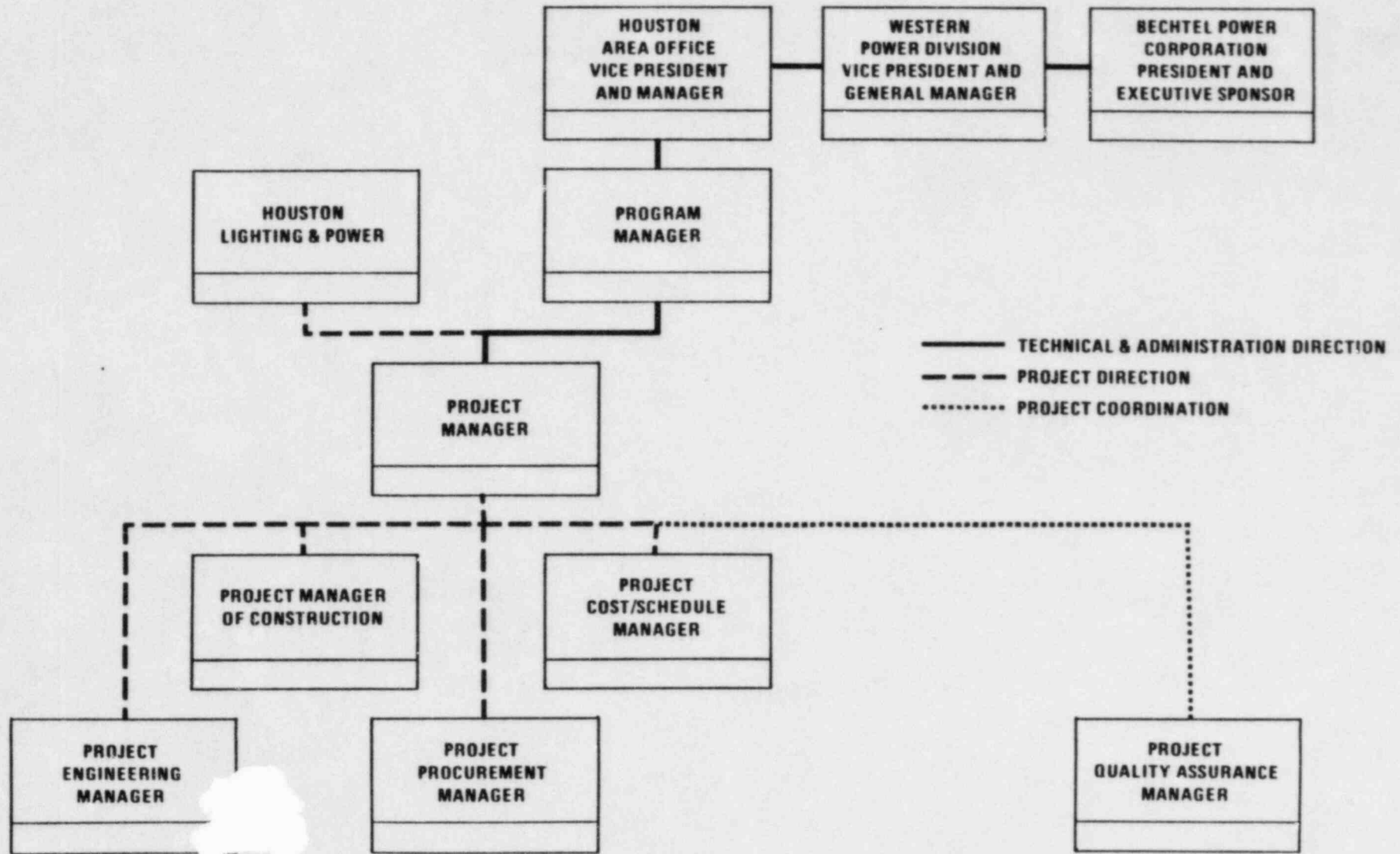
SEPTEMBER 1984

APPROVED



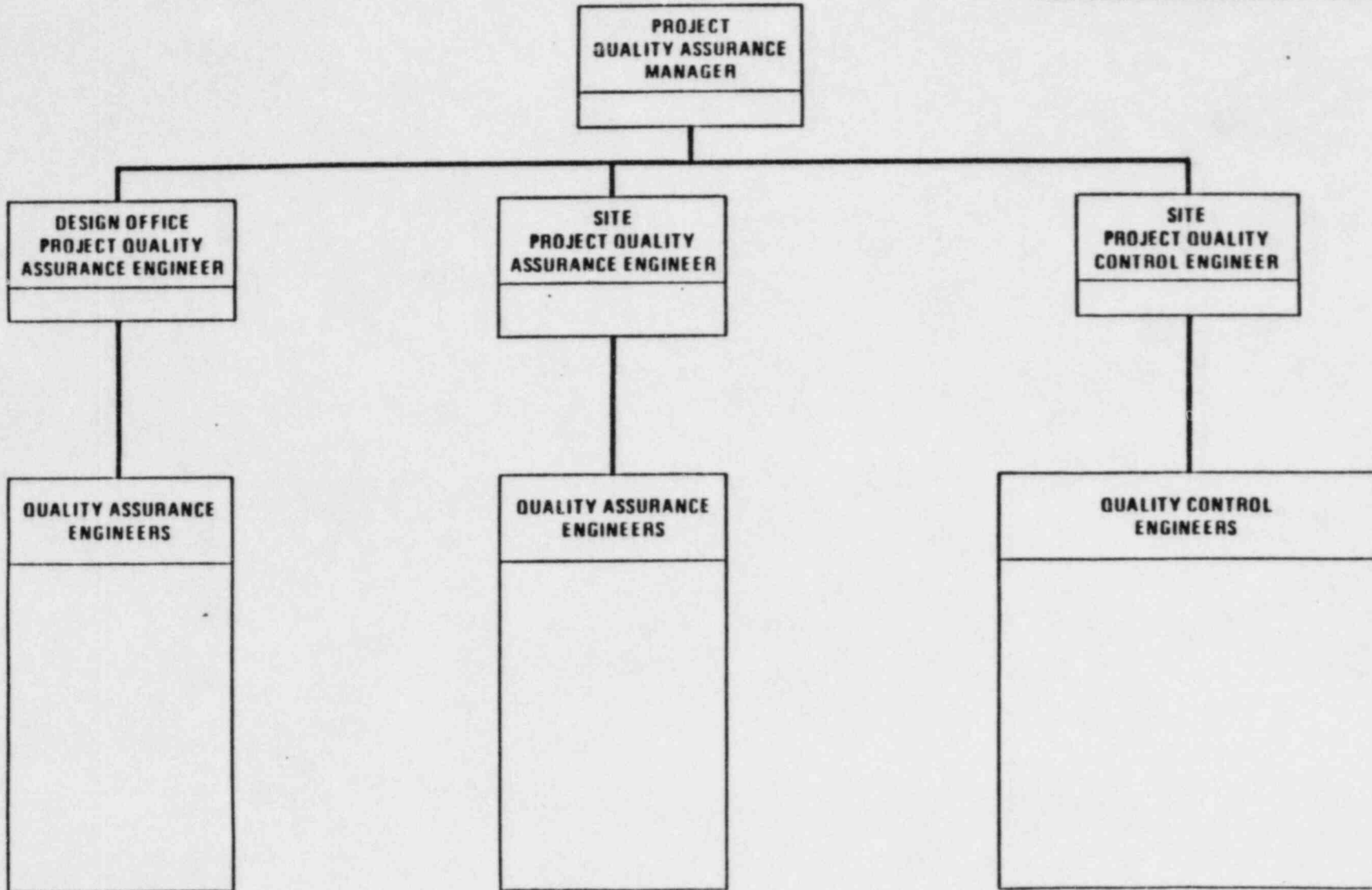
STPEGS - QAPD  
PART B  
Figure 7

**SOUTH TEXAS PROJECT  
MANAGEMENT ORGANIZATION**

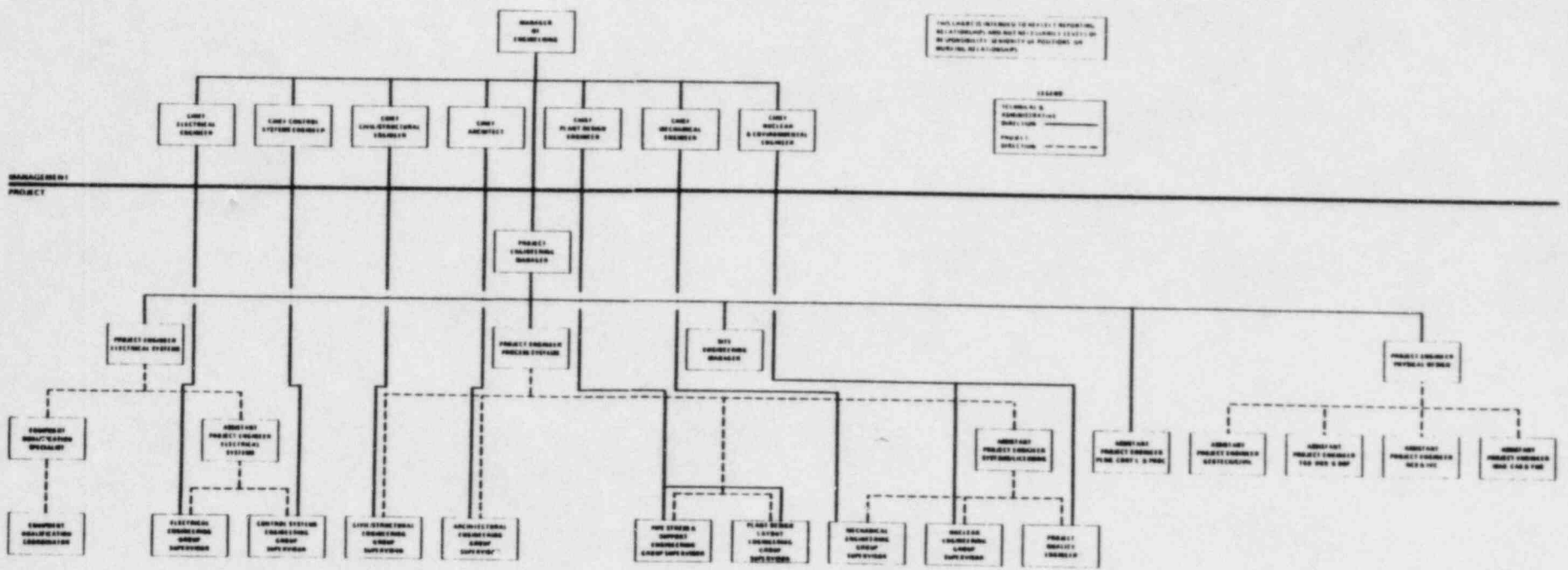


# SOUTH TEXAS PROJECT QUALITY ASSURANCE ORGANIZATION

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



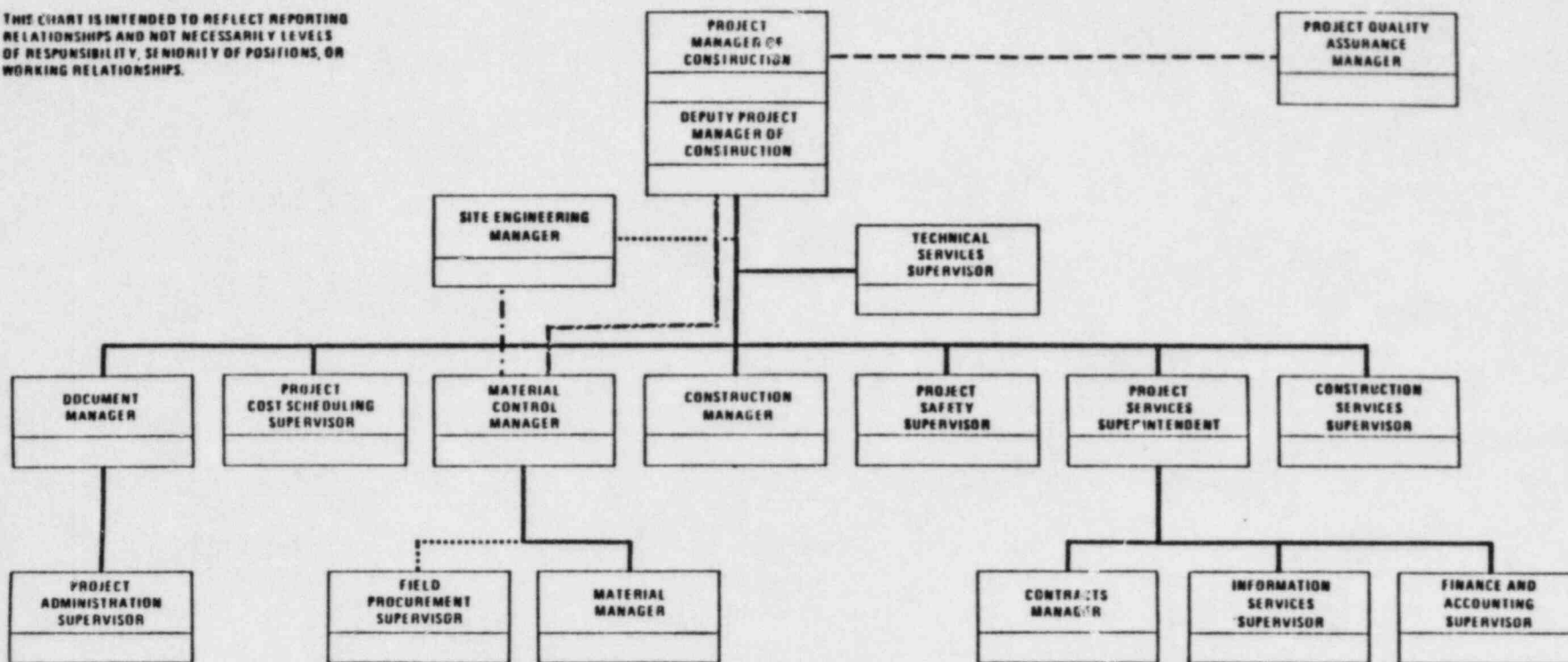
# SOUTH TEXAS PROJECT ENGINEERING MANAGEMENT ORGANIZATION CHART



STPEGS - QAPD  
PART B  
Figure 10

## SOUTH TEXAS PROJECT CONSTRUCTION MANAGEMENT ORGANIZATION CHART

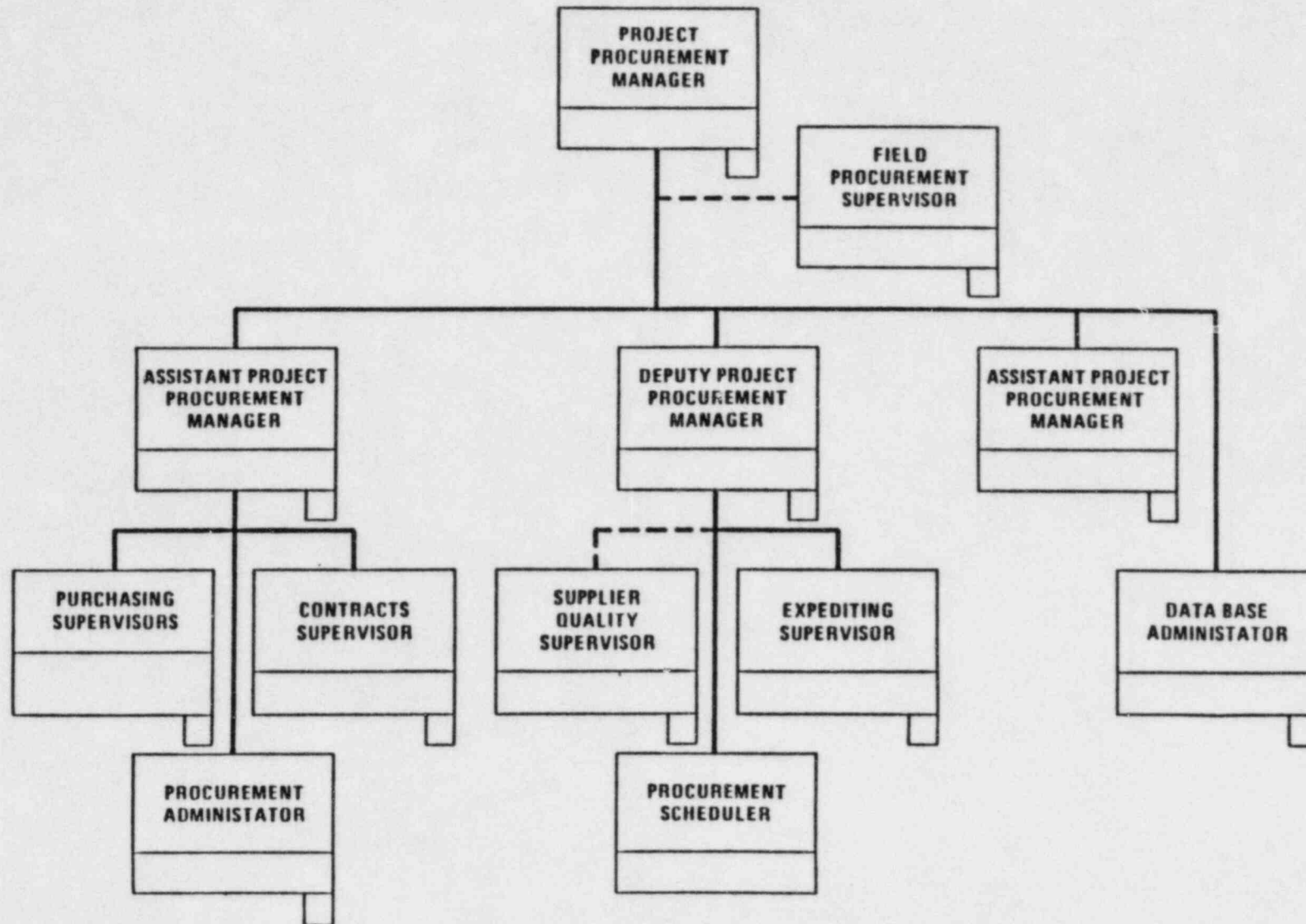
THIS CHART IS INTENDED TO REFLECT REPORTING RELATIONSHIPS AND NOT NECESSARILY LEVELS OF RESPONSIBILITY, SENIORITY OF POSITIONS, OR WORKING RELATIONSHIPS.



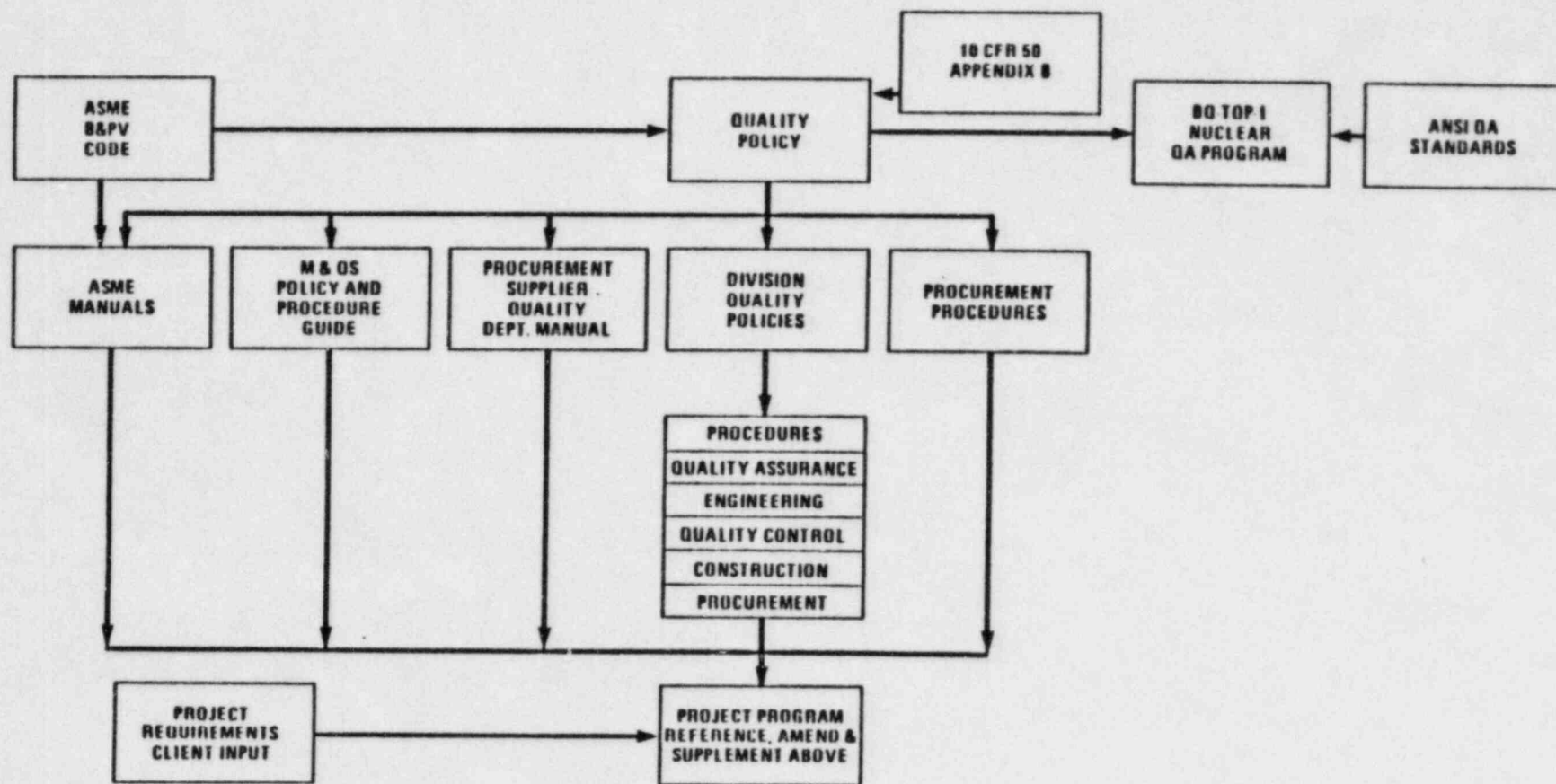
**LEGEND:**

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



STPEGS – QAPD  
PART B  
Figure 13



SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

SECTION REV. 4

TABLE 1

PAGE 1 OF 1

BECHTEL QUALITY PROGRAM DOCUMENTS

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

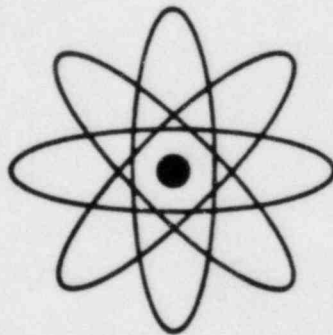
SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION  
QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

REVISION 11  
DATE May 1, 1985

# EBASCO

## QUALITY ASSURANCE PROGRAM DESCRIPTION

### PART C



HOUSTON LIGHTING & POWER COMPANY

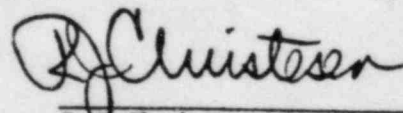
ELECTRIC GENERATING STATION UNITS 1 & 2



**STATEMENT OF AUTHORITY**

The management of Ebasco Services Incorporated recognizes the necessity for a comprehensive Quality Program for Nuclear Power Plants. Ebasco Company Procedure No. N-21 establishes the basic organization, assigns authorities and responsibility for implementing the Quality Program, and establishes the requirement for a corporate Quality Assurance Manual. Accordingly, this Manual represents Ebasco Quality Program policy. In this respect, it is to be used as a standard by personnel in all Ebasco organizational units.

The primary responsibility for overall implementation and administration of the Ebasco Quality Assurance Program rests with the Vice President Corporate Quality Programs as delegated to him by the President. The Quality Program Committee has been established under the auspices of the President, consisting of representatives of designated Vice Presidents. The Committee is permanent and its Chairman shall be the Vice President Corporate Quality Programs.



R. S. Christesen  
President

June 29, 1984

<p style="text-align: center;"><b>EBASCO SERVICES INCORPORATED</b></p>	<p style="text-align: center;"><b>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</b></p> <p style="text-align: center;">TABLE OF CONTENTS</p>	<p><b>SECTION</b></p> <p>Revision <u>11</u></p> <p>Date <u>05/01/85</u></p>
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Introduction & Scope of Services

PART I - General

<u>Section</u>	<u>Title</u>	
QA-I-1	Quality Assurance Program	R11
QA-I-2	Organization and Responsibilities	
QA-I-3	Personnel Indoctrination and Training Program in Quality Assurance	
QA-I-4	Deleted (not applicable)	
QA-I-5	Deleted (not applicable)	
QA-I-6	Quality Assurance Records	R11

PART II - Engineering Offices

Deleted (not applicable)

PART III - Construction Site

<u>Section</u>	<u>Title</u>	
QA-III-1	Instructions, Procedures, and Drawings	R11
QA-III-2	Document Control	
QA-III-3	Deleted (not applicable)	
QA-III-4	Deleted (not applicable)	
QA-III-5	Deleted (not applicable)	
QA-III-6	Nonconformances	R11
QA-III-7	Corrective Action	

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">TABLE OF CONTENTS</p>	<p>SECTION</p> <p>Revision <u>11</u></p> <p>Date <u>05/01/85</u></p>
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PART III - Construction Site (Cont'd)

<u>Section</u>	<u>Title</u>	
QA-III-8	Control of Special Processes	
QA-III-9	Quality Assurance Audits	
QA-III-10	Identification and Control of Items	
QA-III-11	Inspection	
QA-III-12	Test Control	R11
QA-III-13	Control of Measuring and Testing Equipment	
QA-III-14	Control of Receiving, Handling, and Storage	R11
QA-III-15	Inspection, Test, and Operating Status	
Appendix I	Terms and Definitions	
Appendix II	Ebasco Exceptions to US Nuclear Regulatory Guides and ANSI Standards Indicated in Section QA-I-1	R11

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">INTRODUCTION &amp; SCOPE OF SERVICES</p>	<p style="text-align: center;">SECTION</p>
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### Introduction

The Ebasco Quality Assurance Program to be used on the South Texas Project is described in this Manual. It is based on the Ebasco Nuclear Quality Assurance Program Manual, ETR-1001 Rev. 12, which was accepted by the United States Nuclear Regulatory Commission on May 4, 1984. ETR-1001 Rev. 12 represents Ebasco Quality Program policy and requirements for the design and construction of nuclear power stations under the jurisdiction of or in accordance with the requirements of the United States Nuclear Regulatory Commission. In this respect, it is the standard which is used by all Ebasco personnel. Ebasco's commitment to Quality is confirmed in the "Statement of Authority" signed by the President of Ebasco Services Incorporated.

This Manual, as modified for the South Texas Project, is assigned by the Quality Program Coordinator via the Manager Site Quality Assurance to individuals as required for their exclusive use. However, it remains the property of Ebasco Services Incorporated and shall be returned upon request. It is loaned in confidence and upon the condition that neither it nor the information contained in it will be reproduced, copied, or disclosed in whole or in part, except for its incorporation into applicable portions of Houston Lighting & Power Company safety analysis reports. The material herein is copyrighted and protected by the copyright laws.

### Scope of Services

Ebasco Services Incorporated's scope of services for the South Texas Project includes construction services as well as quality assurance and quality control appropriate to those services. The design and procurement sections of ETR-1001 Rev. 12 are not applicable to Ebasco Services Incorporated's scope of services. Those responsibilities are assigned to the Client or his designee. The remainder of ETR-1001 Rev. 12 has been modified as appropriate for the South Texas Project and approved in accordance with applicable Company Procedures.

Although Section QA-III-1, "Instructions, Procedures, and Drawings," contains certain requirements relating to control of drawings, the Client or his designee is the Architect/Engineer and will issue all design drawings. Ebasco may, however, from time to time, initiate drawings which are not design documents, when authorized by specifications issued by the Client or his designee.

<b>EBASCO SERVICES INCORPORATED</b>	<b>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</b>  <b>INTRODUCTION &amp; SCOPE OF SERVICES</b>	<b>SECTION</b>
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Ebasco performs quality trend analysis on a corporate basis as described in Sections QA-I-1, QA-III-6, QA-III-7, and QA-III-9 of this Manual. This trend analysis is a corporate-wide compilation and analysis of quality data generated by the Quality Assurance organization in conjunction with the various projects on which Ebasco is performing nuclear safety-related activities and is not related to the specific South Texas Project trend analysis program. The Client is responsible for the performance of quality trend analysis specific to the South Texas Project.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-1</p>
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## 1.0 SCOPE

The purpose of this Section is to describe the Quality Assurance Program of Ebasco Services Incorporated and its applicability to safety-related activities and services performed by Ebasco in the construction of the South Texas Project. This program has been designed to meet the applicable requirements of the United States Nuclear Regulatory Commission 18 Quality Assurance Criteria of 10 CFR 50, Appendix B. It has also been designed to meet the regulatory position of the following USNRC Regulatory Guides and ANSI Standards, with exceptions and clarifications as stated in Appendix II of this Manual:

<u>Standard</u>	<u>Title</u>
ANSI N45.2-1971 R.G. 1.28 (Rev. 0, 6/72)	Quality Assurance Program Requirements for Nuclear Power Plants
ANSI N45.2.1-1973 R.G. 1.37 (Rev. 0, 3/73) (See Appendix II Notes 3 through 5)	Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants
ANSI N45.2.2-1972 R.G. 1.38 (Rev. 0, 3/73) (See Appendix II Notes 6 through 11)	Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants (During the Construction Phase)
ANSI N45.2.3-1973 R.G. 1.39 (Rev. 0, 3/73) (See Appendix II Notes 12 and 13)	Housekeeping During the Construction Phase of Nuclear Power Plants
ANSI N45.2.4-1972 R.G. 1.30 (Rev. 0, 8/72) (See Appendix II Notes 14 and 15)	Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations
ANSI N45.2.5-1974 (See Appendix II Notes 1 and 2)	Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants



<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-1</p>
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<u>Standard</u>	<u>Title</u>	
ANSI N45.2.6-1973 R.G. 1.58 (Rev. 0, 8/73) As Modified by Positions C.5, C.6, C.7,C.8, and C.10 of Rev. 1 (See Appendix II Note 24)	Qualifications of Inspection, Examination, and Testing Personnel for the Construction Phase of Nuclear Power Plants	R11   R11
ANSI N45.2.8-1975 R.G. 1.116 (6/76) (See Appendix II Notes 16 through 18)	Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants	
ANSI N45.2.9-1974 R.G. 1.88 (Rev. 2, 10/76) (See Appendix II Notes 19 through 21)	Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants	
ANSI N45.2.10-1973 R.G. 1.74 (Rev. 0, 2/74)	Quality Assurance Terms and Definitions	
ANSI N45.2.12-1977 R.G. 1.144 (Rev. 1, 9/80) (See Appendix II Note 22 and 23)	Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants	
ANSI N45.2.23-1978 R.G. 1.146 (Rev. 0, 8/80)	Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants	

Table I-1.1 provides a matrix which shows the sections of the Ebasco Nuclear Quality Assurance Program Manual that correspond to the requirements of 10 CFR 50, Appendix B and USNRC Regulatory Guide 1.28, Rev. 0. The Ebasco Quality Assurance Program is comprised of: The Ebasco Nuclear Quality Assurance Program Manual, written corporate policies, procedures, departmental instructions, and other site-specific documents related to quality. Table I-1.2 provides a matrix of the principal implementing procedures as they relate to 10 CFR 50, Appendix B criteria. Table I-1.3 is a listing of these procedures by title. The principal implementing procedures are not necessarily limited to those indicated in the matrix. Implementing procedures will be issued for South Texas Project use as the need for specific procedures arises due to changes in scope of Ebasco safety-related activities.

|R11

<p style="text-align: center;"><b>EBASCO SERVICES</b> INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 <b>QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</b></p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-1</p>
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The Ebasco Nuclear Quality Assurance Program Manual has been designed to meet the requirements of 10 CFR 50.34(7) for a quality assurance program description. It will be incorporated into applicable portions of Houston Lighting & Power Company safety analysis reports in whole or by reference as provided by 10 CFR 50.32.

The Ebasco Quality Program for the South Texas Project is in force at the Ebasco home office and Construction operations. The Ebasco home office is an organized unit where project-related support functions are performed. Construction operations encompass those activities related to the construction of the nuclear power station. Ebasco's responsibility for implementing the Ebasco Quality Program shall begin at the commencement of activities affecting quality and shall end with the turnover of completed systems to the Client or his designee.

Definitions pertaining to the Ebasco Quality Program are listed in Appendix I of this Manual.

## 2.0 QUALITY ASSURANCE ORGANIZATION

The Ebasco Quality Assurance organization is responsible for establishing new, and updating existing, quality assurance requirements. In addition, this organization is responsible to administer and enforce the implementation of the Ebasco Quality Assurance Manual.

## 3.0 QUALITY PROGRAM COMMITTEE

3.1 The Ebasco Quality Program Committee is responsible for and has authority to make and approve procedures for any changes to this Manual. This committee is comprised of representatives of International Operations, Corporate and Consulting Engineering, Advanced Technology, Project Procurement, Project Management Services, Corporate Quality Programs, EnviroSphere Company, Ebasco Plant Services Inc, and Ebasco Constructors Inc. These representatives are appointed by the Vice President of the respective organizational area.

|R11

The Vice President Corporate Quality Programs is designated by the President as the Chairman of the Quality Program Committee. A member of the Quality Assurance organization shall be designated by the Chairman as Quality Program Coordinator, who shall function as the Quality Program Committee's secretary and be a member of the Committee.

The Director Quality Assurance is designated by the Vice President Corporate Quality Programs as a permanent representative of Corporate Quality Programs on the Quality Program Committee.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-1</p>
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The Committee shall be responsible for and shall have authority to make any changes to the policies and procedures of the Ebasco Quality Program. All changes or revisions to the Ebasco Nuclear Quality Assurance Program Manual shall be processed through the Quality Program Committee by the Quality Program Coordinator.

|R11

3.2 Ebasco Quality Program Procedures document the various significant activities of the Quality Program that are the direct responsibility of the Quality Program Committee or the Quality Program Coordinator. These procedures include but are not limited to the following:

3.2.1 Quality Program Procedure No. 4 entitled, QUALITY PROGRAM COORDINATOR - DESCRIPTION OF POSITION, DUTIES, RESPONSIBILITIES.

3.2.2 Quality Program Procedure No. 5 entitled, DEVIATING FROM THE CORPORATE EBASCO NUCLEAR QUALITY ASSURANCE PROGRAM MANUAL. This provides for control of such deviations by requiring execution of an authorization form involving approval of specified authorities to assure, among other things, that safety and/or quality will not be sacrificed.

3.2.3 Quality Program Procedure No. 6 entitled, ASSIGNMENT, DISTRIBUTION AND CONTROL OF THE EBASCO NUCLEAR QUALITY ASSURANCE PROGRAM MANUAL.

3.2.4 Quality Program Procedure No. 7 entitled, REVISIONS TO THE EBASCO NUCLEAR QUALITY ASSURANCE PROGRAM MANUAL.

#### 4.0 GENERAL

4.1 Section QA-I-2 of this Manual describes the organizational structure, functional responsibilities, levels of authority, and lines of internal and external communication for management, direction, and execution of the Ebasco Quality Assurance Program. By the Statement of Authority at the front of this Manual, Ebasco's President mandates the use of this Manual and its supporting documents which make up the Ebasco Quality Program for the South Texas Project.

|R11

4.2 It shall be the responsibility of each Ebasco department and the individual personnel of that department to adhere to the requirements of this Program. Section QA-III-1 of this Manual requires these departments to develop and control Ebasco instructions, procedures, and/or drawings which describe the manner in which activities affecting quality are to be

|R11

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accomplished. When documented evidence is required for the satisfactory performance of these activities, checklists, forms, and/or other appropriate means shall provide this evidence. The documents which contain the procedures listed in Table I-1.3 and are used to implement the Ebasco QA Program are:

- 4.2.1 Quality Assurance Procedures Manual for South Texas Project
- 4.2.2 Standard Quality Assurance Procedures for the South Texas Project
- 4.2.3 Quality Program Procedures Manual
- 4.2.4 Company Procedures Manual - Nuclear
- 4.2.5 Quality Control Procedures Manual for South Texas Project
- 4.2.6 Site Quality Assurance Instructions Manual for South Texas Project
- 4.2.7 Construction Procedures Manual - Administrative Site Procedures for South Texas Project
- 4.2.8 Construction Procedures Manual - Construction Site Procedures for South Texas Project
- 4.2.9 Construction Procedures Manual - Construction Maintenance Instructions for South Texas Project
- 4.2.10 Standard Site Procedures for the South Texas Project

|R11

The above-listed manuals may also contain departmental working procedures which do not describe activities affecting quality and therefore are not governed by the requirements of this Manual. Furthermore, certain implementing procedures may require changes in order to suit unique client requirements; such procedures for the South Texas Project will be included in a project manual of procedures and/or a site manual. In this case, the changed procedure shall be designated a Project Procedure. These procedures will be subject to controls similar to those applicable to the original documents.

4.3 In addition to the requirements of Section QA-III-1 of this Manual and Paragraph 4.2 above, Section QA-III-8 of this Manual further assures control over quality-related activities by requiring that special processes shall be performed in accordance with written qualified

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procedures, and that they shall be performed only by qualified personnel. All qualifications shall be in accordance with applicable codes, standards, specifications, and other requirements as applicable. The Ebasco Quality Program provides for the verification of quality requirements through written policies, procedures, and instructions for the performance of inspections and tests. These inspections and tests are performed on services provided by Ebasco. All inspections shall be performed by individuals other than those who performed the activity.

#### 5.0 INDOCTRINATION AND TRAINING

Section QA-I-3 of this Manual provides for the company-wide indoctrination and training of Ebasco personnel engaged in activities subject to the requirements of the Ebasco Quality Assurance Program. The objectives of the training program are to familiarize applicable Ebasco personnel with this Quality Assurance Program Manual and the implementing procedures identified in Table I-1.3. Overall responsibility for training as delineated in Section QA-I-3 rests with the Quality Assurance organization.

#### 6.0 REVIEW OF QUALITY PROGRAM ADEQUACY

6.1 The adequacy of the Ebasco Quality Program is reviewed on a regular basis. The determination of program adequacy is based on audit results and trend analyses. Section QA-III-9 of this Manual provides for the performance and follow-up of audits by Site Quality Assurance and home office Quality Assurance Engineering and of management audits of the Materials Applications and Quality Assurance functions.

6.2 Audits performed by home office Quality Assurance Engineering and Site Quality Assurance are designed to evaluate the Quality Program effectiveness on a project basis. When corrective action is necessary, re-audits are scheduled to assure implementation of corrective action. Section QA-III-9 of this Manual defines review activities and reports involved in the auditing function.

6.3 Information on audits performed by home office Quality Assurance Engineering and Site Quality Assurance shall be submitted to the Quality Assurance Engineering Supervisor of Auditing. He shall make an analysis of the available quality data with respect to quality trends and report the result at least semi-annually to the appropriate executive level of management for review and assessment in accordance with Quality Assurance Procedure QA-D.3. The Vice President Corporate Quality Programs shall be responsible for initiating the implementation of any changes or corrective action deemed necessary to improve the effectiveness of the Ebasco Quality Assurance Program.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  QUALITY ASSURANCE PROGRAM	SECTION  QA-I-1
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TABLE I-1.1

MATRIX OF COMPLIANCE TO  
USNRC 10 CFR 50 APPENDIX B AND ANSI N45.2

<u>10 CFR 50 Appendix B Criteria</u>	<u>ANSI N45.2 Paragraph</u>	<u>Ebasco Nuclear Quality Assurance Program Manual Section</u>
I	3	QA-I-2
II	2	QA-I-1, QA-I-3
III	4	Not Applicable to Ebasco STP Work Scope
IV	5	Not Applicable to Ebasco STP Work Scope
V	6	QA-III-1
VI	7	QA-III-2
VII	8	Not Applicable to Ebasco STP Work Scope
VIII	9	QA-III-10
IX	10	QA-III-8
X	11	QA-III-11
XI	12	QA-III-12
XII	13	QA-III-13
XIII	14	QA-III-14
XIV	15	QA-III-15
XV	16	QA-III-6
XVI	17	QA-III-7
XVII	18	QA-I-6
XVIII	19	QA-III-9

TABLE I-1.2  
MATRIX OF COMPLIANCE OF  
PRINCIPAL IMPLEMENTING PROCEDURES TO 10 CFR 50 APPENDIX 8

Crite- rion	Nuclear Procedures (N-)	Quality Control Procedures (QCP-,NDE-,QC-)	Site Quality Assurance Instructions (QAI-)	Quality Assurance Procedures (QA-)	Standard Quality Assurance Procedures (SQA-)	Construction Procedures			Quality Program Procedures (QPP-)	Standard Site Procedures (SPP-)
						Administrative Site Procedures (ASP-)	Construction Site Procedures (CSP-)	Construction Maintenance Instructions (CMI-)		
I	-21	-1.1	-001							
II	-24	-2.1,-2.2,-6.3	-003,-012, -017,-018, -022,-023	-G.3			-14,-34		-4 through -7	
V	-23	-6.1,-6.3	-002,-005, -017,-022	-G.1,-G.2	-01		-1,-7,-10, -11,-12, -14,-17	-1 through -96 (as applicable)		-1
VI		-6.2	-002,-022	-G.1,-G.2			-6			
VIII		-9.1 through -13.3 (as applicable), -14.1,-17.2					-5 -18,-32	-14,-25,-38, -39,-88		
IX		-9.1,-9.3, -9.4,-9.5, -10.1,-10.6, -002-1,-002-2, -005-1,-005-2, -005-3,-006-1, -007-1,-009-1, -100(A:	-014,-015, -020					-11,-81 through -97		
X		-2.1,-9.1 through -13.3 (as applicable)		-G.3.1	-04					
XI		-11.1,-11.2		-G.3.1			-9	-5,-17,-32, -33		-2
XII		-12.1	-015				-23	-34,-94		
XIII		-10.22,-13.1, -13.2,-13.3					-4,-5, -32,-82	-3,-11,-12, -37,-60 through -65	-1	
XIV		-14.1	-024				-9	-40,-49		
XV		-15.1,-15.2, -15.3	-004,-007, -011				-15,-33			
XVI		-15.2,-16.1	-007,-011	-D.3	-02		-15,-16			
XVII		-17.1,-17.2, -17.3	-010,-019	-G.3,-G.4			-8			
XVIII	-24		-003,-006, -013,-023	-D.4, -D.5.2,-G.3	-03					

R11

R11

EBASCO SERVICES INCORPORATED
HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C
QUALITY ASSURANCE PROGRAM
SECTION QA-I-1

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-1</p>
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TABLE I-1.3

PRINCIPAL IMPLEMENTING PROCEDURES

<u>Procedure No.</u>	<u>Title</u>
<u>NUCLEAR PROCEDURES (N)</u>	
N-21	Nuclear Quality Program Authorization and Implementation
N-23	Reporting a Defect/Noncompliance to the NRC
N-24	Ebasco Management Quality Assurance Audit Committee
<u>QUALITY CONTROL PROCEDURES (QCP, NDE, AND QC)</u>	
QCP-1.1	Quality Control Organization and Responsibilities
QCP-2.1	Indoctrination, Training and Qualification of Quality Control Personnel to ANSI N45.2.6 Requirements
QCP-2.2	Indoctrination, Training and Qualification of Quality Control Personnel to ASME Section III, Division 2 Requirements
QCP-6.1	Preparation, Review and Approval of Quality Control Procedures
QCP-6.2	Document Control
QCP-6.3	Quality Control Review of Incoming Revisions/Changes to Bechtel Specifications and Procedures
QCP-9.1	Weld Inspection, Piping - ASME
QCP-9.3	Inspection of Post-Weld Heat Treatment
QCP-9.4	Verification of Weld Filler Material Control
QCP-9.5	Weld Inspection (AWS)



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Procedure  
No.

Title

QUALITY CONTROL PROCEDURES (Cont'd)

QCP-10.1	Cadweld Inspection
QCP-10.2	Preplacement Concrete Inspection
QCP-10.3	Concrete Placement Inspections
QCP-10.4	Post-Placement Concrete Inspection
QCP-10.5	Inspection of Structural Steel Erection and Bolting
QCP-10.6	Stud Welding Inspection
QCP-10.7	Miscellaneous Metal Fabrication Inspection
QCP-10.8	Protective Coatings Inspection
QCP-10.9	General Inspection
QCP-10.10	Soils Inspection
QCP-10.11	Mechanical Equipment Installation Inspection
QCP-10.12	Pipe Support Installation Inspection
QCP-10.13	Mechanical Instrumentation Installation Inspection
QCP-10.14	System/Subsystem Walk-Down Inspection
QCP-10.15	Electrical Equipment Installation Inspection
QCP-10.16	Inspection of Electrical Raceways
QCP-10.17	Electrical Cable Installation Inspection
QCP-10.18	Electrical Cable Termination Inspection
QCP-10.19	Inspection of Concrete Expansion Anchors, Rock Bolts, and Core Drilling
QCP-10.20	Electrical Penetration Installation Inspection

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-1</p>
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Procedure  
No.

Title

QUALITY CONTROL PROCEDURES (Cont'd)

QCP-10.21	HVAC Duct/Hanger Installation Inspection.
QCP-10.22	Receipt Inspection
QCP-10.23	Waterstop/Joint Filler/Sealer Material Inspection
QCP-10.24	Grouting Inspection
QCP-10.25	Inspection of Bending and Fabrication of Reinforcing Steel
QCP-10.26	Quality Control Verification of Equipment or Component Interchange
QCP-10.27	Modification/Removal Control Procedure
QCP-10.28	Control of Inspection Stamps
QCP-10.30	Inspection of Installation and Fabrication of Electrical Cable Tray Hangers, Conduit Supports and Auxiliary Steel
QCP-11.1	Hydrostatic and Pneumatic Pressure Test Inspection
QCP-11.2	Duct and Housing Leak Test Inspection
QCP-12.1	Control of Measuring and Test Equipment
QCP-13.1	Storage and Maintenance Inspection/Verification
QCP-13.2	Verification of Rigging and Handling Activities
QCP-13.3	Housekeeping Inspections
QCP-14.1	Status Control
QCP-15.1	Identification and Control of Discrepancies and Nonconforming Conditions
QCP-15.2	Stop Work Order

<p style="text-align: center;"><b>EBASCO SERVICES INCORPORATED</b></p>	<p style="text-align: center;"><b>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</b></p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;"><b>SECTION</b></p> <p style="text-align: center;">QA-I-1</p>
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Procedure  
No.

Title

QUALITY CONTROL PROCEDURES (Cont'd)

QCP-15.3	Control and Processing of Transition Phase Deficiencies and Conditions
QCP-16.1	Corrective Action
QCP-17.1	Quality Assurance Records
QCP-17.2	Preparation, Issuance, and Control of ASME Nameplates/Data Reports
QCP-17.3	ASME On-Site Fabrication
NDE-002-1	Radiographic Standards for Welds and Components
NDE-002-2	Procedure for the Calibration and Operation of the Radiographic Densitometer
NDE-005-1	Ultrasonic Examination (Thickness Measurement)
NDE-005-2	Ultrasonic Examination of Pipe Welds and Components
NDE-005-3	Ultrasonic Examination of Structural Welds
NDE-006-1	Liquid Penetrant Examination
NDE-007-1	Magnetic Particle Examination Procedure
NDE-009-1	Visual Examination of NF Welds
QC-100	Preparation, Control and Distribution of NDE Procedures (with Addenda A)

SITE QUALITY ASSURANCE INSTRUCTIONS (QAI)

QAI-001	Site QA Organization and Responsibilities
QAI-002	Preparation, Review, Distribution and Control of Supplements to Quality Assurance Procedures

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-1</p>
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Procedure  
No.

Title

SITE QUALITY ASSURANCE INSTRUCTIONS (Cont'd)

QAI-003	Indoctrination, Training, Qualification and Certification of Site Quality Assurance Audit Personnel
QAI-004	Issuance and Processing of Nonconformance Reports
QAI-005	Review and Approval of Quality Control and Construction Procedures
QAI-006	Audit of Ebasco Site Organization by the Client, Bechtel, Ebasco Home Office, Code or Regulatory Agency
QAI-007	Reportable Deficiencies
QAI-010	Site Quality Assurance Records
QAI-011	Corrective Action and Stop Work Authority
QAI-012	General Surveillance Instruction
QAI-013	Preparation, Conducting, Documenting and Logging of Audits
QAI-014	Quality Assurance Review of Radiographs
QAI-015	Procedure for the Calibration and Operation of the Radiographic Densitometer
QAI-017	QA Review of Incoming Revisions to Bechtel and Houston Lighting & Power QA Program Documents
QAI-018	Quality Assurance Indoctrination and Training Program
QAI-019	Safety-Related Documentation Turnover Packages
QAI-020	Training, Examination and Certification of NDE Personnel

|R11

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Procedure  
No.

Title

SITE QUALITY ASSURANCE INSTRUCTIONS (Cont'd)

QAI-021	Allegation Investigations
QAI-022	Quality Assurance Instructions
QAI-023	Planning of Site Quality Assurance Activities
QAI-024	System Turnover

|R11

QUALITY ASSURANCE PROCEDURES (QA)

QA-G.1	Preparation and Control of Quality Assurance Engineering Department Procedures
QA-G.2	Control and Distribution of Project-Related Manuals
QA-G.3	Qualification of QA Audit Personnel
QA-G.3.1	Qualification of Inspection, Examination and Testing Personnel
QA-G.4	Quality Assurance Engineering Records
QA-D.3	Determination and Analysis of Quality Trends
QA-D.4	Resolution of External Audit Findings
QA-D.5.2	Site Audit Procedure

STANDARD QUALITY ASSURANCE PROCEDURES (SQAP)

SQAP-01	Preparation and Control of Standard Quality Assurance Procedures
SQAP-02	Deficiency Reporting
SQAP-03	Project Audits
SQAP-04	Project Surveillances

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Procedure  
No.

Title

ADMINISTRATIVE SITE PROCEDURES (ASP)

ASP-1	Preparation of Site Procedures
ASP-2	Organization and Responsibility
ASP-3	Material Requisition
ASP-4	Heavy Handling and Rigging
ASP-5	Material Control
ASP-6	Document Control
ASP-7	Field Change Notice Procedure
ASP-8	Preparation and Transmittal of Quality Assurance Records
ASP-9	Construction Turnover/Release for Test
ASP-10	Configuration Control
ASP-11	Field Change Request
ASP-12	Development of Construction Field Sketches
ASP-14	Impact Review of Bechtel/HL&P Issued Documents
ASP-15	Stop Work Procedure
ASP-16	Corrective Actions
ASP-17	Design Change Package
ASP-18	Modification of Equipment/Component Tags
ASP-20	ASME Section XI Repair Program
ASP-21	Qualification of Construction Test Supervisors

<p style="text-align: center;"><b>EBASCO SERVICES INCORPORATED</b></p>	<p style="text-align: center;"><b>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</b></p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;"><b>SECTION</b></p> <p style="text-align: center;">QA-I-1</p>
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Procedure  
No.

Title

ADMINISTRATIVE SITE PROCEDURES (Cont'd)

ASP-22	Field Fabrication Modifications
ASP-23	Measuring and Test Equipment Control
ASP-32	Maintenance of Construction Equipment
ASP-33	Nonconformances
ASP-34	Indoctrination and Training
ASP-82	Fire Prevention and Fire Protection

CONSTRUCTION SITE PROCEDURES (CSP)

CSP-1	Excavation and Backfill
CSP-2	Installation of Permanent Electrical and Mechanical Plant Equipment
CSP-3	Control of Lifting Apparatus
CSP-4	Concrete Placement
CSP-5	Duct and Housing Leak Test
CSP-6	Installation of HVAC Hangers
CSP-7	Pipe Support Installation
CSP-8	Cable Terminations and Splices
CSP-9	Installation of Duct and Duct Accessories
CSP-10	Erection and Bolt-up of Structural Steel
CSP-11	Storing, Installation, Cadwelding, Fabrication and Modification of Rebar

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNIT 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE PROGRAM</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-1</p>
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Procedure  
No.

Title

CONSTRUCTION SITE PROCEDURES (Cont'd)

CSP-12	General Instructions for Housekeeping During Construction
CSP-13	Concrete Core Drilling
CSP-14	Control of Material for Temporary Construction
CSP-16	Piping Installation Procedure
CSP-17	Hydrostatic and Pneumatic Testing
CSP-18	Soil Test Fill Procedure
CSP-19	Safety and Non-Safety Related Cable Pulling
CSP-20	Construction Survey Activities
CSP-21	Field Preparation and Coating of Surfaces Outside the Reactor Containment Building
CSP-22	Valve/Pump Work
CSP-24	Reactor Coolant Pump Volute Final Setting
CSP-25	Temporary Equipment Site Tagging Procedure
CSP-26	Reactor Vessel Final Setting
CSP-27	Steam Generator Final Setting
CSP-29	Reactor Vessel Internals Handling and Assembly
CSP-30	Field Preparation and Coating of Surfaces Inside the Reactor Containment Building
CSP-31	Piping System Cleanliness
CSP-32	Insulation Resistance Testing



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Procedure  
No.

Title

CONSTRUCTION SITE PROCEDURES (Cont'd)

CSP-33	High-Potential Testing
CSP-34	Control and Verification of Survey Equipment
CSP-35	Installation of Post-Tensioning Trumplate Assemblies and Sheathing
CSP-36	Data Collection to Support Geotechnical Monitoring Program
CSP-37	Crane and Hoist Load Testing
CSP-38	Equipment or Component Interchange
CSP-39	Vendor's ASME Code Data Plate Modifications
CSP-40	EE580 Electrical Installations
CSP-41	Installation of Expansion Type Anchors
CSP-43	Installation of Electrical Raceways
CSP-44	Installation of Electrical Penetration Assemblies
CSP-47	Instrumentation Installation
CSP-49	Permanent Plant Equipment Site Tagging Procedure
CSP-54	On-Site Shop Fabrication
CSP-55	Field Fabrication of Reinforcing Steel
CSP-56	Application and Repair of Waterproofing of Buildings
CSP-57	Shop Fabrication of ASME Section III Parts, Appurtenances, Piping Subassemblies and Component Supports

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Procedure  
No.

Title

CONSTRUCTION SITE PROCEDURES (Cont'd)

CSP-60	Rigging for Setting Steam Generator
CSP-61	Rigging for Setting Pressurizer
CSP-62	Rigging for Setting Reactor Vessel
CSP-63	Rigging for Setting Unit #2 Reactor Head
CSP-64	Rigging for Setting Unit #2 Reactor Internals
CSP-65	Reactor Coolant Pumps Rigging and Installation
CSP-81	Welder Qualification
CSP-82	AWS D1.1 Structural Welding
CSP-83	General ANSI B31.1 Welding Requirements for Piping and Hangers
CSP-84	General ASME Section III Welding Requirements for Piping and Hangers
CSP-85	Post-Weld Heat Treatment
CSP-86	Repairs of ASME Section III and ANSI B31.1 Piping and Components
CSP-87	Welding Procedure Specification Qualification
CSP-88	Weld Filler Material Control
CSP-89	Field Welding and Repair of Aluminum Bronze ECW [Essential Cooling Water] Piping
CSP-90	Welding Documentation
CSP-93	Control of Weld Filler Material For Non-Permanent Plant Maintenance

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Procedure  
No.

Title

CONSTRUCTION SITE PROCEDURES (Cont'd)

- CSP-94 Maintenance, Calibration and Repair Program for Dimetrics Automatic Welding Equipment
- CSP-95 General Welding Requirements for HVAC
- CSP-96 Request for NDE
- CSP-97 Cold Bending

CONSTRUCTION MAINTENANCE INSTRUCTIONS (CMI)

- CMI-1 Caring and Maintenance of Permanent Plant Items

QUALITY PROGRAM PROCEDURES (QPP)

- QPP-4 Quality Program Coordinator - Description of Position, Duties, Responsibilities
- QPP-5 Deviating from the Corporate Ebasco Nuclear Quality Assurance Program Manual
- QPP-6 Assignment, Distribution and Control of the Ebasco Nuclear Quality Assurance Program Manual
- QPP-7 Revisions to the Ebasco Nuclear Quality Assurance Program Manual

STANDARD SITE PROCEDURES (SSP)

- SSP-1 Preparation, Issue, and Control of Standard Site Procedures
- SSP-2 Project Generic Pressure Test Procedure

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<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">ORGANIZATION AND RESPONSIBILITIES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-2</p>
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## 1.0 SCOPE

This Section of the Manual describes the organizational structure, functional responsibilities, levels of authority, and lines of internal and external communication for management, direction, and execution of the Ebasco Quality Program. It is recognized that quality assurance is an interdisciplinary function and not the sole domain of a single quality assurance group; for that reason, this Section of the Manual includes organizational and functional descriptions of several departments in addition to that organization whose sole function is quality assurance.

## 2.0 GENERAL

2.1 The Ebasco operations organization consists of five independent quality-related principal divisions headed respectively by Group Vice Presidents of Engineering, Construction and Plant Services, Advanced Technology and Special Projects, and International Operations; and the Vice President of Corporate Quality Programs. Each of these officers of the company report to the Ebasco President and Chief Operating Officer. Quality-related subdivisions or subsidiary companies are headed by officers reporting to Group Vice Presidents. Reporting to the Engineering Group Vice President are the Senior Vice President of Corporate and Consulting Engineering; the Vice Presidents of Project Management Services, Project Procurement, and Project Engineering and Design; and the President of Envirosphere Company. Reporting to the Construction and Plant Services Group Vice President are the Presidents of Ebasco Constructors Inc, and Ebasco Plant Services Inc. Reporting to the Advanced Technology and Special Projects Group Vice President is the Vice President of Advanced Technology.

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2.2 Representatives of the Ebasco Group Vice President International Operations; of the Ebasco Senior Vice President of Corporate and Consulting Engineering; of the Ebasco Vice Presidents of Advanced Technology, Project Procurement, Project Management Services, and Corporate Quality Programs; and of the Presidents of Ebasco subsidiaries Envirosphere Company, Ebasco Plant Services Inc, and Ebasco Constructors Inc, comprise the Quality Program Committee which is responsible for Ebasco Quality Assurance policy. This Committee is shown diagrammatically in Figure I-2.1 at the end of this Section.

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2.3 The Ebasco organizational units most directly involved in the implementation of the Quality Assurance program for fabrication and installation are Corporate Quality Programs, and Ebasco Constructors Inc. The organizational structures of these are shown in Figures I-2.2 and I-2.4 at the end of this Section.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">ORGANIZATION AND RESPONSIBILITIES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-2</p>
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The responsibilities of the individual Ebasco organizational units for quality assurance requirements applied to nuclear power stations are described herein.

### 3.0 CORPORATE QUALITY PROGRAMS

Primary responsibility for quality assurance rests with the Vice President Corporate Quality Programs who reports directly to the President. Qualification requirements for the position of Vice President Corporate Quality Programs are: Bachelor of Science Degree in Engineering; 10 to 15 years of experience in quality-related work or equivalent experience in the engineering or construction of a nuclear power plant, including at least 10 years experience in responsible managerial project positions; and a thorough knowledge of the Ebasco Quality Assurance Program. The Corporate Quality Programs unit is comprised of the following organizations, each of which contributes directly to the implementation of the Quality Program (see Figure I-2.2):

- a) Quality Assurance
- b) Materials Applications
- c) Vendor Quality Assurance
- d) Quality Assurance Consulting Engineer
- e) Materials Engineering Laboratory

3.1 Quality Assurance is administered by the Director Quality Assurance who reports to the Vice President Corporate Quality Programs. Qualification requirements for the position of Director Quality Assurance are: Bachelor of Science Degree in Engineering; 10-15 years of experience in quality-related work or equivalent experience in the engineering or construction of a nuclear power plant, including at least 5 years experience in responsible managerial project positions; and a thorough knowledge of the Ebasco Quality Assurance Program. Quality Assurance is responsible to plan implementation of, evaluate, monitor, and enforce the Ebasco Quality Program. This responsibility is carried out by five functional subdivisions:

- a) Quality Assurance Projects
- b) Quality Assurance Site Services
- c) Quality Assurance Engineering

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">ORGANIZATION AND RESPONSIBILITIES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-2</p>
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- d) Inservice Inspection/Nondestructive Examination Services
- e) Quality Assurance Consulting

Managers in charge of the subdivisions report directly to the Director Quality Assurance. Engineers and Specialists are then assigned to specific projects from these subdivisions. The Quality Assurance Organization is shown in Figures I-2.6 and I-2.7 at the end of this Section. The organization and responsibilities of the four Quality Assurance subdivisions associated with the South Texas Project are described in the following paragraphs.

3.1.1 Quality Assurance Site Services - The Quality Assurance Site Services subdivision is headed by the Manager Quality Assurance Site Services who is responsible for all site-related Quality Assurance/Quality Control activities, including implementation of the site phase for all Ebasco project quality programs. A Manager Site Quality Assurance, who reports to the Manager Quality Assurance Site Services, and a Quality Program Site Manager, who reports to the Director Quality Assurance, are responsible for Quality Program implementation for the South Texas Project in accordance with the following:

3.1.1.1 Site Quality Assurance - The Manager Site Quality Assurance, who reports to the Manager Quality Assurance Site Services in New York, is responsible for providing technical assistance and guidance to subordinate Quality Assurance Site Supervisors and staff, and for distribution and control of quality assurance manuals, as well as changes thereto, for the South Texas Project. (See Figures I-2.2 and I-2.6.) The Manager Site Quality Assurance has delegated authority to the Quality Program Site Manager on the preparation, review, approval, and distribution control of Site Quality Control Procedures and Site Quality Assurance Instructions; and to approve the Standard Quality Assurance Procedures and the Standard Site Procedures, when applicable, developed by the Client or his designee.

3.1.1.2 Site Quality Program - A Quality Program Site Manager is assigned to the construction site on a resident basis for the purpose of overall planning, direction, and implementation of the Ebasco Nuclear Quality Assurance Program Manual. The Quality Program Site Manager, who reports to the Director Quality Assurance, is subordinate to no individual on site and has the independent authority to identify site quality-related problems, to initiate or

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EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  ORGANIZATION AND RESPONSIBILITIES	SECTION  QA-I-2
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recommend solutions, to control existing nonconformances, to verify implementation of approved dispositions, to direct efforts to obtain ASME Certificates of Authorization for Ebasco as may be required for the South Texas Project, to represent the Ebasco Quality Assurance organization with regard to South Texas Project activities, such as Client or his designee and/or Ebasco meetings, Client or his designee audits, management audits, and, when necessary, to stop work. He is responsible to assure that all personnel working for him are qualified for their respective positions and properly trained. The Director Quality Assurance has delegated authority to the Quality Program Site Manager on the preparation, review, approval, and distribution control of project-related supplements to the applicable Quality Assurance Procedures. The Site Quality Program function is divided into three groups: Quality Assurance, Quality Control, and Quality Records, each reporting through a respective supervisor to the Quality Program Site Manager. (See Figure I-2.6.)

3.1.1.2.1 Site Quality Assurance - A Quality Assurance Site Supervisor and staff of engineers and representatives are assigned the following functions:

- a) Review and audit safety-related site construction and engineering activities and records on a continuing basis.
- b) Perform audits and surveillances of construction forces for adherence to prescribed approved procedures.
- c) Review and advise on quality control procedures, construction procedures, and nondestructive examination procedures for compliance with this Manual and code and regulatory requirements. When necessary, the Quality Assurance Site Supervisor may request the Manager Site Quality Assurance to assist in the review of quality control procedures.
- d) Generate records of all reviews and audits performed.

<p style="text-align: center;"><b>EBASCO SERVICES INCORPORATED</b></p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">ORGANIZATION AND RESPONSIBILITIES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-2</p>
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- e) Review all radiographic film for site-related nondestructive examination.
- f) Audit records and documentation prior to turnover to the Client.
- g) Develop and implement Quality Assurance Instructions and review the Standard Quality Assurance Procedures prior to the Quality Program Site Manager's approval and their implementation. When applicable, review the Standard Site Procedures prior to the Quality Program Site Manager's approval and their implementation. | R11
- h) Perform on-site distribution of those Quality Assurance procedures which are issued and controlled by the Manager Site Quality Assurance or his designee, and distribute the Standard Quality Assurance Procedures. | R11
- i) The Quality Assurance Site Supervisor has stop work authority.

3.1.1.2.2 Site Quality Control - A Quality Control Site Supervisor and staff of engineers and inspectors are assigned the following functions consistent with the scope of work assigned to Ebasco:

- a) Planning and performance of inspection activities during the construction phase.
- b) Identifying and initiating correction of nonconforming conditions to requirements indicated by drawings, specifications, codes, or procedures, and performance of reinspection to verify corrective action taken.



<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">ORGANIZATION AND RESPONSIBILITIES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-2</p>
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- c) Establishing and enforcing quality control documentation and inspection requirements based upon specifications, codes, standards, and drawings as established by the Client or his designee.
- d) Performance or monitoring of site NDE, soils, and concrete testing activities.
- e) Assisting in organizing and administering training seminars as required to assure proper level of training, and engaging in the certification of Quality Control personnel to the required level of qualification.
- f) Identification and control of the quality status of items.
- g) Development and implementation of applicable Quality Control Procedures, implementation of applicable Standard Site Procedures, and generation of inspection reports covering mandatory inspection activities at the construction site.
- h) The Quality Control Site Supervisor has stop work authority.

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The Site Quality Control Group will only be responsible for first-level Quality Control activities for safety-related items and services being performed by Ebasco's forces.

3.1.1.2.3 Site Quality Records - A Quality Records Supervisor and staff of specialists are assigned the following functions:

- a) Develop, establish, and implement a system for the collection, storage, and maintenance of quality assurance records at the project construction site.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">ORGANIZATION AND RESPONSIBILITIES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-2</p>
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- b) Responsible for review for completeness, control, storage, preservation, and safekeeping of Ebasco site-generated quality assurance records until turnover to the Client or his designee.
- c) Establishment and implementation of a records indexing system to permit proper traceability and retrieval.
- d) Establishment of a procedure for access to the records storage area, and removal and retrieval of quality records.

3.1.2 Quality Assurance Engineering - The Quality Assurance Engineering subdivision is headed by the Manager Quality Assurance Engineering. He is responsible for the following activities which are under the direction of supervisors reporting to him and are performed in accordance with Quality Assurance procedures:

- a) Administration of training and qualification programs for Quality Assurance audit and inspection personnel.
- b) Conducting Quality Assurance education, both internal and external to Quality Assurance. Quality Assurance Education Specialists from Quality Assurance Engineering are assigned to the construction site. These specialists report administratively and functionally to the Quality Program Site Manager, but receive technical direction from Quality Assurance Engineering at the Ebasco home office.
- c) Interdepartmental auditing of all individuals or groups responsible for activities covered by the Quality Program.
- d) Development and implementation of Corporate Trend Analysis programs. |R11

3.1.2.1 Radiation Safety - Ebasco's Corporate Radiation Safety Officer reports to the Director Quality Assurance through the Manager Quality Assurance Engineering. He is responsible for auditing and enforcing the Ebasco Procedures for radiation safety.

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3.1.3 Inservice Inspection/Nondestructive Examination Services - The Inservice Inspection/Nondestructive Examination Services subdivision is headed by the Manager of Inservice Inspection/Nondestructive Examination. He is responsible for the following activities which are under the direction of supervisors reporting to him:

- a) Establishment and/or interpretation of NDE requirements and acceptance criteria for fabricated and erected equipment as required.
- b) Reviewing and commenting on NDE procedures and radiographic films submitted by site construction forces and/or clients.
- c) Advising site construction forces as to proper NDE procedures, applications, techniques, equipment, and qualifications.
- d) Qualification and certification of Ebasco NDE personnel.

3.1.4 Quality Assurance Consulting - The Quality Assurance Consulting subdivision is headed by the Senior Consulting Quality Assurance Engineer, who is responsible for the following activities:

- a) Development of Quality Assurance standards and procedures.
- b) Interpretation of quality assurance requirements as specified in national codes, standards, and regulatory documents, and incorporating these requirements in company documents.

3.2 Materials Applications, under the supervision of the Chief Materials Engineer, includes two subdivisions: Materials Engineering and Welding Engineering. A Project Materials Engineer and Project Welding Engineer are assigned to the South Texas Project. These positions may be assigned to the same individual if properly qualified. A Site Welding Superintendent, who reports to the Chief Materials Engineer in New York, is assigned to the construction site and is responsible for the direction, supervision, and administration of a site welding operations staff. Quality-related activities of Materials Applications personnel include the following:

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  ORGANIZATION AND RESPONSIBILITIES	SECTION  QA-I-2
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- a) Develop material and welding specifications.
- b) Develop and qualify welding procedures and fabrication techniques for use by Ebasco site construction forces.
- c) Prepare site welding operations implementation procedures for Ebasco site construction forces.
- d) Advise Ebasco Construction management as to the development and application of advanced welding techniques which would enhance quality.
- e) Prepare Process Data Checklists which provide comprehensive requirements for welding process and procedure selection, postweld thermal treatment, and inspection at the construction site.
- f) Review specifications and drawings provided by the Client or his designee for compliance with applicable codes and regulatory requirements for proper selection of materials, weld procedures, and joint details.
- g) Supervise the welder performance testing program at the construction site to assure that all code and regulatory requirements have been met.
- h) Provide technical assistance as required to resolve problems at the construction site in the areas of welding, materials, heat treatment, and other related areas.
- i) Provide technical assistance concerning material properties under service conditions involving stress, radiation, temperature, corrosive media, etc, to determine capability of specific materials to perform in such environments.
- j) Review, monitor, and provide recommendations for upgrading of Ebasco welder training programs and welder assignment practices.
- k) Prepare and monitor site filler material control procedures.
- l) Supervise and direct testing and applied research programs required to resolve site construction materials and welding problems.

<p>EBASCO SERVICES INCORPORATED</p>	<p>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p>ORGANIZATION AND RESPONSIBILITIES</p>	<p>SECTION</p> <p>QA-I-2</p>
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3.3 The Quality Assurance Consulting Engineer reports to the Vice President Corporate Quality Programs. He is responsible for conducting audits of the Ebasco Quality Assurance function to determine and report its compliance with the Ebasco Quality Program requirements.

3.4 The Materials Engineering Laboratory performs field nondestructive examination services. The Materials Engineering Laboratory is administered by a Manager who reports to the Vice President Corporate Quality Programs. The NDE Laboratory Supervisor reports administratively to the Materials Engineering Laboratory Manager, or his designee and is responsible for the technical direction of nondestructive examination activities performed by the Site NDE Laboratory at the construction site. The NDE Laboratory Supervisor reports functionally to the Quality Control Site Supervisor or his designee.

4.0 CONSTRUCTION AND PLANT SERVICES GROUP

Primary responsibility for construction and plant services rests with the Group Vice President Construction and Plant Services. The Construction organization has the prime responsibility for the performance of quality construction on the South Texas Project and is described in the following paragraphs.

4.1 The President Ebasco Constructors Inc reports to the Group Vice President Construction and Plant Services and is responsible for executive management of all construction activities and services. (See Figure I-2.4.)

4.1.1 The Ebasco Construction Manager reports to the President Ebasco Constructors Inc and is responsible for overall supervision and coordination of all construction activities and services. Additionally, the Ebasco Construction Manager shall approve the Standard Site Procedures. The Ebasco Construction Manager has stop work authority.

4.1.2 The Manager of Construction Quality reports to the President Ebasco Constructors Inc, and is responsible for development of Construction Standard Procedures, keeping abreast of NRC and code requirements, and periodic reporting to Construction management of current Quality Program status and any required corrective actions.

4.1.3 The Site Manager reports to the Ebasco Construction Manager. The Site Manager has the responsibility for the direction and coordination of all on-site activities related to construction. The Site Manager has stop work authority.

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4.1.4 The Project Superintendent reports to the Site Manager and is responsible for performing general site supervision of construction in accordance with drawings, specifications, and contractual obligations. The Project Superintendent has stop work authority.

4.1.5 The Unit Superintendents reports to the Project Superintendent. Each Unit Superintendent is individually responsible for the Ebasco construction operations and activities within his assigned unit of the plant. The Unit Superintendents have stop work authority.

4.1.6 The Assistant Superintendents report to the Unit Superintendents. The Assistant Superintendents will manage all phases of construction within disciplines assigned, including field engineering and cost control, to assure that the work accomplished is completed within the budget and in accordance with all applicable installation specifications. The Assistant Superintendents have stop work authority.

4.1.7 The Discipline Superintendents report to the Assistant Superintendents. Each Discipline Superintendent will direct, coordinate, and monitor all work performance within the assigned discipline to assure that work proceeds in accordance with approved plans, specifications, and the Quality Assurance Program.

4.1.8 The Labor Relations Representative reports to the Site Manager. The Labor Relations Representative is conversant with the general provisions of the Project Stabilization Agreement. The Labor Relations Representative participates in settlement of local labor disputes, assists in preparation for arbitration proceedings related to operations at the site, and advises the Project Superintendent on local labor relation matters.

4.1.9 The Senior Resident Engineer reports to the Site Manager and is responsible for administering, coordinating, and supervising all Site Construction Engineering and technical activities, for interpretation of design documents and specifications, and for furnishing assistance to Ebasco site personnel as required. The Senior Resident Engineer has stop work authority.

4.1.10 The Construction Indirects Superintendent reports to the Project Superintendent. The Construction Indirects Superintendent is responsible for the direction of all support craft forces on the project, and the supply, maintenance, and repair of major project construction equipment. The Construction Indirects Superintendent has stop work authority.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">ORGANIZATION AND RESPONSIBILITIES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-2</p>
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4.1.11 The Construction Services Manager reports to the Site Manager and will be responsible for providing and establishing adequate and efficient security, safety, and training and development programs.

4.1.12 The Safety Supervisor reports to the Site Manager. The Safety Supervisor is responsible for establishing and enforcing the site safety and industrial hygiene programs in accordance with established policy and all federal and state regulations, as well as any other criteria necessary to insure the safety of site personnel.

4.1.13 The Administrative Manager reports to the Site Manager. The Administrative Manager is responsible for providing the necessary accounting, timekeeping, and computer support, as required to support the construction effort.

4.1.14 The Outlying Facilities Superintendent reports to the Project Superintendent and is responsible for supervising and coordinating in an efficient manner all construction activities of all the outlying plant facilities, including the Diesel Generating Building in Unit 1 and Unit 2. The Outlying Facilities Superintendent has stop work authority.

4.1.15 The Site Welding Superintendent reports to the Chief Materials Engineer or his designee. The Site Welding Superintendent receives his day-to-day and technical direction from the Materials Applications Department in New York.

4.1.16 The System Completion Superintendent reports to the Project Superintendent and is responsible for systems completion. He ensures construction progress in support of systems completion. This includes coordination of all prestart-up planning and scheduling, and conducting construction test efforts.

4.1.17 The Second Shift Superintendent reports to the Project Superintendent and is responsible for performing general site supervision of construction in accordance with drawings, specifications, and contractual obligations for all activities performed on the second shift. The Second Shift Superintendent has stop work authority.

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## 5.0 INTERFACE

Interface, as applicable, is so illustrated by Figure I-2.9 at the end of this Section and is explained by appropriate and applicable South Texas Project documents.

## 6.0 ORGANIZATION CHARTS

The following figures apply to this Section:

<u>Figure No.</u>	<u>Title</u>
I-2.1	Operations Organization Showing Quality Program Committee Representation
I-2.2	Corporate Quality Programs Organization
I-2.3	Deleted
I-2.4	Organization for Construction
I-2.5	Deleted
I-2.6	Quality Assurance Organization
I-2.7	Quality Assurance Engineering Quality Assurance Specialists
I-2.8	Deleted
I-2.9	Interface Between Houston Lighting & Power Company, Bechtel Energy Corporation, and Ebasco Services Incorporated



**Ebasco Services Incorporated**  
**OPERATIONS ORGANIZATION SHOWING QUALITY PROGRAM COMMITTEE REPRESENTATION**

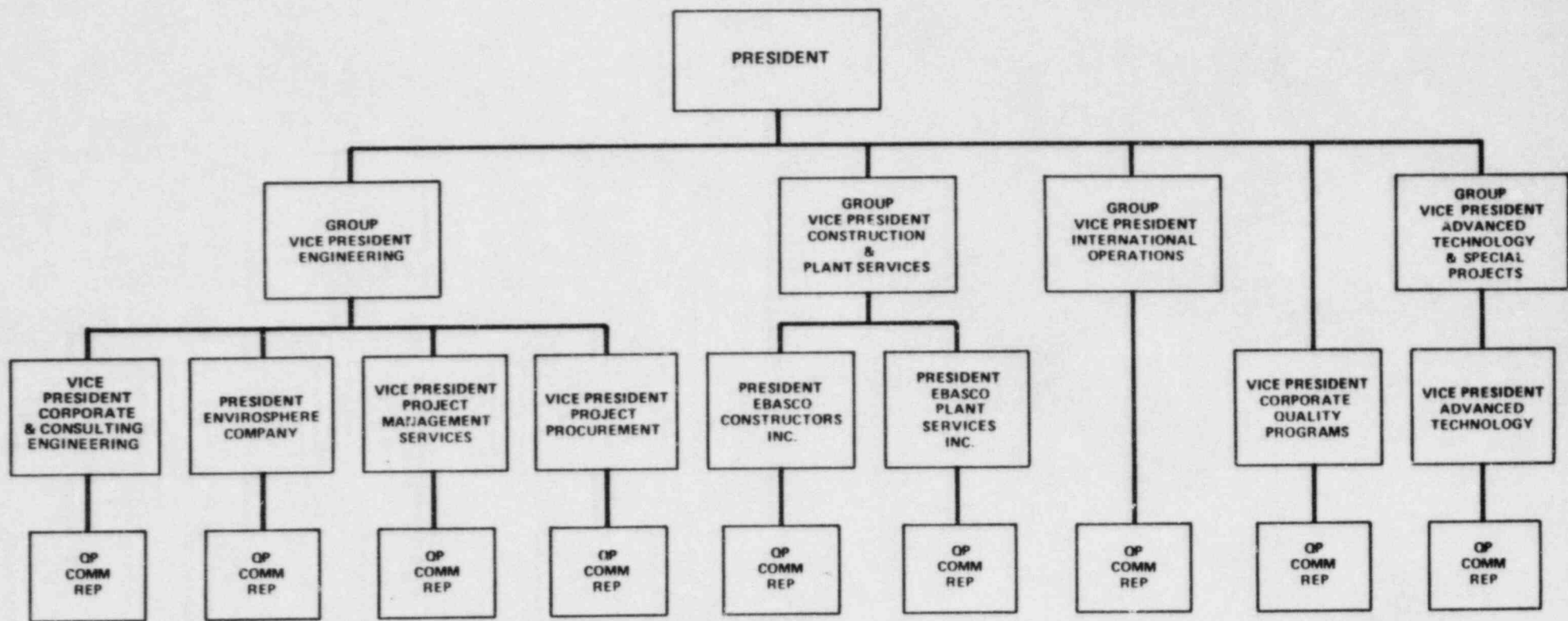
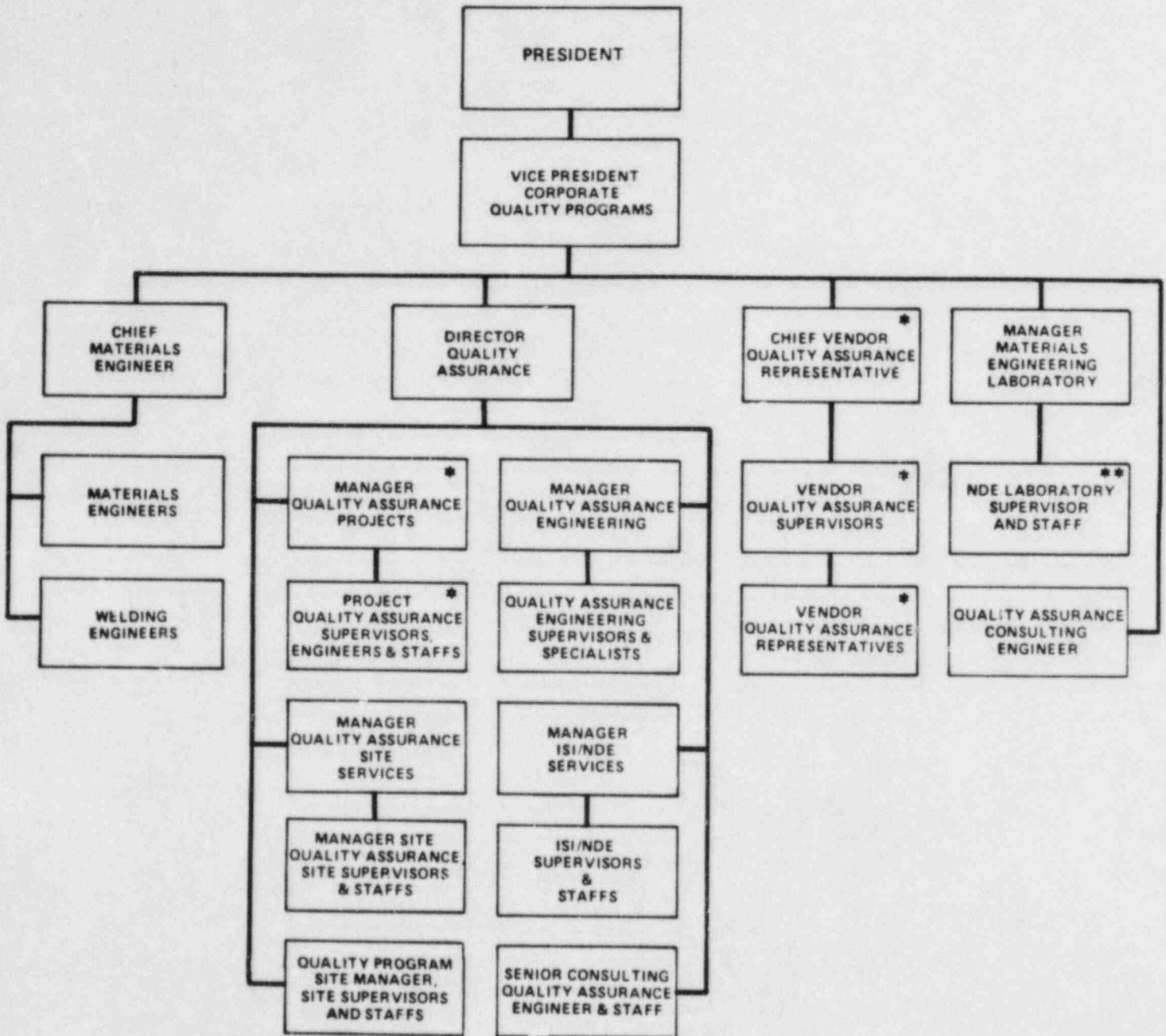


FIGURE I-2.1  
 REV. 11-STP

# Ebasco Services Incorporated

## CORPORATE QUALITY PROGRAMS ORGANIZATION



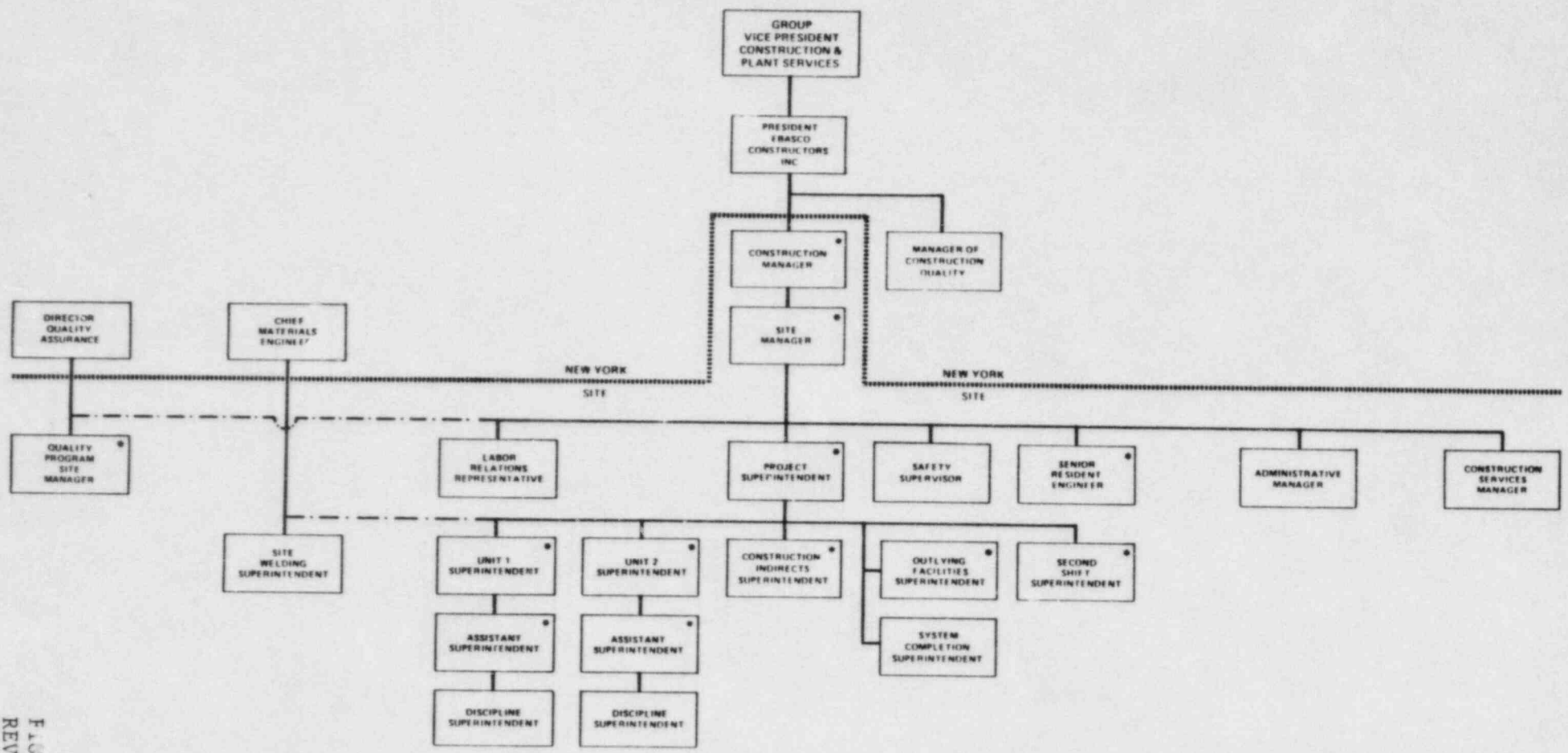
\* NOT APPLICABLE TO THE STP QUALITY PROGRAMS ORGANIZATION

\*\* REPORTS FUNCTIONALLY TO THE QUALITY CONTROL SITE SUPERVISOR

FIGURE I-2.2  
REV. 11-STP

# Ebasco Services Incorporated ORGANIZATION FOR CONSTRUCTION

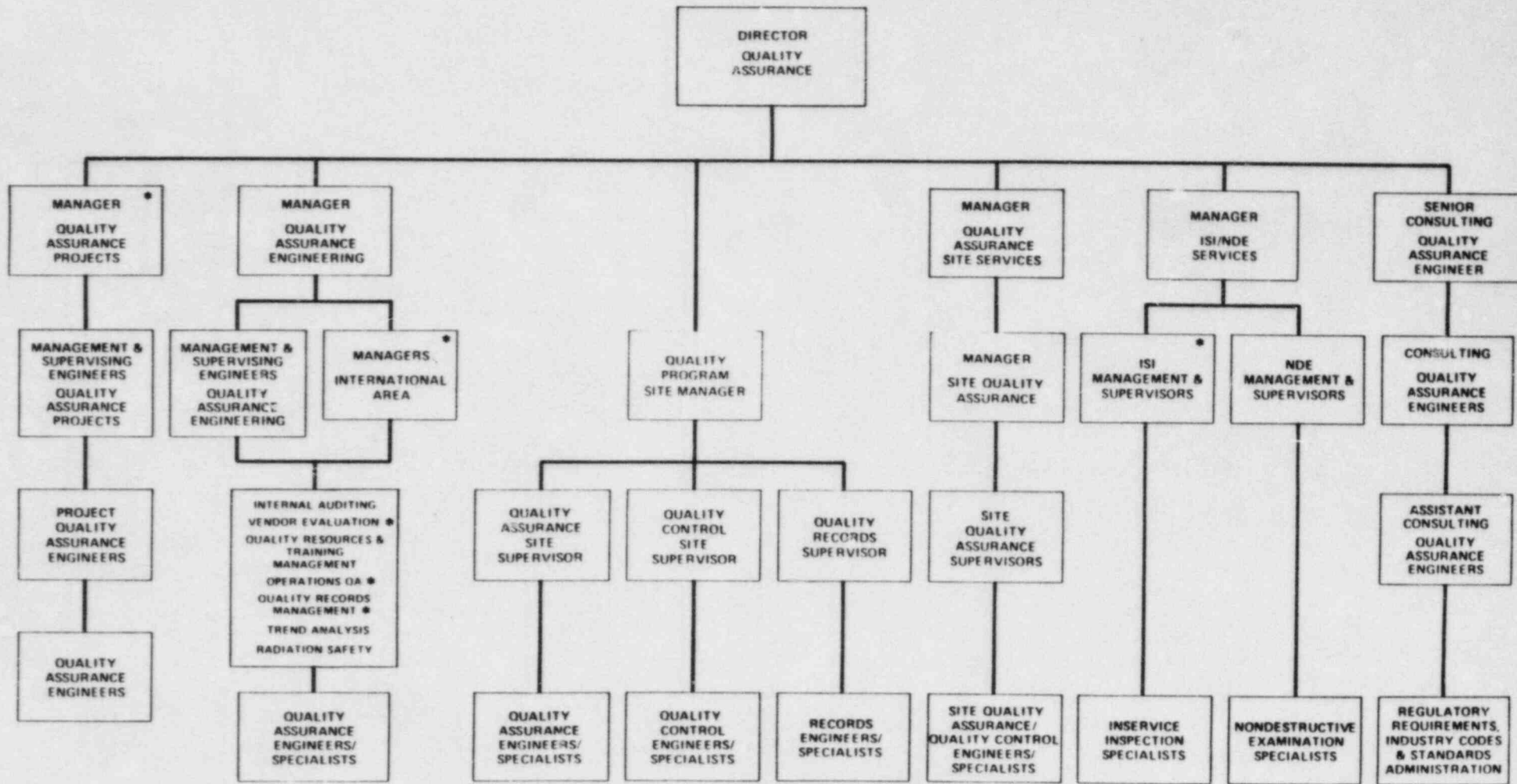
ADAPTED FOR  
HOUSTON LIGHTING & POWER COMPANY  
SOUTH TEXAS PROJECT  
ELECTRIC GENERATING STATION UNITS 1 & 2



— LINE SUPERVISION  
 - - - COORDINATION  
 \* STOP WORK AUTHORITY

FIGURE I-2.4  
 REV. 11-STP

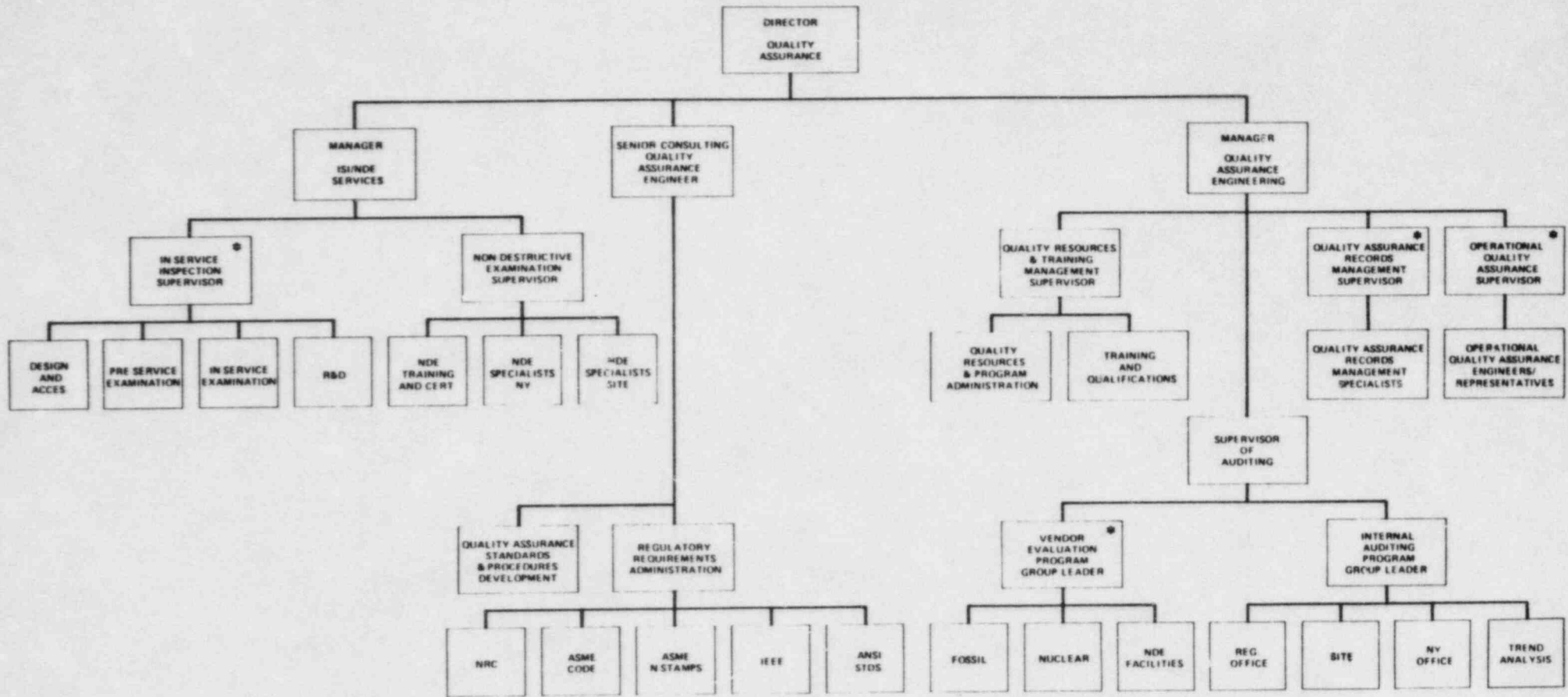
# EBASCO SERVICES INCORPORATED QUALITY ASSURANCE ORGANIZATION



• NOT APPLICABLE TO THE STP  
QUALITY ASSURANCE ORGANIZATION

FIGURE I-2.6  
REV. 11-STP

# EBASCO SERVICES INCORPORATED QUALITY ASSURANCE ENGINEERING QUALITY ASSURANCE SPECIALISTS



\* NOT APPLICABLE TO THE STP  
QUALITY ASSURANCE ORGANIZATION

FIGURE I-2.7  
REV. 11-STP

# INTERFACE BETWEEN HOUSTON LIGHTING & POWER COMPANY, BECHTEL ENERGY CORPORATION, AND EBASCO SERVICES INCORPORATED

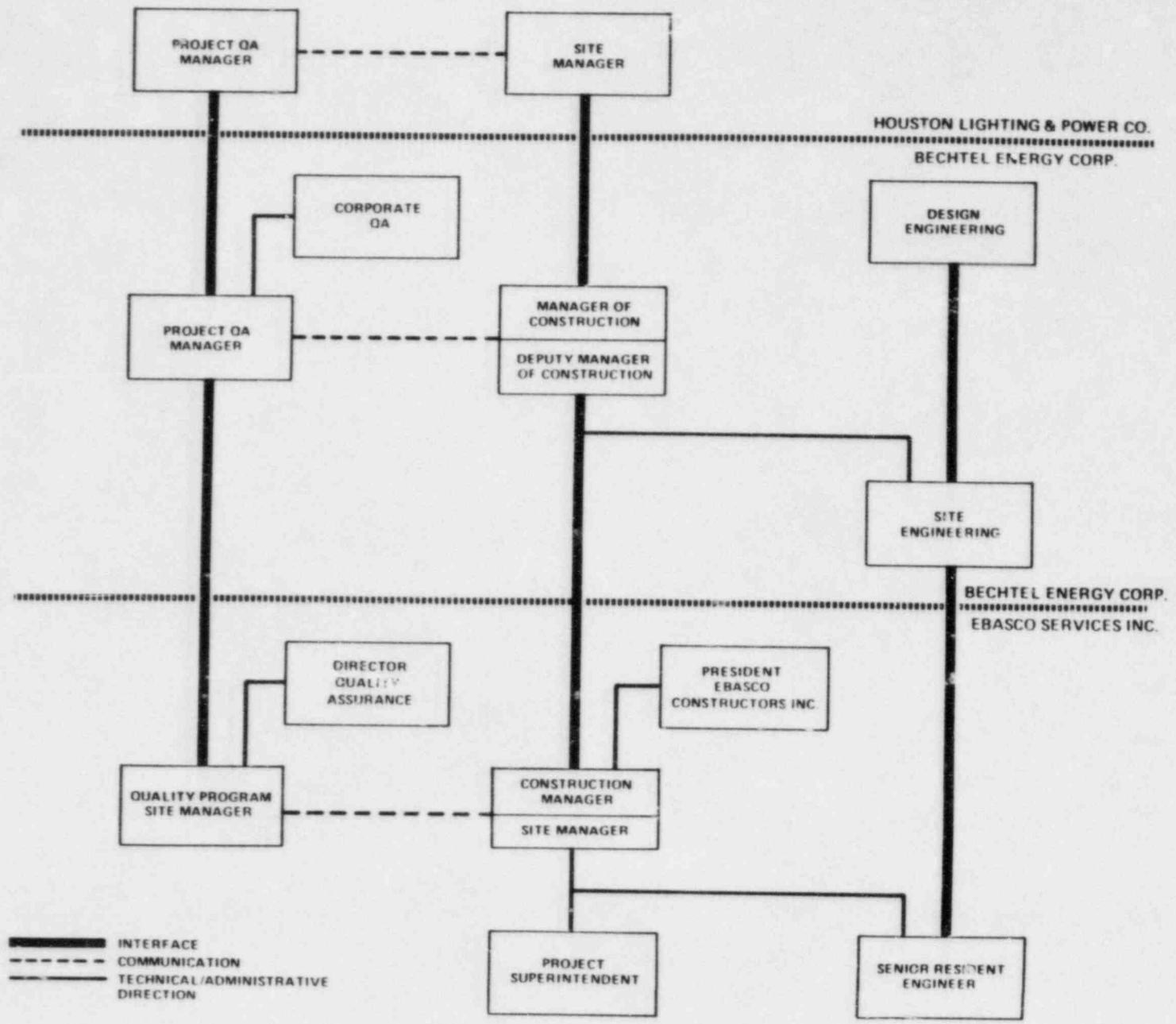


FIGURE I-2.9  
REV. 11-STP

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  PERSONNEL INDOCTRINATION AND TRAINING PROGRAM IN QUALITY ASSURANCE</p>	<p style="text-align: center;">SECTION  QA-I-3</p>
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## 1.0 SCOPE

This Section describes the program for indoctrination and training of Ebasco personnel engaged in activities affecting quality with respect to the requirements of this Manual and its supporting principal implementing procedures. Ebasco personnel shall be indoctrinated and trained, as necessary, to assure that proficiency is achieved and maintained in those parts of the Quality Assurance Program as it applies to the individual's responsibility.

## 2.0 GENERAL

The Indoctrination and Training Program is a combined effort of the Ebasco organizations implementing any portion of this Manual and its principal implementing procedures, and the Quality Assurance organization. The Construction, Materials Applications, and Quality Assurance organizations are responsible to schedule, indoctrinate, and train their personnel, and to record this indoctrination and training, unless otherwise denoted by project commitments.

## 3.0 PROGRAM REQUIREMENTS

3.1 Preplanned written lessons shall contain the substance of the indoctrination and training program. These lessons shall address one or more quality-related topics, to achieve one or more stated educational objectives. The training will be conducted by trained supervisors or their designees within the Construction and Materials Applications organizations, and by a Quality Assurance Education Specialist or designee when the need arises. A Quality Assurance Education Specialist will be responsible for training the selected instructors within the other Ebasco organizations in methods of conducting required quality assurance training.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  PERSONNEL INDOCTRINATION AND TRAINING PROGRAM IN QUALITY ASSURANCE</p>	<p style="text-align: center;">SECTION  QA-I-3</p>
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3.2 For Construction, Quality Assurance, and Materials Applications, preplanned training lessons are maintained by each organization respectively. The preplanned training lessons relate to activities the personnel shall be performing. For Construction and Materials Applications, a responsible person within the respective organization shall determine the training requirements for each individual based on that individual's assigned responsibilities and past experience. Within the Quality Assurance organization, a Quality Assurance Education Specialist shall be responsible for determination of an individual's training requirements based upon that individual's assigned responsibilities and past experience, as applicable. Preplanned training lessons are updated, when required, and reflect any changes in the program. Copies of these preplanned training lessons shall be kept on file by the respective organization. Quality-affected training will reflect project requirements.

#### 4.0 RECORDS

Individual training files for personnel in the Construction, Quality Assurance, and Materials Applications organizations receiving indoctrination and training in accordance with this program's requirements shall be maintained by each affected organization. These records will indicate, as applicable, the subject matter, the training received, attendance date, time duration, instructor, and special qualifications or restrictions, if any.

#### 5.0 SCHEDULING

Scheduling training of applicable organization personnel will be coordinated with a Quality Assurance Education Specialist where necessary. As new personnel are added to the South Texas Project within an organization, appropriate indoctrination and training sessions will be scheduled based on the requirements of this Manual.

#### 6.0 PROGRAM UPDATING

This indoctrination and training program is subject to continuous development to broaden and improve its effectiveness. A Quality Assurance Education Specialist will hold periodic discussions with those groups involved with the training program to coordinate recommendations for updating. A Quality Assurance Education Specialist is responsible for updating the program for the Quality Assurance organization.



<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  PERSONNEL INDOCTRINATION AND TRAINING PROGRAM IN QUALITY ASSURANCE</p>	<p style="text-align: center;">SECTION  QA-I-3</p>
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## 7.0 ADMINISTRATION

7.1 The Quality Assurance Engineering Quality Resources and Training Management Group shall have overall responsibility for administrating the quality assurance training program. It shall provide technical expertise for developing necessary programs and review existing programs for currency.

7.2 Management of each Ebasco organization is responsible to assure that the appropriate personnel attend the training program(s) for which they are scheduled.

## 8.0 TRAINING, QUALIFICATION, AND CERTIFICATION OF QUALITY CONTROL PERSONNEL

Training, qualification, and certification of Site Quality Control inspection personnel shall be in accordance with written procedures. The Quality Control Site Supervisor or his designee shall coordinate with a Quality Assurance Education Specialist regarding the training, qualification, and certification of Quality Control personnel. Qualification records for all Quality Control personnel assigned to the South Texas Project site shall be maintained by a Quality Assurance Education Specialist at the site. These records will be reviewed initially by the Manager Quality Assurance Engineering, or his designee, for compliance with the qualification requirements, and thereafter on an annual basis by auditors from the Site Quality Assurance organization. Any deficiencies detected shall be reported in writing by the Quality Assurance Site Supervisor, or his designee, to the Quality Control Site Supervisor for resolution. Pending resolution of the deficiency, the individual shall be restrained from performing any Quality Control activities.

## 9.0 AUDITS

Audits of indoctrination and training activities shall be performed to assure compliance with this Program. Such audits shall be performed in accordance with the requirements of Section QA-III-9 of this Manual.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE RECORDS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-6</p>
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## 1.0 SCOPE

This Section covers the requirements and guidelines for the collection, filing, storage, disposition, and maintenance of lifetime and nonpermanent quality assurance records associated with the construction and maintenance of nuclear power plants.

## 2.0 RESPONSIBILITY

It shall be the responsibility of Ebasco to maintain quality assurance (QA) records in accordance with the requirements of this Section until such time as those records are turned over to the Client or his designee for permanent storage. The HL&P STP - RMS Site Records Center is the principal and final records repository. All QA records shall be accessible to the Client or his designee until such time as they are turned over to the Client or his designee.

## 3.0 QUALITY ASSURANCE RECORDS SYSTEM

Each organization within Ebasco (including but not limited to the Construction and Quality Assurance organizations) that participates in the generation, collection, filing, storage, disposition, or maintenance of quality assurance records shall establish a written quality assurance record system applicable to the function(s) performed by that organization. These written procedures shall provide that each completed quality assurance record shall be transmitted by the organization generating the records to the Ebasco Site Quality Records group for final review and transmittal to the Client or his designee. This system shall be implemented and enforced in accordance with the requirements of the following paragraphs that apply to the function(s) of that organization.

## 4.0 GENERATION OF QUALITY ASSURANCE RECORDS

4.1 The QA records to be generated shall be specified in the applicable design specifications, construction, maintenance, test, or inspection procedures, and other documents as necessary.

4.2 All QA records shall be dated and signed or otherwise authenticated.

4.3 QA records shall be indexed. The indexing system shall include as a minimum:

4.3.1 QA records retention times (retention period begins on date of satisfactory operation of items).

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  QUALITY ASSURANCE RECORDS	SECTION  QA-I-6
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4.3.2 Location of storage area.

4.3.3 Location of QA records within storage area.

4.4 All QA records shall be distributed and handled in accordance with written instructions.

4.5 There shall be sufficient information in the QA records to permit identification between the records and the item(s) or activity to which it applies. Identification of QA records may be by purchase order number, system, or any means that permits accurate traceability.

4.6 All QA records shall be classified as "lifetime" or "nonpermanent."

4.7 When QA records are corrected or supplemented they shall be reviewed or approved by the organization that originated the records. All corrections and supplements shall bear dates and authorized signatures or initials traceable to the authorized individual.

4.8 Inspection and test records shall contain the following, as applicable:

- a) The type of observation.
- b) Evidence of completing and verifying an inspection or test operation.
- c) The date and results of the inspection or test.
- d) Information related to nonconformances.
- e) Inspector or data recorder identification.
- f) Evidence of the acceptability of the results.

## 5.0 RECEIPT OF QUALITY ASSURANCE RECORDS

5.1 A system shall be established for receipt of QA records at the Site which shall include:

- 5.1.1 A checklist designating the required QA records.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE RECORDS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-6</p>
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5.1.2 A record of QA records received.

5.1.3 Written procedures for receipt and inspection of incoming Site QA records.

These quality assurance records shall be maintained by Site Quality Records and audited by Site Quality Assurance to assure that they are maintained properly until turned over to the Client or his designee.

5.2 The system described in Paragraph 5.1 of this Section shall permit an accurate assessment of the status of the QA records during the receiving process.

#### 6.0 TEMPORARY STORAGE, PRESERVATION, AND SAFEKEEPING

6.1 QA records shall be stored in accordance with a written procedure which shall require or include the following:

6.1.1 Description of storage facility, if other than a dual facility.

6.1.2 Description of filing system to be used.

6.1.3 Method for verifying that QA records received are in agreement with transmittal documents and pre-established records checklist and that the QA records are legible.

6.1.4 Rules governing access to files.

6.1.4.1 A list shall be generated designating those personnel who shall have access to the files.

6.1.5 Method for maintaining control of QA records removed from storage. Such method shall provide for signing out of QA records removed from storage or other appropriate means of maintaining control of the records removed.

6.1.6 Method of filing supplemental information and superseding obsolete QA records. Supplemental information shall be filed with the original documents whenever practical.

|R11

6.2 A custodian (or custodians) shall be designated to implement the requirements of Paragraph 6.1 of this Section.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE RECORDS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-I-6</p>
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6.3 QA records may be stored within a temporary storage facility if they are protected from damage and loss. This shall include:

6.3.1 Storage within fire-resistant cabinets with a four-hour Underwriters' rating or a satisfactory alternative.

6.3.2 Protection from condensation.

6.3.3 Disallowance of loose documents. Records shall be attached to binders, placed in folders, or similarly maintained.

6.3.4 Specially processed QA records such as radiographs, microfilm, etc, shall be stored and protected in accordance with the manufacturer's recommendations.

6.4 A satisfactory alternative to the requirements of Paragraph 6.3 of this Section is maintenance of duplicate QA records stored in a separate remote location.

6.5 Audits shall be performed to assure the effectiveness of the storage system, and shall include:

6.5.1 Verification that QA records which have been processed into the records facility are available in their proper location and in good condition, including those records that have been logged-out and removed away from the storage system.

6.5.2 Audit results shall be documented and its resulted discrepancies shall be verified to assure their correction.

6.6 The storage systems shall provide for accurate retrieval of QA records without undue delay.

## 7.0 DISPOSITION OF QA RECORDS

Upon transfer of QA records, the Client or his designee shall acknowledge in writing the receipt of the particular QA records.

## 8.0 AUDITS

Audits shall be performed in accordance with Section QA-III-9 of this Manual to assure conformance to the requirements of this Section.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">INSTRUCTIONS, PROCEDURES, AND DRAWINGS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-1</p>
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## 1.0 SCOPE

Activities affecting quality performed at the construction site shall be described in written instructions, procedures, or drawings that have been developed in accordance with the requirements of this Section. Departmental procedures which describe the manner in which activities affecting quality are to be accomplished are part of the Ebasco Quality Program.

## 2.0 RESPONSIBILITIES

2.1 Where the Ebasco Nuclear Quality Assurance Manual designates an individual or organization with the responsibility of performing quality-related functions at the construction site, such functions shall be performed in accordance with written instructions, procedures, or drawings that have been developed by the organization performing the function. These instructions, procedures, and drawings shall establish the manner of performing the activity in accordance with the requirements of the Ebasco Nuclear Quality Assurance Program Manual and of the organization performing the activity.

2.2 When documented evidence is required for the satisfactory performance of particular activities, checklists, forms, and/or other appropriate means shall be utilized to provide this evidence. Such documents shall be signed and dated by the party performing the activity.

2.3 Ebasco procedures, instructions, or drawings describing activities affecting quality which are qualitative or quantitative in nature (ie, inspections or tests) shall contain or reference criteria for determining that such activities have been satisfactorily accomplished.

2.4 The Standard Quality Assurance Procedures and the Standard Site Procedures are procedures which are developed by the Client, Bechtel, and Ebasco and are common to each organization. Standard Quality Assurance Procedures and Standard Site Procedures, when applicable, shall be reviewed and approved by the Quality Program Site Manager prior to implementation.

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## 3.0 DEVELOPMENT OF INSTRUCTIONS, PROCEDURES, AND DRAWINGS

3.1 Instructions, procedures, or drawings for activities affecting quality at the construction site shall be developed by the Construction and Site Quality Assurance organizations for their respective quality-related functions. The Ebasco Nuclear Quality Assurance Program Manual shall be used as a guideline for their development. In addition, all Site Quality Control Procedures shall include at least the following:

<p style="text-align: center;"><b>EBASCO SERVICES</b> INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 <b>QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</b></p> <p style="text-align: center;">INSTRUCTIONS, PROCEDURES, AND DRAWINGS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-1</p>
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- a) Identification of characteristics to be inspected.
- b) Identification of the individuals or groups responsible for performing the inspection operation.
- c) Acceptance and rejection criteria.
- d) A description of the method of inspection.
- e) Verification of completion and certification of inspection.
- f) A record of the results of the inspection operation.

3.2 The Ebasco Engineering Development and Standards Department shall develop company instructions and procedures of categories, such as Nuclear (N), pertaining to quality-related functions.

3.3 Individual departments/disciplines shall be responsible for the development of their own intradepartmental/discipline instructions, procedures, or drawings that establish the methods for performing quality-related functions. The Ebasco Engineering Development and Standards Department will provide, upon request, guidance and assistance in developing the documents.

3.4 If so requested by a department, Quality Assurance Engineering shall act in an advisory capacity during the preparation of internal Ebasco procedures.

3.5 All procedures, instructions, and drawings for activities affecting quality shall be identified, dated, and shall provide authorized signature(s) of approval.

3.6 To assure that all Ebasco Quality Control and Construction procedures and instructions comply with this Manual, site-specific requirements, and applicable codes and regulatory requirements, they shall be submitted for review and acceptance to Ebasco Site Quality Assurance prior to implementation. When required by the Contract, quality assurance, quality control, special process, and construction procedures and instructions shall also be submitted to the Client or his designee for acceptance prior to implementation.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">INSTRUCTIONS, PROCEDURES, AND DRAWINGS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-1</p>
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3.7 The Standard Quality Assurance Procedures and the Standard Site Procedures are procedures which are developed by the Client, Bechtel, and Ebasco and are common to each organization. Standard Quality Assurance Procedures and Standard Site Procedures, when applicable, shall be reviewed and approved by the Quality Program Site Manager prior to implementation.

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#### 4.0 DISTRIBUTION AND CONTROL

4.1 Each Ebasco department shall be responsible for maintaining and enforcing a written system for the distribution and control of that organization's instructions, procedures, and drawings (other than design; ie, rigging drawings) for activities affecting quality. This system shall provide for at least the following:

4.1.1 Copies of these documents and revisions thereto shall be distributed to all appropriate department personnel in a timely manner.

4.1.2 Outdated and/or superseded documents shall either be destroyed or shall be clearly marked as "Superseded" or "Void" to avoid inadvertent use.

| R11

4.1.3 A file of the latest revision of these documents shall be maintained. Such a file shall be readily available to all affected personnel.

4.1.4 A log of the documents shall be maintained. The log shall indicate as a minimum:

- a) Title of document.
- b) Document identification number.
- c) Latest revision number and date of document presently in use.
- d) Distribution of document (Manual Holder No.)

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4.2 A historical file of all revisions and changes to instructions, procedures, and drawings shall be maintained by the applicable organization responsible for such documents or as may be described in the applicable organization's procedures.



<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">INSTRUCTIONS, PROCEDURES, AND DRAWINGS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-1</p>
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4.3 All approved Ebasco site-generated field sketches, construction procedures, quality control procedures, and special process procedures shall be transmitted to the Client or his designee for distribution and control in accordance with Section QA-III-2 of this Manual.

#### 5.0 CHANGES TO DOCUMENTS

Changes to Ebasco documents, the Standard Quality Assurance Procedures, and the Standard Site Procedures shall be reviewed and approved by the same organization responsible for the original document when those changes affect the original reviewer, unless delegated in writing by the originating organization to another responsible organization. The reviewing organization shall 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.

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#### 6.0 AUDITS

Audits shall be performed in accordance with Section QA-III-9 of this Manual to assure conformance to the requirements of this Section.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">DOCUMENT CONTROL</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-2</p>
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## 1.0 SCOPE

This Section of the Manual establishes the requirements for the control of all project documents used by Ebasco which have an effect on quality-related activities. These requirements apply to those documents such as specifications and drawings, as well as site instructions and site procedures, which control or direct activities affecting quality.

## 2.0 RESPONSIBILITIES

2.1 The corresponding Department Heads or their designees shall be responsible for furnishing the Client or his designee with the latest of all Ebasco site-generated field sketches, construction procedures, quality control procedures, and special process procedures.

2.2 The Client or his designee shall be responsible for the distribution and control of all construction site design documents, drawings, specifications, construction procedures, quality control procedures, special process procedures, and Standard Site Procedures. |R11

2.3 Ebasco shall assure satisfactory implementation of the Client or his designee's distribution and control of Ebasco-generated documents as per the requirements of Paragraph 6.0 of this Section of the Manual. |R11

2.4 The Quality Assurance Site Supervisor or his designee shall be responsible for the distribution and control of site-generated Quality Assurance Instructions and the distribution of Standard Quality Assurance Procedures. |R11

## 3.0 ISSUANCE OF CONTROLLED DOCUMENTS

### 3.1 Establishment of Document Control Stations

3.1.1 Document control stations shall be established and maintained by the Client or his designee.

3.1.2 Requests by Ebasco for the establishment of new or deletion of existing document control stations for the distribution of controlled documents shall be submitted by the corresponding Department Head, Unit Superintendents, or Project Superintendent to the Client or his designee.

3.1.3 Requests by Ebasco for additions or deletions of documents issued to an established document control station shall be submitted to the Client or his designee.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">DOCUMENT CONTROL</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-2</p>
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### 3.2 Design Documents, Drawings, and Specifications

3.2.1 The Client or his designee shall furnish, distribute, and control all design documents, drawings, and specifications to the established document control stations in accordance with the Client's or his designee's written procedures.

3.2.2 Ebasco personnel shall use during their work activities the latest design documents, drawings, and specifications as provided by the Client or his designee at the appropriate document control stations, except that field change requests in an "Interim Approval" stage shall be controlled by the Senior Resident Engineer in accordance with approved site procedures.

### 3.3 Ebasco Intradepartmental/Discipline Instructions and Procedures

3.3.1 Intradepartmental/Discipline instructions and procedures shall be issued and controlled in accordance with Section QA-III-1 of this Manual.

3.3.2 Quality Assurance Instructions and Standard Quality Assurance Procedures describing responsibilities of Site Quality Assurance shall be distributed and controlled at the construction site in "book" form by the Quality Assurance Site Supervisor. A master file shall be maintained of all procedures and revisions. A master list shall be maintained indicating each person or organization to whom a book of procedures has been issued. New or revised procedures will be issued to each holder of a procedure "book." A receipt system shall be used which requires written acknowledgment of distributed procedures. Receipt acknowledgements shall be maintained for the latest revision.

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### 3.4 Ebasco Site-Generated Procedures and Instructions

Ebasco site-generated construction, special process, and quality control procedures and instructions shall be transmitted to the Client or his designee for distribution to the established document control stations.

### 3.5 Field Change Requests

3.5.1 A Field Change Request shall be submitted to the Senior Resident Engineer from applicable site personnel whenever conditions arise which may warrant consideration by the Client or his designee of a change in the specified design.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">DOCUMENT CONTROL</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-2</p>
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3.5.2 The Senior Resident Engineer shall submit the proposed Field Change Request to the Client or his designee for evaluation, disposition, distribution, and control by the Client or his designee in accordance with the Client's or his designee's written procedures.

3.5.2.1 In order to expedite field change requests associated with in-process activities against design drawings, an "Interim Approval" shall be obtained by the Senior Resident Engineer from the Client or his designee in accordance with approved site procedures.

### 3.6 Field Change Notice

3.6.1 A "Field Change Notice" shall be generated by the Senior Resident Engineer as is allowed by the design specification and shall be approved, issued, and controlled by the Senior Resident Engineer in accordance with approved site procedures.

3.6.2 A Field Change Notice (FCN) is to provide construction with a method of documenting conditions (not tolerances) that are within criteria allowed by the applicable specifications. An FCN shall not be used in lieu of a Nonconformance Report (NCR) or a Field Change Request (FCR).

### 3.7 Field Sketches

3.7.1 Field sketches shall be prepared, reviewed, and approved by the Senior Resident Engineer or his designee in accordance with approved site procedures. Only the following two types of field sketches shall be permitted to be utilized by field personnel as a basis for the fabrication, installation, and inspection of safety-related items:

- a) Field sketches which have been approved by the Client or his designee.
- b) Field sketches which the Senior Resident Engineer has determined to be within standard detailing parameters established by specifications prepared by the Client or his designee.

3.7.2 Field sketches shall be transmitted by the Senior Resident Engineer to the Client or his designee for approval and/or distribution to the established document control stations by the Client or his designee.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  DOCUMENT CONTROL	SECTION  QA-III-2
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#### 4.0 CHANGES TO DOCUMENTS

Changes to Ebasco documents shall be distributed in the same manner as the original document. Revised documents shall be controlled in accordance with the requirements of this Section and/or written procedures in order to avoid inadvertent use of outdated documents.

#### 5.0 QUALITY ASSURANCE RECORDS

Quality Assurance records shall be maintained by Site Quality Records which shall be audited by Site Quality Assurance to assure that they are maintained properly.

5.1 The system for control and retrieval of Quality Assurance records at the site shall be in accordance with Section QA-I-6 of this Manual.

#### 6.0 AUDITS

Ebasco Site Quality Assurance shall audit the Client's or his designee's control and distribution of Ebasco-generated construction, special process, and quality control procedures and instructions in accordance with the requirements of Section QA-III-9 of this Manual.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">NONCONFORMANCES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-6</p>
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## 1.0 SCOPE

This Section establishes the requirements for the identification, control, and disposition of items or services found to be in nonconformance with the applicable requirements at the construction site. All activities described in this Section shall be performed in accordance with written instructions and/or procedures.

## 2.0 CONSTRUCTION SITE NONCONFORMANCES

2.1 Nonconformances at the construction site may be detected by Ebasco Site Quality Control, Site Quality Assurance, or Construction. The person identifying a nonconforming condition shall document the condition by initiating a South Texas Project Site Nonconformance Report. | R11

2.2 All nonconformances detected shall be reported to the Quality Assurance Site Supervisor and/or the Quality Control Site Supervisor or their designees. A preliminary assessment of the severity of the nonconformance shall be made in accordance with Company Procedure N-23 or approved site procedures. The final responsibility for evaluation of all nonconformances for possible reportability rests with the Client or his designee. | R11

2.3 Quality Control procedures shall require that all nonconforming items shall be clearly marked or tagged as nonconforming and shall be segregated when possible.

2.4 The Nonconformance Report shall then be reviewed and processed in accordance with Paragraph 4.0 of this Section of the Manual.

2.5 After processing of the Nonconformance Report, the Quality Assurance Site Supervisor or his designee shall distribute copies of the reviewed and evaluated report in accordance with internal Site Quality Assurance Instructions. | R11

2.6 The Quality Assurance Site Supervisor and the Quality Control Site Supervisor or their designees from the Site Quality Assurance organization shall verify by audits, reinspections, or other appropriate means that the necessary corrective actions are taken.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">NONCONFORMANCES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-6</p>
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### 3.0 REINSPECTION

3.1 For nonconformances detected at the construction site, the Quality Control Site Supervisor or his designee shall assure that reinspection is performed on all items and services reported as nonconforming. Reinspection shall be performed in accordance with the requirements of the governing code(s) and in accordance with requirements at least as stringent as those by which the nonconformance was detected. He shall document the satisfactory correction or resolution of all nonconformances on the dispositioned Nonconformance Report. This documentation shall provide sufficient detailed information for as-built records.

3.1.1 Nonconformances not corrected in accordance with the requirements of the approved disposition to the Nonconformance Report shall not be accepted by Site Quality Control. Items or services shall not be accepted by Site Quality Control until such time as the appropriate corrective action has been accomplished.

### 4.0 REVIEW OF NONCONFORMANCE REPORTS

4.1 Upon receipt or initiation of a Nonconformance Report, the Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization shall perform the following functions in accordance with QA procedures and/or instructions:

4.1.1 Log-in the report and record a unique identifying number on the report.

4.1.2 Route the report to the Client or his designee who shall disposition and approve the report.

4.1.3 Receive the report from the Client or his designee following approval of the dispositioned report.

4.1.4 Upon receipt of the approved Nonconformance Report from the Client or his designee, the Quality Assurance Site Supervisor or his designee shall log-in the results of the review and distribute copies of the report for implementation of the approved disposition as necessary in accordance with approved procedures.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">NONCONFORMANCES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-6</p>
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4.2 Dispositions for all nonconformances to the design specifications or other documents originally requiring review and approval of the Client or his designee, must have the review and approval of the Client or his designee prior to implementation unless otherwise permitted by approved procedures.

4.3 The Quality Assurance Site Supervisor or his designee shall perform a final review for closure of Nonconformance Reports generated in accordance with the requirements of this Section.

4.4 The Quality Assurance Site Supervisor or his designee shall maintain on file, copies of all open Nonconformance Reports generated in accordance with the requirements of this Section.

#### 5.0 DEFICIENCY NOTICES

5.1 Deficiencies in the quality of items and services which either violate the restrictions of Paragraphs 5.2 and 5.3 of this Section of the Manual or are detected during final inspection at the construction site, and which can be corrected by reworking or by standard repair procedures (approved by the Client or his designee) during the normal course of construction, shall be documented on a Deficiency Notice. Copies of all Deficiency Notices shall be transmitted to the Quality Control Site Supervisor or his designee who will initiate Nonconformance Reports based on information given in the Deficiency Notices when he determines that this action is necessary. In this case, the Deficiency Notice becomes a part of the Nonconformance Report and only the Nonconformance Report is required to be resolved.

5.2 Items discovered to be out-of-tolerance or not to specification at routine checkpoints of an inspection process shall not be considered as a nonconformance, provided:

- a) The condition is corrected prior to acceptance of the work.
- b) The work does not proceed beyond the checkpoint until the correction is made.
- c) The out-of-tolerance condition does not reflect on work previously accepted.
- d) No violation of procedures or code is evident.

Damage which would affect the integrity of an item shall be classified as a nonconformance and processed accordingly.



<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">NONCONFORMANCES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-6</p>
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5.3 An unacceptable ASME Code weld found during the normal welding/inspection process shall be processed and reported on a "Process Data Checklist" form in accordance with approved Site Quality Control procedures. Any unacceptable weld found after the normal welding/inspection process is completed shall be documented as nonconforming in accordance with this Section of the Manual.

5.4 The processing of Deficiency Notices shall be detailed in approved Site Quality Control procedures.

#### 6.0 TREND ANALYSIS OF NONCONFORMANCE REPORTS AND DEFICIENCY NOTICES

##### 6.1 Ebasco's Corporate Trending

Copies of Nonconformance Reports from the sources mentioned above shall be submitted to the Quality Assurance Engineering Supervisor of Auditing. The Quality Assurance Engineering Supervisor of Auditing subsequently receives the Nonconformance Report and makes an analysis of the available data with respect to quality trends. The trend analysis and distribution of subsequent reports shall be made in accordance with the requirements of Quality Assurance Procedure QA-D.3.

##### 6.2 Client's Trending

Copies of Nonconformance Reports (NCR's) and Deficiency Notices (DN's) from the sources mentioned above shall be transmitted to the Client's Quality Systems/Administration (QS/A). The Client's QS/A is responsible for the South Texas Project Trend Program activity in accordance with their procedure(s).

#### 7.0 RECORDS

Nonconformance Reports shall be maintained in accordance with Section QA-I-6 of this Manual and/or approved Site Quality Assurance Instructions.

#### 8.0 AUDITS

Ebasco Site Quality Assurance shall be responsible for the performance of audits in accordance with Section QA-III-9 of this Manual to the extent necessary to assure compliance to the requirements of this Section.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  CORRECTIVE ACTION	SECTION  QA-III-7
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## 1.0 SCOPE

This Section establishes the requirements for the identification, analysis, and implementation of corrective action for safety-related items and services. The Section applies to activities performed at the construction site.

## 2.0 GENERAL

2.1 Corrective action shall be required for identified and documented nonconformance(s) associated with safety-related items and services.

2.2 The need for corrective action may be identified from the following sources:

- a) Inspection activities performed by Site Quality Control.
- b) Site Quality Records document reviews.
- c) Quality Assurance audits performed by the Quality Assurance organization in accordance with Section QA-III-9 of this Manual.
- d) Audits of Ebasco performed by the Client or his designee or regulatory bodies.
- e) Nonconformances detected at the construction site as described in Section QA-III-6 of this Manual.
- f) Audits of the Quality Assurance and Materials Applications organizations performed by the Management Audit Committee.
- g) Surveillances performed by Site Quality Assurance.

2.3 Determination and review of corrective action items shall be made as early as possible in order to preclude the possible repetition of deficiencies.

2.4 During the review of all corrective action items, consideration shall be given to the training of personnel if it is determined that this was a cause of the deficiency.

2.5 Dissemination of corrective action information to responsible individuals shall be performed in a minimum length of time.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CORRECTIVE ACTION</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-7</p>
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2.6 At the discretion of the Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization, for corrective action items identified per Paragraph 2.2 of this Section, a corrective action document may be issued. This document shall be used when deficiencies detected are not isolated cases and when they are of sufficient magnitude to warrant a documented supervisory review in accordance with approved Quality Assurance procedures or instructions. This document goes beyond the standard audit action response required by audit reports.

2.7 For programmatic deficiencies detected by Site Quality Assurance, the maximum length of time for corrective action response shall be 20 working days from the receipt of notice of deficiency. The maximum implementation time shall be 20 working days from the acceptance of corrective action response, unless otherwise approved by the Director Quality Assurance or his designee from the Quality Assurance organization. Nonconformance reports shall be initiated and processed in accordance with Section QA-III-6 of this Manual.

2.8 It shall be the responsibility of the Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization to assure that all required corrective action is implemented in a timely manner.

2.9 A preliminary assessment of the severity of deficiencies and nonconformances detected shall be made in accordance with Company Procedure N-23 or approved site procedures. The final responsibility for evaluation of all deficiencies and nonconformances for possible reportability rests with the Client or his designee. Reporting of deficiencies and nonconformances in accordance with 10 CFR 50.55e and its subsequent evaluation will be the responsibility of the Client or his designee.

### 3.0 DETERMINATION AND IMPLEMENTATION METHODS

#### 3.1 Nonconformance Reports Generated at the Construction Site

3.1.1 Site Quality Control shall perform direct inspection of activities at the construction site as required by Section QA-III-11 of this Manual.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CORRECTIVE ACTION</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-7</p>
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3.1.2 Nonconformances noted during these inspection activities shall be documented on a Nonconformance Report in accordance with Section QA-III-6 of this Manual. Site Quality Control shall verify that the corrective action which has been stipulated on the completed form is implemented. Site Quality Control shall maintain a log of all required corrective action and shall review this periodically to assure the resolution of deficiencies and implementation of required corrective action.

### 3.2 Site Quality Assurance Audits

Site Quality Assurance shall perform audits of activities performed at the construction site as required by Section QA-III-9 of this Manual. Site Quality Assurance shall also perform follow-up action as described in Section QA-III-9 to assure that corrective action, if required, has been accomplished. If disagreement about the type or effectiveness of corrective action exists, the problem shall be reviewed by appropriate levels of management until satisfactory resolution is obtained.

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### 3.3 Client or His Designee, or Regulatory Agency Audits

Audits of construction site activities may be performed by the Client or his designee and/or appropriate regulatory agencies. If corrective action is required as a result of one of these audits, the Quality Assurance Site Supervisor or his designee from the Quality Assurance organization shall be responsible for obtaining a response from the cognizant individual(s) for submittal to the auditing body.

## 4.0 FINAL VERIFICATION OF CORRECTIVE ACTION IMPLEMENTATION

In addition to his other duties, overall responsibility for verification of the implementation of required corrective action rests with the Quality Assurance Site Supervisor or his designee from the Quality Assurance organization. He shall be responsible for performing this verification for all items indicated in Paragraph 3.0 of this Section, and shall assure that the corrective action is implemented and in a timely manner. In the event that there is a disagreement between those individuals who detect a deficiency and those responsible for the function found to be deficient, the Quality Assurance Site Supervisor shall contact appropriate higher levels of management as necessary until resolution is obtained.

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<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CORRECTIVE ACTION</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-7</p>
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## 5.0 DETERMINATION AND ANALYSIS OF QUALITY TRENDS

### 5.1 Ebasco's Corporate Trending

In order to prevent the recurrence of quality problems, Ebasco has developed a method for the determination and analysis of quality trends. Copies of audit reports and Nonconformance Reports (or other appropriate documentation) mentioned above shall be submitted to the Quality Assurance Engineering Supervisor of Auditing. The Quality Assurance Engineering Supervisor of Auditing subsequently receives all reports and makes an analysis of the available data with respect to quality trends. The trend analysis and distribution of subsequent reports shall be made in accordance with Quality Assurance Procedure QA-D.3.

### 5.2 Client's Trending

Copies of Nonconformance Reports (NCR's), Standard Deficiency Reports (SDR's), and Management Corrective Action Requests (MCAR's) shall be transmitted by the Site Quality Assurance organization to the Client's Quality Systems/Administration (QS/A). The Client's QS/A is responsible for the South Texas Project Trend Program activity in accordance with their procedure(s).

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EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  CONTROL OF SPECIAL PROCESSES	SECTION  QA-III-8
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## 1.0 SCOPE

This Section of the Quality Assurance Manual establishes the requirements for the control of special processes at the construction site. Included herein are provisions for the establishment of critical process parameters, qualification of the processes, and training and qualification of personnel who perform the functions covered by this Section.

## 2.0 RESPONSIBILITIES

2.1 The Quality Assurance organization shall be responsible for the following:

2.1.1 Developing and implementing Site Quality Control procedures and for qualifying personnel to perform inspection of special processes.

2.1.2 Providing technical assistance for procedure review and development as required.

2.1.3 Qualifying personnel performing nondestructive examination.

2.1.4 Performance of audits in accordance with Section QA-III-9 of this Manual to assure conformance to the requirements of this Section.

2.2 The Materials Applications organization shall be responsible for the following:

a) Development and qualification of welding procedures.

b) Providing technical assistance for procedure review and development as required by Site Quality Assurance and Site Quality Control.

c) Qualification of welders and welding operators.

d) Development of heat treating procedures.

2.3 The Construction organization shall be responsible for the following:

2.3.1 Implementing welding and heat treating procedures.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CONTROL OF SPECIAL PROCESSES</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-8</p>
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2.3.2 Developing and implementing procedures for other activities classified as special processes (eg, cadwelding, chemical cleaning, flushing) and for qualifying personnel to perform those functions.

2.4 The Ebasco Site NDE Laboratory, an extension of the Materials Engineering Laboratory, is responsible for developing and implementing nondestructive examination procedures.

### 3.0 METHODS FOR CONTROL OF SPECIAL PROCESSES

#### 3.1 Site Special Process Procedures

3.1.1 Nondestructive examination procedures used at the construction site shall be developed by the Site NDE Laboratory and shall be reviewed and accepted by the Quality Assurance Site Supervisor or his designee, to assure compliance to the requirements of all applicable codes and standards, as a minimum. Conformance to these procedures and qualification requirements shall be verified through audits and surveillances performed by Site Quality Assurance.

3.1.2 All welding procedures used at the construction site shall be prepared by the New York Materials Applications organization. The weld procedures test material shall be prepared either at the home office or the construction site according to instructions for qualification provided by the New York Materials Applications organization.

3.1.3 Construction procedures for site implementation of welding and heat treating requirements shall be developed by the Site Welding Superintendent or his designee.

3.1.4 All welders installing safety-related components shall be qualified according to appropriate codes and standards. Welder qualification shall be performed by the Site Welding Superintendent or his designee. Verification of conformance to procedure and operator qualification requirements shall be performed in accordance with site procedures by Site Welding Superintendent (or his designee) surveillance, Site Quality Control inspection, and/or Site Quality Assurance audit and surveillance functions.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  CONTROL OF SPECIAL PROCESSES	SECTION  QA-III-8
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3.1.5 All Construction procedures for site implementation of requirements for welding, heat treating, and other special processes shall be reviewed and accepted by the Quality Assurance Site Supervisor or his designee. All comments resulting from such reviews shall be resolved prior to procedure implementation.

#### 4.0 RECORDS

Records pertaining to this Section shall be maintained in accordance with Section QA-I-6 of this Manual.



<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE AUDITS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-9</p>
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## 1.0 SCOPE

Quality-related activities at the construction site and Ebasco home office are independently audited by the Quality Assurance organization. This Section establishes the requirements and guidelines for the preparation, performance, reporting, and follow-up of quality assurance audits as performed by Site Quality Assurance, home office Quality Assurance Engineering, and the Ebasco Management Audit Committee.

## 2.0 RESPONSIBILITIES

2.1 The Ebasco Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization shall assign qualified Site Quality Assurance personnel to perform audits of construction site activities.

2.2 The Quality Assurance Engineering Supervisor of Auditing shall assign qualified Quality Assurance personnel to perform home office audits of Ebasco site activities.

2.3 A committee chaired by the Quality Assurance Consulting Engineer shall conduct audits of the Ebasco Materials Applications and Quality Assurance organizations at the home office.

## 3.0 GENERAL REQUIREMENTS FOR AUDITS PERFORMED BY THE QUALITY ASSURANCE ORGANIZATION

### 3.1 Audit Personnel

3.1.1 Audit personnel shall be independent of direct responsibility for performance of the activity being audited.

3.1.2 Audit personnel shall be qualified to perform quality assurance audits based on experience and training as described in Quality Assurance Procedure QA-G.3.

### 3.2 Training and Orientation

3.2.1 Audit personnel shall have experience and training or orientation to assure their competence for performing audits. The competence of personnel to perform audits shall be developed by one or more of the following methods:

- a) Providing personnel with working knowledge of appropriate regulatory documents, practices, codes, and standards.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE AUDITS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-9</p>
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- b) Training or orientation in general and specialized methods of planning and performing audits.
- c) On-the-job training under direct supervision of a Lead Auditor.

3.2.2 The requirements for training and orientation of auditors shall be in accordance with Quality Assurance procedures.

### 3.3 Proficiency of Lead Auditors

3.3.1 Lead Auditors performing audits shall maintain their proficiency through one or more of the following methods:

- a) Regular, active participation in the audit process.
- b) Review and study of codes, standards, and procedures related to Quality Assurance Programs and program auditing.
- c) Participation in orientation or training programs.

3.3.2 The Director Quality Assurance or his designee shall evaluate Lead Auditors in accordance with Quality Assurance Procedure QA-G.3 to assure that the Lead Auditors are maintaining their proficiency.

### 3.4 Scheduling of Audits

3.4.1 Audits shall be initiated as early in the life of the project or activity as practicable in order to assure timely implementation of the applicable Quality Assurance Program requirements, and to assure effective quality assurance during construction activities.

3.4.2 Audits shall be regularly scheduled on the basis of the status and safety importance of the activities to assure conformance to the Ebasco Nuclear Quality Assurance Program. Applicable elements of the Quality Assurance Program shall be audited by the home office Quality Assurance Engineering and the Ebasco Management Audit Committee at least annually or once within the life of the activity, whichever is shorter.

3.4.3 Audits performed by Ebasco Site Quality Assurance at the construction site shall be scheduled in accordance with the Standard Quality Assurance Procedures requirements.

ERASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  QUALITY ASSURANCE AUDITS	SECTION  QA-III-9
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3.4.4 Supplemental audits shall be conducted when:

- a) Significant changes in the Quality Assurance Program are made.
- b) There is evidence of significant noncompliance to the Quality Assurance Program.
- c) An assessment of the effectiveness of the Quality Assurance Program is requested.
- d) It is necessary to verify implementation of corrective action.
- e) It is considered necessary by the Quality Program Site Manager.

3.5 Planning of Audits

Preparation for audits shall include the development of a written audit plan of standard format which shall include or identify the following:

- a) Audit scope.
- b) Requirements and applicable documents.
- c) Activities to be audited.
- d) Organization to be audited.
- e) Tentative audit schedule.
- f) Approved written procedures and/or checklists which assure that the organization will be audited to the extent necessary. These procedures and/or checklists shall provide for verifying corrective action of deficiencies identified in previous audits. Audit procedures and/or checklists may be developed as part of a general audit program and need not be unique for each audit.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  QUALITY ASSURANCE AUDITS	SECTION  QA-III-9
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### 3.6 The Audit Team

3.6.1 The audit shall be performed by one or more individuals. A qualified Lead Auditor shall be established as the team leader for audits when teams are comprised of two or more auditors. When audits are performed by only one individual, that individual shall be a qualified Lead Auditor and considered to be the team leader. The team leader shall be responsible for:

- a) Orientation of the team.
- b) Assuring communication between the team and the organization being audited.
- c) Coordinating the preparation and issuance of audit reports.
- d) Establishing the pace of the audit.

3.6.2 The team leader shall assure that the team is prepared prior to performing the audit. Information such as appropriate procedures, manuals and prior audit reports shall be made available to the team members. Each auditor shall be provided with any appropriate audit plans, procedures, or checklists necessary to performing the audit.

### 3.7 Audit Notification

The organization to be audited shall be notified of a scheduled audit and the scope of the audit. Such notification shall be given a reasonable time before the audit is to be performed.

### 3.8 Audit Performance

3.8.1 Checklists and/or written procedures prepared during audit planning shall be used to conduct the audit.

3.8.2 An informal pre-audit conference shall be arranged at the audit site in order to confirm audit scope and discuss the audit plan.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  QUALITY ASSURANCE AUDITS	SECTION  QA-III-9
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3.8.3 A post-audit conference shall be conducted to:

- a) Inform those audited of the audit results.
- b) Assure understanding of audit results.

### 3.9 Reporting of Audit Results

3.9.1 An audit report shall be compiled and shall be signed by the audit team leader. The audit report shall provide:

- a) Description of the audit scope.
- b) Identification of the auditors.
- c) Persons contacted.
- d) A summary of the audit results, including an evaluation statement regarding the effectiveness of the Quality Assurance Program elements which were audited.
- e) Detailed description of Quality Assurance Program deficiencies and causes thereof where possible.
- f) Recommendations for correcting program deficiencies or improving the Quality Assurance Program, if possible.

3.9.2 The audit report shall be issued in a timely manner as defined in the applicable Quality Assurance procedure, but shall not exceed 30 days from the post-audit conference.

### 3.10 Audit Follow-Up

3.10.1 A response to the audit report shall be prepared by the responsible individual and submitted within the required time period as established in the audit report, but shall not exceed 30 days. The response shall state the corrective action taken or to be taken, and the date of completion. The audit team leader, or another qualified Lead Auditor or the management of the auditing group shall review the response for acceptance. As necessary, subsequent responses may be required to verify completion of corrective action.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE AUDITS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-9</p>
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3.10.2 Follow-up action shall be performed by a qualified Lead Auditor to:

- a) Assure that the written reply to the audit report is received.
- b) Assure that corrective action is identified and scheduled for each program deficiency.
- c) Confirm that deficiencies are resolved and corrective action, when necessary, is accomplished.

3.10.3 Follow-up action may be accomplished through written communication, re-audit, or other appropriate means.

3.10.4 Follow-up action taken shall be documented on the audit report.

### 3.11 Trend Analysis of Audit Reports

The Quality Assurance Engineering Supervisor of Auditing shall make an analysis of the available data (such as the audit reports mentioned above) with respect to quality trends, and report the result of the analysis. Distribution of the trend analysis reports shall be made in accordance with the requirements of Quality Assurance Procedure QA-D.3.

## 4.0 SPECIFIC AUDIT REQUIREMENTS

### 4.1 Management Audits

4.1.1 A committee chaired by the Quality Assurance Consulting Engineer is responsible for conducting audits of Ebasco Materials Applications and Quality Assurance functions to determine compliance with the Ebasco Quality Assurance Program requirements. This committee is made up of personnel not in the Quality Assurance organization and who are qualified in accordance with criteria denoted in Ebasco Nuclear Procedure N-24. These audits will also include evaluating quality assurance policy effectiveness and assuring that appropriate implementing procedures are available and are being complied with.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">QUALITY ASSURANCE AUDITS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-9</p>
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4.1.2 This auditing shall be accomplished on an annual basis in accordance with the requirements of Ebasco Nuclear Procedure N-24. The management audit committee shall be comprised of at least two qualified representatives from either Ebasco Constructors Inc or Engineering, and the QA Consulting Engineer. Each committee representative shall be appointed by the respective group Vice President; however, no committee member can be directly engaged in any policy-making or administrative phase of the Ebasco Quality Assurance Program, but shall be knowledgeable in the general area of quality assurance. The committee shall be directly responsible to the Vice President Corporate Quality Programs.

4.1.3 The committee shall prepare an audit report for each audit performed. This report shall be submitted directly to the Vice President Corporate Quality Programs, with copies to other appropriate parties.

4.1.4 The Vice President Corporate Quality Programs shall be responsible for informing the concerned Ebasco management of the results of the audits performed by the committee. He shall also be responsible for initiating the implementation of any changes or corrective action deemed necessary to improve the effectiveness of the Ebasco Nuclear Quality Assurance Program.

#### 4.2 Audits by the Quality Assurance Organization

4.2.1 Site Quality Assurance shall audit the various quality-related activities performed by Ebasco organizations on the construction site in accordance with the requirements of this Section, the applicable Site Quality Assurance Instructions, and the Standard Quality Assurance Procedures.

4.2.2 Training and qualification records for Site Quality Control personnel shall be audited in accordance with Section QA-I-3, Paragraph 8.0, of this Manual.

4.2.3 Quality Assurance auditors shall have the authority to reject items, services, or work for nonconformance to the specification, drawing, or quality control requirements.

4.2.4 Home office Quality Assurance Engineering will conduct periodic audits and evaluations of the construction site annually in accordance with this Manual and Quality Assurance Procedure QA-D.5.2.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  QUALITY ASSURANCE AUDITS	SECTION  QA-III-9
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## 5.0 AUDIT RECORDS

5.1 Records generated during audit preparation, performance, or follow-up shall be retained for all audits in accordance with the applicable requirements of Section QA-I-6 of this Manual and/or approved Quality Assurance procedures. Such records shall include:

- a) Audit plans and checklists.
- b) Audit reports.
- c) Written replies to audit reports.
- d) Status of required corrective action.
- e) Other documents which support audit findings and corrective action as appropriate.

5.2 Records of training and experience of auditors shall be maintained for all personnel who are performing audits or who have previously performed audits. These shall be retained for the same period of time as required for the audit reports with which the auditors are associated. Maintenance and retention shall be in accordance with Quality Assurance Procedure QA-G.3.



EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  IDENTIFICATION AND CONTROL OF ITEMS	SECTION  QA-III-10
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## 1.0 SCOPE

1.1 This Section establishes the requirements for the identification and control of safety-related items at the construction site.

1.2 The activities described herein shall be performed in accordance with written instructions, procedures, and/or drawings that have been developed and accepted in accordance with the requirements of Section QA-III-1 of this Manual.

## 2.0 RESPONSIBILITIES

2.1 Site Quality Control shall be responsible to perform the following functions in accordance with written procedures:

- a) Assure that items received from the Client or his designee at the construction site are properly identified and are accompanied by appropriate documentation traceable to the items.
- b) Assure that all items shall be physically identified in accordance with Paragraph 3.0 of this Section of the Manual, and appropriate written procedures.
- c) Assure that identification of items shall be transferred to inspection and test records and as-built documents in a manner sufficient to provide the required traceability.
- d) Assure that items are handled and stored in accordance with the requirements of Section QA-III-14 of this Manual so as to maintain identification.

2.2 The Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization shall be responsible for the performance of reviews and audits in accordance with Section QA-III-9 of this Manual to assure compliance to the requirements of this Section.

## 3.0 GENERAL

3.1 Documented Quality Control procedures require that items shall be physically identified by the following means, as applicable:

- a) Stenciled or etched markings
- b) Strip markings

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  IDENTIFICATION AND CONTROL OF ITEMS	SECTION  QA-III-10
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- c) Imprinted tape
- d) Tagging
- e) Stamping
- f) Color-coding
- g) Records traceable to the items
- h) Procedural control
- i) Other appropriate means in accordance with approved Site Quality Control procedures

3.2 When it is impractical to physically identify individual small items, these may be identified as to heat numbers, batch, lot, or specification by applying markings to bags, bins, tanks, or other suitable containers.

3.3 Identification of items shall provide the required degree of traceability to pertinent documents.

3.4 All markings shall be clear, unambiguous, and indelible and shall not affect the function of the item when applied.

3.5 When an item is subdivided, markings shall be transferred to each part of the item.

3.6 Markings shall not be obliterated or hidden by surface treatment or coatings unless other means of identification is substituted.

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

- a) Uniquely identifiable and traceable.
- b) Physically marked items are not traceable but readily retrievable.
- c) Physically identified as to type and users tested.
- d) Identifiable as to type, by some physical characteristic or other administrative control.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  IDENTIFICATION AND CONTROL OF ITEMS	SECTION  QA-III-10
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#### 4.0 RECORDS

Records pertaining to this Section shall be maintained in accordance with Section QA-I-6 of this Manual.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">INSPECTION</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-11</p>
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## 1.0 SCOPE

This Section establishes the requirements for the inspection of safety-related items and services at the construction site as necessary to assure compliance with documented instructions, procedures, specifications, drawings, codes, and regulatory requirements.

## 2.0 RESPONSIBILITIES

2.1 Site Quality Control shall be responsible for the following:

- a) Development of written procedures for the inspection of safety-related items and services which list the required inspection activities when existing inspection documents such as standard specifications and drawings do not provide an adequate basis for inspection.
- b) Submittal of inspection procedures to Ebasco Site Quality Assurance for review and acceptance in accordance with Section QA-III-1 of this Manual.
- c) Preparation of reports for all inspections made.
- d) Approval processing of inspection procedures and revisions thereto.

2.2 Site Quality Control shall be responsible for performing inspection activities in accordance with appropriate inspection documents.

2.3 Qualification of inspection personnel shall be in accordance with applicable Quality Assurance procedures and Paragraph 4.0 of this Section of the Manual.

2.4 The Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization shall be responsible for the performance of reviews and audits in accordance with Section QA-III-9 of this Manual to the extent necessary to assure compliance with the requirements of this Section.

## 3.0 GENERAL

3.1 Inspection documents shall be prepared based upon the quality requirements contained in specifications, quality control documents and procedures, and applicable codes and standards.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">INSPECTION</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-11</p>
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3.2 If mandatory inspection hold points are required, the specific hold points shall be indicated on the inspection documents.

3.3 Inspection documents shall specify or reference as a minimum the activities to be performed, acceptance criteria, by whom activities are performed, and the sequence in which the activities are to be performed.

3.4 Where mandatory inspection hold points are indicated on inspection documents or procedures, work may continue beyond a hold point only with the written approval of the Quality Control Site Supervisor or his qualified designee.

3.5 Inspection reports shall indicate the acceptability status of the items or services inspected with respect to meeting the applicable quality requirements.

3.6 When inspections are to be performed by use of a sampling program (ie, to determine the acceptability of a group of like-items based upon the results of an inspection of a representative number of items from the group), the sample size shall be identified on the inspection documents. Justification for this sampling shall be based upon recognized standard construction practices and successful past experience, as well as the complexity and function of the activity, item, or service to be inspected.

#### 4.0 TRAINING AND QUALIFICATION OF INSPECTION PERSONNEL

4.1 Inspection personnel shall have experience and training to assure their competence for performing inspection. The competence of personnel to perform inspections shall be developed by one or more of the following methods:

- a) Providing personnel with working knowledge of appropriate regulatory documents, practices, codes, and standards.
- b) Training or orientation in general and specialized methods of planning and performing inspections.
- c) On-the-job training under direct supervision of an experienced, qualified inspector.

EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  INSPECTION	SECTION  QA-III-11
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4.2 The requirements for training and qualification of inspectors shall be in accordance with applicable Quality Assurance procedures, and qualification of inspectors shall be based upon consideration of the following:

- a) Records of education and experience.
- b) Test results, where applicable.
- c) Results of capability determination.

4.3 Site Quality Control shall be responsible for scheduling and coordinating training for quality control personnel in advance of implementation of the applicable inspection documents. This training shall be conducted in sufficient detail and with sufficient frequency to assure that the personnel responsible for the inspection fully understand the requirements contained in the applicable inspection documents.

4.4 Inspectors performing inspections shall maintain their proficiency through one or more of the following methods:

- a) Regular, active participation in the inspection process.
- b) Review and study of codes, standards, and procedures related to Quality Assurance Programs and program inspection.

4.5 The Director Quality Assurance or his designee shall periodically evaluate inspectors in accordance with applicable Quality Assurance procedures to assure that the inspectors are maintaining their proficiency.

## 5.0 RECORDS

5.1 All inspection documents shall be maintained in accordance with Section QA-I-6 of this Manual.

5.2 Records of training, experience, and certification of inspectors shall be maintained for all personnel who are performing inspection or who have previously performed inspections. These records shall be retained for the same period of time as required for the inspection reports with which the inspectors are associated.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">TEST CONTROL</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-12</p>
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## 1.0 SCOPE

1.1 This Section describes the system employed at the construction site which assures that tests required to demonstrate that items will perform satisfactorily in service are identified and documented. The requirements of this Section apply to all phases of the testing program at the construction site, including, but not limited to: functional testing, proof testing, acceptance testing, and operational testing.

1.2 These tests shall be performed in accordance with written test procedures which include or reference the requirements and acceptance limits contained in applicable design documents.

## 2.0 RESPONSIBILITIES

2.1 Site Quality Control procedures shall provide for the following:

- a) Assuring that all prerequisites for the given test have been met.
- b) Use of trained personnel to witness tests.
- c) Identification of test equipment and the item to be tested.
- d) Checking the condition of test equipment and the item to be tested.
- e) Use of devices calibrated in accordance with Section QA-III-13 of this Manual for the performance of tests.
- f) Verification that tests are performed under proper environmental conditions; eg, cleanliness. |R11
- g) Documentation of test results.
- h) Acceptance criteria for test requirements.

2.2 Site Quality Assurance shall review and comment on the written procedures for tests covered by this Section. All comments shall be resolved prior to implementation of the procedures. These test procedures shall be reviewed in accordance with Site Quality Assurance procedures and/or instructions for the inclusion of:

- a) Provisions for assuring that all test prerequisites have been met.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">TEST CONTROL</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-12</p>
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- b) Identification of items to be tested.
- c) Identification of calibrated devices or equipment to be used during testing.
- d) Provisions for checking condition of test equipment and item to be tested.
- e) Proper environmental conditions under which test is to be performed.
- f) Test methods.
- g) Operations to be performed.
- h) Inclusion of, or reference to, acceptance criteria.
- i) Data to be recorded.
- j) Requirements for qualified and/or certified personnel.

2.3 Test reports shall be reviewed and signed-off by Ebasco Quality Control in accordance with written procedure requirements to assure that test requirements have been satisfied.

2.4 The Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization shall be responsible for the performance of reviews and audits in accordance with Section QA-III-9 of this Manual to the extent necessary to assure compliance to the requirements of this Section.

### 3.0 RECORDS

All records pertaining to this Section shall be maintained in accordance with Section QA-I-6 of this Manual.



EBASCO SERVICES INCORPORATED	HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 & 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C  CONTROL OF MEASURING AND TESTING EQUIPMENT	SECTION  QA-III-13
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## 1.0 SCOPE

1.1 This Section describes the interface activities between the Client and Ebasco for the purpose of providing Measuring and Test Equipment (M&TE) and calibration services. This Section also describes the requirements of Ebasco's M&TE control for the equipment used at the construction site when performing tests and inspections of safety-related items.

1.2 Ebasco's activities described herein shall be performed in accordance with written instructions, procedures, and/or drawings that have been developed and accepted in accordance with the requirements of Section QA-III-1 of this Manual.

## 2.0 RESPONSIBILITIES

2.1 The Client shall be responsible for the issuance and subsequent calibration of all measuring and testing devices.

2.2 The Ebasco Quality Control Site Supervisor or his designee shall be responsible to assure compliance with site implementing procedures for the control of user M&TE apparatus used by the Site Quality Control.

2.3 The Ebasco Site Manager or his designee shall be responsible to assure compliance with site implementing procedures for the control of user M&TE apparatus used by Ebasco Construction.

2.4 The users shall assure that the measuring and testing devices used are marked with the proper identification number and identified to their calibration due date, and are of the proper range, type, and accuracy to verify conformance to established requirements.

## 3.0 GENERAL

3.1 Measuring and Test Equipment issued from the Client to Ebasco shall be controlled in accordance with approved site procedures.

3.2 Methods shall be employed to assure proper handling, storage, and care of the M&TE in order to maintain its required accuracy.

<p>EBASCO SERVICES INCORPORATED</p>	<p>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p>CONTROL OF MEASURING AND TESTING EQUIPMENT</p>	<p>SECTION</p> <p>QA-III-13</p>
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3.3 Any M&TE found to be out-of-calibration shall be returned to the Client. When M&TE is found to be out-of-calibration, damaged, lost, or stolen, an evaluation shall be made to ascertain the validity of previous inspection or test results and the acceptability of suspect items, the original required inspections and/or tests shall be repeated using properly calibrated equipment. Suspect items on which a questionable device was used shall be listed on the Nonconformance Report (NCR) or Deficiency Notice (DN), as applicable.

3.4 Inspection and test reports shall include identification of M&TE used to perform the inspections and/or tests.

3.5 The Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization shall be responsible for the performance of reviews and audits in accordance with Section QA-III-9 of this Manual to the extent necessary to assure compliance with the requirements of the Client's measuring and test equipment calibration program and the requirements of this Section.

#### 4.0 RECORDS

Records pertaining to this Section shall be maintained in accordance with Section QA-I-6 of this Manual.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CONTROL OF RECEIVING, HANDLING, AND STORAGE</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-14</p>
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## 1.0 SCOPE

1.1 This Section describes the methods employed during receiving, handling, storage, and installation to assure that all safety-related items received by Ebasco at the construction site will be usable when needed. These requirements apply to both items received by Ebasco from the Client or his designee and Ebasco site-fabricated subassemblies which require temporary storage before assembly or installation. They also apply to both on-site and off-site facilities which are used for the storage of items under control of the construction forces.

1.2 The activities described herein shall be performed in accordance with written instructions, procedures, and/or drawings that have been developed and accepted in accordance with the requirements of Section QA-III-1 of this Manual.

1.3 The storage of safety-related items maintained in facilities under the direct control of the Client or his designee is excluded from the scope of this Manual.

## 2.0 RESPONSIBILITIES

2.1 The Ebasco Construction organization shall be responsible for the following:

- a) Performance of receiving, handling, storage, maintenance, and cleaning activities in accordance with specifications provided by the Client or his designee and/or code requirements.
- b) Development of methods for special handling (off-loading) in accordance with manufacturer's recommendations and/or specifications provided by the Client or his designee.
- c) Establishing storage areas to meet levels as briefly described below:
  - 1) Level A - Indoor, controlled environment.
  - 2) Level B - Indoor, heated and ventilation controlled.
  - 3) Level C - Indoor or equivalent, ventilation controlled.
  - 4) Level D - Outdoor.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CONTROL OF RECEIVING, HANDLING, AND STORAGE</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-14</p>
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- d) Development of general storage plans which list types of items and their intended storage locations and levels. Such plans shall be prepared prior to receipt of items from the Client or his designee.

2.2 Ebasco Site Quality Control shall be responsible for the following:

- a) Qualification of personnel performing inspection functions applicable to receiving, handling, and storage.
- b) Assigning qualified quality control personnel for performance of inspection and/or surveillance of receiving, handling, storage, maintenance, and cleaning activities.
- c) Performing and documenting inspection and/or surveillance activities in accordance with approved checklists to verify that receiving, handling, storage, maintenance, and cleaning activities, as described in Paragraph 2.1 of this Section, are performed in accordance with project requirements.
- d) Establishing and implementing methods for rejection of nonconforming items which provide adequate means of identifying the item as nonconforming and physically segregating the item where practical. When segregation is not practical, a status type indicator shall be used. Application and removal of status type indicators shall be by quality control personnel only.

2.3 Ebasco Site Quality Assurance shall be responsible for the performance of audits in accordance with Section QA-III-9 of this Manual to the extent necessary to assure compliance to the requirements of this Section.

2.4 The Client or his designee is responsible for procurement and initial receiving inspection of all safety-related items. However, if requested in writing by the Client or his designee to perform initial receiving inspection of safety-related items upon their arrival at the job site, Ebasco will conduct a complete program that covers the full parameters of this Section. Otherwise, Ebasco shall conduct a receiving inspection program as is applicable and in accordance with approved site procedures.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CONTROL OF RECEIVING, HANDLING, AND STORAGE</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-14</p>
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### 3.0 RECEIVING INSPECTION

3.1 Safety-related items utilized for fabrication, erection, installation, or modification shall be subjected to receiving inspection to assure conformance to the requirements of the applicable drawings, specifications, and other documents as required. Where source inspection is not performed, receiving inspection at site for acceptability will be performed.

#### 3.2 Inspection Requirements

Receiving inspection procedures shall be prepared by the Quality Control Site Supervisor or his designee in accordance with the requirements of this Manual. These procedures shall provide instructions and checklists for performing receiving inspection and shall include at least the following activities:

- a) Documentation review to assure that the documentation package has been received and that a signed "Release for Shipment" form accompanies the items received, when applicable.
- b) Visual examination.
- c) Marking and tagging for traceability.
- d) Testing when specified.
- e) Preparation for storage.

### 4.0 HANDLING

4.1 Handling practices applied to safety-related items shall assure minimum possibility for damage or loss of environmental protection.

#### 4.2 Inspection Requirements

Site Quality Control procedures shall provide for at least the following:

- a) Review of handling requirements for safety-related items.
- b) Performance of appropriate inspections to assure that handling operations have not jeopardized item integrity.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CONTROL OF RECEIVING, HANDLING, AND STORAGE</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-14</p>
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## 5.0 STORAGE AND IN-PLACE PROTECTION

5.1 All safety-related items shall be stored in locations and storage levels as outlined below except for those items released from storage and placed in their permanent or staged locations which shall be cared for, maintained, and inspected in accordance with design specifications and the applicable approved procedures. In-place protection in permanent location is permitted for large items such as equipment, provided that the permanent location is ready for the item installation. If the permanent location or the area in which the item is staged does not afford the required level of protection, additional protection shall be provided to prevent degradation of the item. For in-place protection purposes, a permanent location shall be considered to be within the room and/or immediate vicinity in which the item is to be permanently installed.

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### 5.2 Inspection Requirements

Site Quality Control procedures shall provide for at least the following:

- a) Monitoring of the storage levels listed below:
  - 1) Level A - Indoor, controlled environment.
  - 2) Level B - Indoor, heated and ventilation controlled.
  - 3) Level C - Indoor or equivalent, ventilation controlled.
  - 4) Level D - Outdoor.
- b) Monitoring maintenance of storage areas to control such items as the following:
  - 1) Physical condition of storage area.
  - 2) Access to storage area.
  - 3) Fire protection.
  - 4) Prohibited materials.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">CONTROL OF RECEIVING, HANDLING, AND STORAGE</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-14</p>
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- c) Inspection of stored items and items protected in-place to assure their integrity.
- d) Verification of general storage plans which list types of items and their intended storage locations and levels.
- e) Monitoring of storage areas to maintain proper segregation of materials. Items shall retain an appropriate identification for retrievability and inventory control, as applicable to the nature and use of the material.
- f) Monitoring of provisions for preservation of items, as required by special conditions.
- g) Verification that the withdrawal of any component, assembly, system, or materials from the Client's or his designee's warehouse or storage areas shall be by the Requisition for Stored Items completed by the responsible supervisor or his designated representative. The request shall identify the material and applicable references to a drawing or specification.

5.3 The Client or his designee shall be responsible for the establishment of storage levels, maintenance, and any other applicable handling and storage requirements. The Ebasco Construction organization is responsible for developing and implementing procedures addressing these requirements.

## 6.0 RECORDS

Records pertaining to this Section shall be maintained in accordance with Section QA-I-6 of this Manual.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">INSPECTION, TEST, AND OPERATING STATUS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-15</p>
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## 1.0 SCOPE

1.1 This Section establishes requirements for identifying and documenting the status of inspections and tests performed on safety-related items at the construction site and the status of the readiness of these items for initial operation.

1.2 The activities described herein shall be performed in accordance with written instructions, procedures, and/or drawings that have been developed and accepted in accordance with the requirements of Section QA-III-1 of this Manual. Procedures and instructions shall include identification and authority of the individuals or groups responsible for application and removal of status indicators.

## 2.0 RESPONSIBILITIES

Site Quality Control shall be responsible for the following:

2.1 Develop and implement a system for maintaining the status of safety-related items through the use of status indicators such as physical location and tags, markings, work travelers, stamps, or inspection records. This system shall provide for the identification and maintenance of the status of inspections and tests performed on these items throughout fabrication, installation, and erection. This system shall provide methods which assure that only items that have passed the required inspections and tests are used, installed, or operated. Where physical tagging is either impractical or insufficient, procedural control or other appropriate means for maintaining item status shall be employed.

2.2 Control and maintain a log of the issuance and removal of status indicators such as tags.

2.3 Develop and implement plans for the witnessing and documenting the results of inspections and tests.

2.4 Provide methods for assuring that all required inspections and tests are performed (checklists, travelers, etc).

2.5 Develop and implement a system for marking and tagging to indicate the initial operating status of safety-related items which are in test, rework, or other initial operating status, so as to prevent inadvertent operation.



<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">INSPECTION, TEST, AND OPERATING STATUS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">QA-III-15</p>
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2.6 Develop and implement a system for marking and tagging of all safety-related items during preoperational testing. This system shall provide for maintaining records of status indicators placed on boundaries or within systems turned over to the Client or his designee.

2.7 Maintain a log containing entries of all systems turned over from construction forces for preoperational testing. This log shall be maintained for quality status reference.

### 3.0 GENERAL

3.1 Quality Control procedures shall require that inspection and test status be maintained by the use of status indicators such as tags, markings, travelers, stamps, inspection records, work sequence plans, or other appropriate means.

3.2 The progress of fabrication, installation, erection, inspection, and test shall be entered on appropriate documents. Provisions shall be made for updating these documents to reflect current conditions.

3.3 Nonconforming safety-related items shall be clearly identified and marked and shall be processed in accordance with Section QA-III-6 of this Manual.

3.4 Records of tests and inspection results shall be prepared and maintained in an orderly and systematic manner.

3.5 The Quality Assurance Site Supervisor or his designee from the Site Quality Assurance organization shall be responsible for the performance of reviews and audits in accordance with Section QA-III-9 of this Manual to the extent necessary to assure compliance to the requirements of this Section.

### 4.0 RECORDS

Records pertaining to this Section shall be maintained in accordance with Section QA-I-6 of this Manual.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">TERMS AND DEFINITIONS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">Appendix I</p>
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This Appendix contains certain terms and their definitions used in this Manual that are important to the uniform understanding of the Manual and its application. Where a term is used to convey a different intent than that related herein, clarification must be provided at the point of application:

ACTIVITIES AFFECTING QUALITY (Quality-related activities) - Activities affecting the quality of safety-related items, including designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, and testing.

AUDIT - A planned and documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that applicable elements of a quality assurance program have been developed, documented, and effectively implemented in accordance with applicable regulatory documents, guidelines, or requirements. An audit does not include surveillance or inspection for the purpose of process control or product acceptance.

AUDITS (INTERNAL) - Audits performed by Ebasco personnel on those Ebasco organizations that are governed by the Ebasco Quality Assurance Program.

CLIENT OR HIS DESIGNEE - "Client" is defined as Houston Lighting and Power Company and "his designee" as Bechtel Energy Corporation.

CONSTRUCTION OPERATION - Activities related to construction of a nuclear power station.

EBASCO HOME OFFICE - Office where project support and related functions are performed at Ebasco, New York.

INSPECTION - A phase of quality control which by means of examination, observation, or measurement determines the conformance of items or services to predetermined quality requirements.

INSTRUCTIONS - Written descriptions of activities to be performed, including job specifications, work instructions, shop construction drawings, job tickets, planning sheets, operating or procedure manuals, test procedures, or other written forms, to assure that the activity is adequately described.

ITEM - Any level of unit assembly, including structure, system, subsystem, component, part, or material.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">TERMS AND DEFINITIONS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">Appendix I</p>
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NONCONFORMANCE - A deficiency in characteristic, documentation, or procedure which renders the quality of an item or service unacceptable. Items discovered to be out-of-tolerance of specification at routine checkpoints of an inspection process shall not be considered as a nonconformance, provided:

- a) The conditions are corrected prior to acceptance of the work.
- b) The work does not proceed beyond the checkpoint until the correction is made.
- c) The condition does not affect work previously accepted.
- d) No violation of procedure or Code is evident.

QUALITY ASSURANCE (QA) RECORDS - are those records which furnish documentary evidence of the quality of items and of activities affecting quality. A document is considered a quality assurance record when the document has been completed. QA records may be either the original or a reproduced copy.

QA RECORDS (LIFETIME) - are those records which meet one or more of the following criteria:

- a) Those which would be a significant value in demonstrating capability for proper functioning of safety-related items.
- b) Those which would be of significant value in maintaining, reworking, repairing, replacing, or modifying the item.
- c) Those which would be of significant value in determining the cause of an accident or malfunction of an item.
- d) Those which provide required baseline data for in-service inspection.

QA RECORDS (NONPERMANENT) - are those records which meet all of the following criteria:

- a) Those of no significant value in demonstrating capability for safe operation.
- b) Those of no significant value in maintaining, reworking, repairing, replacing, or modifying the item.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">TERMS AND DEFINITIONS</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">Appendix I</p>
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- c) Those of no significant value in determining the cause of malfunction of an item.
- d) Those which do not provide baseline data for in-service inspection.

QUALITY TREND - A consistent reporting of conformance or nonconformance with applicable criteria attributed to a specific organizational unit.

SAFETY-RELATED ITEM - Any item designated by the Client or his designee, in accordance with the guidelines established by the Licensing Department of the Client or his designee, to be Safety Class 1, 2, 3, Seismic Category I, or electrical Class IE and any other items as designated by the Licensing Department and indicated as safety-related in the PSAR or FSAR.

SERVICE - Performance of nuclear safety-related activities such as fabrication, inspection, nondestructive examination, installation, and test.

SPECIAL PROCESS - A special process is a fabrication, testing, or inspection operation whose correct performance is governed by parameters established during qualification testing for the operation, eg, welding and nondestructive testing.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">EBASCO EXCEPTIONS TO US NUCLEAR REGULATORY GUIDES AND ANSI STANDARDS INDICATED IN SECTION QA-I-1</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">Appendix II</p>
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EXCEPTIONS TO ANSI N45.2.5-1974:

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 two correlation tests are performed for each pumped placement exceeding 200 cu. yds.
  - B. Otherwise, a minimum of two 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 Testing," "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 South Texas Project Final Safety Analysis Report).

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">EBASCO EXCEPTIONS TO US NUCLEAR REGULATORY GUIDES AND ANSI STANDARDS INDICATED IN SECTION QA-I-1</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">Appendix II</p>
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EXCEPTIONS TO ANSI N45.2.1-1973:

3. 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 2, 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.
4. Section 4, Pre-Installation Cleanness. This section states, "Items should not be delivered to the point of installation site sooner than necessary unless the installation 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.
5. Section 3.1.2, Cleanness Classifications - Class B. Ebasco interprets the lighting level of 100 footcandles to be guidance. It is Ebasco'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.

EXCEPTIONS TO ANSI N45.2.2-1972:

6. 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.

<p style="text-align: center;">EBASCO SERVICES INCORPORATED</p>	<p style="text-align: center;">HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p style="text-align: center;">EBASCO EXCEPTIONS TO US NUCLEAR REGULATORY GUIDES AND ANSI STANDARDS INDICATED IN SECTION QA-I-1</p>	<p style="text-align: center;">SECTION</p> <p style="text-align: center;">Appendix II</p>
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7. 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."

8. 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.
9. 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.
10. In Section 8, the control of documentation and records shall be in accordance with Section QA-I-6 of the Ebasco Nuclear Quality Assurance Program Manual for the South Texas Project.
11. 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.

EXCEPTIONS TO ANSI N45.2.3-1973:

12. 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.

<p>EBASCO SERVICES INCORPORATED</p>	<p>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p>EBASCO EXCEPTIONS TO US NUCLEAR REGULATORY GUIDES AND ANSI STANDARDS INDICATED IN SECTION QA-I-1</p>	<p>SECTION</p> <p>Appendix II</p>
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13. 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.

EXCEPTIONS TO ANSI N45.2.4-1972:

14. 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.
15. 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 inspections 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.

EXCEPTIONS TO ANSI N45.2.8-1975:

16. 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. Individual plans for each item or system are not normally prepared unless the work operations are unique. However, standard procedures or plans



<p>EBASCO SERVICES INCORPORATED</p>	<p>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p>EBASCO EXCEPTIONS TO US NUCLEAR REGULATORY GUIDES AND ANSI STANDARDS INDICATED IN SECTION QA-I-1</p>	<p>SECTION</p> <p>Appendix II</p>
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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.

17. Section 3.3, Processes 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.
18. 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 (ie, on a case-by-case basis) or general authority is granted in writing to the Construction Manager's organization.

EXCEPTIONS TO ANSI N45.2.9-1974:

19. Section 1.4, Definitions. Quality Assurance Records - A document is considered complete when it has finished full processing and has been issued for use in design, procurement, construction, or manufacturing.
20. 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.
21. 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.

<p>EBASCO SERVICES INCORPORATED</p>	<p>HOUSTON LIGHTING AND POWER COMPANY SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION UNITS 1 &amp; 2 QUALITY ASSURANCE PROGRAM DESCRIPTION - PART C</p> <p>EBASCO EXCEPTIONS TO US NUCLEAR REGULATORY GUIDES AND ANSI STANDARDS INDICATED IN SECTION QA-I-1</p>	<p>SECTION</p> <p>Appendix II</p>
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EXCEPTIONS TO ANSI N45.2.12-1977:

22. 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.

23. 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 Houston Lighting & Power Company (HL&P), Bechtel Energy Corporation (BEC), or Ebasco Services Incorporated (ESI) Quality Assurance personnel.

EXCEPTIONS TO ANSI N45.2.6-1973:

24. As an alternate, compliance with ANSI N45.2.6-1978 and R.G. 1.58 (Rev 1, 9/80) in its entirety is acceptable.

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