

## 17.0 QUALITY ASSURANCE

Washington Public Power Supply System shall implement an overall Quality Assurance Program (QA Program) for the design, procurement, construction and operation of Supply System's Nuclear Project Nos. 3 and 5 (WNP-3/5) in accordance with the requirements of Appendix "B" of 10CFR50. As the applicant, the Supply System is responsible for the plant and will take appropriate actions to assure that it is designed, procured, constructed and operated in accordance with sound engineering principles and practices. Systems, components and structures that are safety-related, in the context of 10CFR20, 10CFR50 and 10CFR100, will be designed, specified, fabricated, installed, tested and operated in accordance with applicable regulatory requirements, codes, standards specifications and procedures. The objective of the Supply System is to implement a QA Program that will comply with the requirements of NRC Regulation, 10CFR50, Appendix "B", "Quality Assurance Criteria for Nuclear Power Plants" by assuring that quality-related efforts are performed in a controlled manner and are documented to provide objective evidence of compliance.

The WNP-3/5 Project Quality Assurance Manager (PQAM) is responsible to assure the implementation of the Quality Assurance Program at the WNP-3/5 site. The WNP-3/5 Site Quality Assurance Program shall conform to the policies and requirements established by the Supply System's Corporate Quality Assurance Program. Quality affecting activities conducted at the Corporate Office pertaining to WNP-3/5 shall be governed by the Corporate Quality Assurance Program. Full use will be made of the experience of the Architect-Engineer and Construction Manager, Ebasco Services, Inc., (Ebasco); and the Nuclear Steam Supply System Contractor, Combustion Engineering (CE). The Supply System's WNP-3/5 Quality Assurance Program began at the initial design phase with the Supply System, Ebasco and CE developing specifications and/or associated purchase documents which contain quality control and inspection requirements, through the selection of the suppliers, design and engineering, fabrication of the components or systems, erection and installation, and startup and test.

Specific quality control requirements cover such areas as material control, welding requirements, cleanliness requirements, acceptance criteria, provisions for comprehensive auditing of manufacturer and constructor efforts and the preparation and retention of QA records. Ebasco, as the Architect-Engineer and Construction-Management Contractor (AE/CM) and the prime contractors, are responsible for assuring that the necessary quality control requirements are included in all the component and construction specifications and associated purchase documents they prepare. Specifications and associated purchase documents will be reviewed by Supply System Quality Assurance and/or Ebasco Quality Assurance, to assure that the necessary quality control provisions are incorporated in these documents.

## 17.0 QUALITY ASSURANCE (CONT'D)

With the exception of the NSSS Supplier (CE), the Quality Assurance/Quality Control (QA/QC) programs of the prime component contractors and site construction contractors, will be under the surveillance of Ebasco; with the prime contractors being responsible for surveillance of their subcontractors QA/QC programs. This quality assurance surveillance effort is in addition to the QA/QC programs of the individual manufacturers or site constructors. The purpose of this surveillance effort is to assure that the work of the various manufacturers and constructors is actually proceeding in accordance with the contract requirements. Ebasco will also be responsible for conducting formalized Quality Assurance Audits of constructors and manufacturers.

The NSSS Supplier, Combustion Engineering (CE), is responsible for Quality Surveillance of its sub-vendors. The Supply System will provide surveillance, through the Home Office and site organizations, over both CE and its sub-vendors.

In addition, to assure that the Supply System's Quality Assurance Program is functioning as desired, Supply System QA personnel will conduct periodic Quality Assurance audits of the quality assurance programs of the contractors or subcontractors involved with the design, construction, maintenance or operation of WNP-3/5.

In summary, this Quality Assurance Program can be termed a three level Quality program. The first level of the program is performed by the equipment manufacturer, site contractor or Ebasco; the second level by Ebasco, for those services provided by Ebasco at the site; the third level by the Supply System. The third level (Owner) is provided in two ways: 1) the site activities are continuously monitored by Resident Site Surveillance and Audit personnel, and 2) a corporate audit program provides third level checks of the Owner's quality affecting organizations, both on and off the project site.

The WNP-3/5 Site Quality Assurance Program is discussed in further detail in Section 17.1.2 of this PSAR.

## 17.1 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION-WASHINGTON PUBLIC POWER SUPPLY SYSTEM

This Section describes the Supply System's WNP-3/5 Quality Assurance Program. The subsections (17.1.1, 17.1.2, etc.) follow the outline of Appendix "3" to Part 50, Title X of the Code of Federal Regulations (10CFR50, Appendix "3").

### 17.1.1 ORGANIZATION

The Supply System is ultimately responsible for Quality Assurance on WNP-3/5. WNP-3/5 Project Management is responsible for the quality of the work. The WNP-3/5 Project Quality Assurance Manager (PQAM) is responsible for assuring this quality is obtained. The PQAM reports directly to the WNP-3/5 Program Director who is directly accountable to the Managing Director for completing the construction and startup of Units 3 and 5.

The PQAM is also responsible for evaluating the Ebasco (AE/CM) Home Office Vendor Surveillance and Site Construction QA activities to assure implementation and effectiveness of the Supply System's WNP-3/5 Quality Assurance Program. The Ebasco WNP-3/5 Quality Assurance Program is described in Section 17.2.

Organization charts depicting the Supply System corporate structure, the WNP-3/5 Site Organization and the WNP-3/5 Quality Assurance Organization are presented in Figures 17.1-1, 17.1-2 and 17.1-3 respectively.

Functional responsibilities for the implementation of the Supply System's WNP-3/5 Quality Assurance Program are assigned as follows:

#### A. DIRECTOR OF QUALITY ASSURANCE (CORPORATE)

The Director, Quality Assurance, is responsible and accountable to the Managing Director to develop and administer the Corporate Quality Assurance Program for the Supply System. This program, when properly implemented by the Supply System and its contractors, will ensure that Supply System projects are designed, constructed, tested and operated in strict accordance with applicable Federal regulations, industry standards and other licensing commitments.

The organization will include experienced auditors to provide corporate-level assurance of program implementation on each project. The organization will also include a Quality Engineering and Systems staff to provide standardization in procedures, management systems and measurement techniques between projects to the extent practical.

An Operational Quality Assurance organization will be responsible for developing and administering the Corporate Quality Assurance Program for utilization during the operational phase of the Supply System Projects.

17.1.1 ORGANIZATION (CONT'D)A. DIRECTOR OF QUALITY ASSURANCE (CORPORATE) (CONT'D)

With respect to the WNP-3/5 Quality Assurance Program, the Director of Quality Assurance is responsible for the following:

- a) Assuring the adequacy of PSAR/FSAR QA Program Description and revision of the Corporate QA manuals;
- b) Verification of the adequacy of program implementation at all Projects;
- c) Apprising the Managing Director of the effectiveness of the Quality Assurance Program by periodically reporting on quality activities, trends and problems;
- d) Analyzing data on Project QA problems and trends to preclude repetition of problems;
- e) Exercising the authority to Stop Work of any Supply System contractor or supplier organization;
- f) Standardization of criteria for procedures, instructions and methods;
- g) Providing the Project Quality Assurance Manager recourse in any disputes related to significant conditions affecting quality;
- h) Assuring that significant conditions affecting quality, are adequately investigated;
- i) Providing formal evaluations of any additional quality commitments;
- j) Providing technical information, assistance and/or direction to the Project Quality Assurance Manager when requested.

B. PROGRAM DIRECTOR

The WNP-3/5 Program Director is responsible and accountable to the Managing Director for the safe, successful completion, startup and initial power generation of the project. This role is accomplished through the management and direction of the Architect Engineer and Construction Management organization (Ebasco) and Supply System personnel, including Project Quality Assurance.

Organizations performing Quality related activities which report to the Program Director include Project Engineering, Operations and Startup, and Quality Assurance. The Nuclear Safety Director provides licensing and independent safety assessment support to the Program Director through the WNP-3/5 Licensing Department and the WNP-3/5 Safety Engineering Group. The intent of the Supply System's Corporate structure (as delineated in fig. 17.1-1) renders the WNP-3/5 site autonomous in as many respects as possible.

21wp



17.1.1 ORGANIZATION (CONT'D)

B. PROGRAM DIRECTOR (CONT'D)

The objective of Project Management is to provide support to the Program Director by directing overall engineering, project management and construction activities through the Deputy Project Manager, the Engineering Manager and the Construction Manager.

1. Project Management will provide the following functions:
  - a) Review and approve equipment and construction specifications and changes thereto, to assure that the contractual requirements delineated in the bidding documents and the general and special conditions sections provide the requirements necessary to administer the contract effectively;
  - b) Administer the Ebasco contract to assure that activities affecting quality are performed in accordance with the requirements specified in the procurement documents, and when non-conformances are identified, approved corrective action is implemented in a timely and effective manner.
  - c) Be responsible for quality of the work, implementation of schedules, cost control techniques, policies and objectives of the Supply System.
2. Project Engineering shall be responsible for performing the following quality related activities:
  - a) Review and approve prepurchased equipment and construction specifications and changes thereto to assure that the Supply System, regulatory, code and standard requirements are included and are technically adequate.
  - b) As members of the Nonconformance Review Board, approve and/or determine the disposition of nonconforming items, material or conditions found during site activities.
  - c) Provide personnel to the Supply System Project Quality Assurance Group to assist in vendor surveillance activities and to perform surveillance and audits of site contractors and AE/CM Home Office activities.
  - d) Provide technical information and/or direction for accomplishment of QA/QC functions when requested by PQAM.
3. The description of the Operations and Startup Group will be delineated in the WNP-3/5 FSAR (Final Safety Analysis Report).

17.1.1 ORGANIZATION (CONT'D)

B. PROGRAM DIRECTOR (CONT'D)

4. The Project Quality Assurance organization shall be responsible for the following activities:
  - a) Verify implementation of the Quality Assurance Program Description and QA Manuals;
  - b) Authorize Stop Work orders;
  - c) Identification and reporting of nonconformances;
  - d) Verification by audits and surveillances that the contractors and other project organizations are implementing all applicable quality requirements;
  - e) Assure adequate staffing to implement the QA Program;
  - f) Assignment of adequately trained and qualified/certified personnel to perform quality affecting activities;
  - g) Establishment of QA record management and review requirements;
  - h) Overview contractors procedures and instructions;
  - i) Report to the Program Director significant conditions adverse to quality;
  - j) Reporting all QA problems and trends to the Director of Quality Assurance;
  - k) Implementation of the topical OQAPD policies.

NOTE: The Project Quality Assurance Manager shall consult the Corporate Director of Quality Assurance on matters concerning policy and as a recourse when decisions on quality related problems cannot be obtained at the site. (See Figure 17.1-3). The minimum qualifications for Project Quality Assurance Manager include a BS Degree in Engineering, or a related field, and ten (10) years experience in Nuclear Quality Assurance or technically related activities. Directly related experience may be substituted for academic requirements where the candidate's record of performance clearly demonstrates an ability to fill the position without question.

17.1.1 ORGANIZATION (CONT'D)

C. NUCLEAR SAFETY DIRECTOR

The Nuclear Safety Director provides support organizations which perform quality related activities for the 3/5 Project. These include the Licensing Department and the Safety Engineering Group.

1. LICENSING DEPARTMENT

The Licensing Department will be responsible for performing the following quality related activities:

- a. Review prepurchased equipment and construction specifications and changes thereto to assure that the licensing requirements are included and are adequately fulfilled.
- b. Provide coordination of Project Engineering, Quality Assurance and Plant Operation reviews of licensing documentation to assure licensing requirements are satisfied.
- c. Provide licensing information for accomplishment of QA/QC functions when requested by PQAM.
- d. Provide interface with Safety Engineering Group and Project Engineering for review of technical changes with significant safety implications.

2. SAFETY ENGINEERING GROUP

- a. Provide independent technical review of design changes with significant safety impact to assure the overall safety of the project is not compromised by the modifications.
- b. Provide independent technical review of plant startup, test and operational procedures to assure the project safety is not compromised.

D. DELEGATION OF AUTHORITY

The following major organizations have been delegated Quality Assurance functions:

1. Ebasco Services, Incorporated (Ebasco)  
Architect-Engineering, Construction Management and Quality Assurance Services

27-WP

17.1.1 ORGANIZATION (CONT'D)

D. DELEGATION OF AUTHORITY (CONT'D)

Ebasco has been contracted to provide the Architect-Engineering, Construction Management and Quality Assurance activities for WNP-3 and 5. As AE and Construction Manager, Ebasco is responsible for generation and administration of specifications for procurement of prepurchased equipment and construction activities. These contract specifications are sent to the Supply System for review and approval prior to award of contracts. The Ebasco QA responsibility includes Home Office QA and vendor surveillance. (See Section 17.2).

2. Combustion Engineering, Incorporated (CE)  
Nuclear Steam Supply System Supplier

CE has been contracted to provide the Nuclear Steam Supply System which includes the responsibility of QA/QC activities within their scope of supply. (See Section 17.3).

Figure 17.1-4 illustrates the relationship between the Supply System, Ebasco, CE and other contractors.

CE has been contracted to provide the Nuclear Steam Supply System which includes the responsibility of QA/QC activities within their scope of supply. (See Section 17.3).

Figure 17.1-4 illustrates the relationship between the Supply System, Ebasco, CE and other contractors.



### 17.1.2 QUALITY ASSURANCE PROGRAM

This section delineates in detail the intent and substance of Supply System WNP-3/5 Site Quality Assurance Program.

The Supply System's Program is based upon and provides for the assignment of Quality Classifications to structures, components and systems as identified in Table 3.2-1 of this PSAR. Structures, components and systems are classified as Quality Class I, II-Augmented, II and G in accordance with their design basis and functional or regulatory requirements. The Supply System Quality Assurance classifications are as follows:

#### Quality Class I

Any nuclear structure, system, subassembly, component or design characteristic that prevents or mitigates the consequence of a postulated accident that could cause undue risk to the health and safety of the public. All engineered safeguards fall within this category.

The applicable requirements of Appendix B, 10CFR50 are applied to those items classified as Supply System Quality Class I due to their relationship to a nuclear safety function.

#### Quality Class II-Augmented

Those structures, systems, subassemblies, components or design characteristics which are assigned a Quality Class D designation by Regulatory Guide 1.26, for which additional QA requirements have been delineated by specific NRC Branch Technical Positions (e.g., Fire Protection and Radwaste Systems).

#### Quality Class II

Any structure, system, subassembly, component or design characteristic which, as a result of being defective, could cause a safety hazard to plant personnel, an extended reduction in unit output, an unscheduled unit trip, or equipment damage.

#### Quality Class G

Any non-nuclear system, structure, subassembly, component or design characteristic to which QA requirements are assigned in accordance with the consequence of failure and operating costs or procurement costs.

Those items classified as Supply System Quality Class II and G are not safety related in the context of 10CFR 50 or 10CFR100 and are not subject to the requirements of Appendix B, 10CFR50. Supply System Quality Class II or G are required to meet applicable commercial standards.

17.1.2 QUALITY ASSURANCE PROGRAM (CONT'D)

The Supply System's Design and Construction Quality Assurance Manual (Corporate Manual) contains the written policies and Quality Assurance requirements (QAR's) on which the WNP-3/5 Site Quality Assurance Program is based. These corporate requirements are derived from and conform to the requirements of ANSI N45.2 and 10CFR50, Appendix B. A matrix of the Supply System QA requirements and corresponding criteria from 10CFR50, Appendix B appears in the table below followed by a description of the scope covered by these procedures.

	<u>10CFR50, Appendix B Criteria</u>	<u>Supply System QAR</u>
I	Organization	QAR-1
II	Quality Assurance	QAR-2
III	Design Control	QAR-3
IV	Procurement Document Control	QAR-4
V	Instructions, Procedures and Drawings	QAR-5
VI	Document Control	QAR-6
VII	Control of Purchased Material, Equipment and Services	QAR-7
VIII	Identification and Control of Material, Parts and Components	QAR-8
IX	Control of Special Processes	QAR-9
X	Inspection	QAR-10
XI	Test Control	QAR-11
XII	Control of Measuring and Test Equipment	QAR-12
XIII	Handling, Storage and Shipping	QAR-13
XIV	Inspection, Test and Operating Status	QAR-14
XV	Nonconforming Materials, Parts or Components	QAR-15
XVI	Corrective Action	QAR-16
XVII	Quality Assurance Records	QAR-17
XVIII	Audits	QAR-18

17.1.2 QUALITY ASSURANCE PROGRAM (CONT'D)

a) Organization, QAR-1

Establishes an organizational structure that will direct the resources of the Supply System and its contractors to engineer, design, procure, fabricate, manufacture, install, construct and test the Supply System Nuclear Project to maximize safety, reliability and efficiency.

b) Quality Assurance Program, QAR-2

Defines the Quality Assurance Program established by the Supply System for design and construction. Included in this program is a system for classifying structures, systems, components, design characteristics and procurement documents to determine the Quality Assurance activities associated with each item.

c) Design Control, QAR-3

Establishes a system of independent reviews to assure applicable quality, regulatory, code and design basis requirements are properly translated into design and procurement documents for each structure, system and component. The documented review provides a check for design adequacy, inspectability and compatibility with intended usage.

d) Procurement Document Control, QAR-4

Establishes a system to assure that procurement documents and changes thereto incorporate the technical and quality assurance requirements necessary to assure the quality and integrity of procured material, equipment and services.

e) Instructions, Procedures and Drawings, QAR-5

Establishes a system defining the requirements and responsibilities controlling the preparation, review, approval and release of instructions, procedures and drawings which implement quality requirements.

f) Document Control, QAR-6

Establishes a system to control the issuance of documents, including changes thereto, which prescribe activities affecting quality.

17.1.2 QUALITY ASSURANCE PROGRAM (CONT'D)

g) Control of Purchased Material, Equipment and Services, QAR-7

Establishes a system to assure material, equipment and services are procured in accordance with the requirements specified in the procurement documents.

h) Identification and Control of Materials, Parts and Components, QAR-8

Establishes a system for the identification and control of material, parts, components, equipment and partially completed assemblies to assure that items incorporated into the plant are of proper configuration and, when necessary, traceable to all supporting quality assurance documentation.

i) Control of Special Process, QAR-9

Establishes a system for the control of special processes.

j) Inspection, QAR-10

Establishes a system which assures the program requirements for inspection are delineated in the specifications and contracts and assures that inspection and surveillance activities are performed in accordance with pre-determined requirements delineated in written instructions in a planned and systematic manner.

k) Test Control, QAR-11

Establishes a system to assure that plant testing activities are performed in accordance with pre-determined requirements approved and delineated in written instructions.

l) Control of Measuring and Test Equipment, QAR-12

Establishes a system for the control, calibration and adjustment of tools, gauges, instruments and other inspection, measuring, testing and maintenance devices at specified periods to assure the usage of proper type, range and accuracy necessary to verify conformance to established requirements.

m) Handling, Storage and Shipping, QAR-13

Establishes a system to control the handling, storage, shipping, cleaning and preservation of material, parts, components and equipment in accordance with written and approved procedures, instructions and recommendations, to assure that the designed integrity and functionality of the item are maintained.



17.1.2 QUALITY ASSURANCE PROGRAM (CONT'D)

n) Inspector, Test and Operating Status, QAR-14

Establishes a system to indicate the inspection, test and operating status for all structures, systems or components to preclude the inadvertent bypassing of their inspection and test requirements and to prevent their inadvertent operation.

o) Nonconforming Material, Parts or Components, QAR-15

Establishes a system to assure that nonconformances are identified, documented, segregated or otherwise controlled to prevent inadvertent use or installation and that notification of action taken is transmitted to the affected parties.

p) Corrective Action, QAR-16

Establishes a system to assure that significant conditions adverse to quality are identified, the cause determined, documented, brought to the attention of upper management, corrected as soon as possible and that measures are taken to preclude repetition.

q) Quality Assurance Records, QAR-17

Establishes a system for the control and maintenance of all records sufficient and necessary to provide objective evidence of the activities affecting quality.

r) Audits, QAR-18

Establishes a system of audits to be performed in a planned and systematic manner to verify compliance and effectiveness of the Supply System Quality Assurance Program.

Supply System QA personnel have the authority and responsibility to perform any actions necessary, including stop work authority, to accomplish their mandate as defined in the QA Manual. This responsibility and authority is contained in the Management Statement which appears in each QA Manual and is signed by the Supply System's Program Director. The Management Statement is included as Figure 17.1-5.

Disputes between QA personnel and other Supply System department personnel are handled by referring the problem to successively higher levels of management until satisfactory resolution is accomplished. The Project QA Manager has direct access to all levels of upper management including the Managing Director through the Director, Quality Assurance, for resolution of problems.

17.1.2 QUALITY ASSURANCE PROGRAM (CONT'D)

To assure that Supply System personnel performing quality related activities are knowledgeable of QA procedures and requirements and will be proficient in implementing them, the Supply System Quality Assurance Training Program is established and documented as required by the applicable Supply System Quality Assurance Training Procedure and Quality Assurance Instructions. This training program consists of:

- 1) Initial formal training and orientation on the purpose, scope and implementation of applicable codes and standards, including 10CFR50, Appendix B. This initial training phase also includes specific detailed instruction on the Supply System's QA procedures and instructions, Project Management procedures and other activities which directly relate to the employees job functions. Supply System supervisory personnel also indoctrinate and train personnel performing quality related activities in the principles and techniques of the activity being performed.
- 2) On-going instruction by lecture, discussion and pre-planned presentation, supplemented by outside courses as deemed useful.

The Supply System's QA Program will comply with the requirements contained in 10CFR50, Appendix B and will comply with the guidance contained in NRC Regulatory Guides, ANSI Standards and the NRC documents entitled, "Guidance on Quality Assurance Requirements During Design and Procurement Phase of Nuclear Power Plants", Revision 1 (Gray Book) and "Guidance on Quality Assurance Requirements During the Construction Phase of nuclear Power Plants", (Green Book). Regulatory Guide 1.58 will provide the basis for compliance by the Supply System to the QA requirements of Appendix B to 10CFR50 for personnel qualifications.

Contractors shall be required by contract specifications to provide certification of their personnel who are qualified in accordance with ASNT-TC-1A to Ebasco for approval by a Level III individual.

The Supply System QA Program's scope, implementation and effectiveness is routinely audited by the Supply System's audit section. Audit reports and correspondence generated are presented/routed to the Supply System's Upper Management, Project Management, so that management can regularly assess the effectiveness of the Quality Assurance Program.

17.1.2 QUALITY ASSURANCE PROGRAM (CONT'D)

On an annual basis, the Supply System's management will arrange for an independent audit and evaluation of the adequacy, scope, implementation and effectiveness of Supply System QA Program. This will be accomplished by knowledgeable personnel outside the Quality Assurance Organization to assure an objective program assessment. Results from this independent review will be reported to the Managing Director.

The Supply System requires its Quality Class I contractors, including Ebasco and CE, to establish and implement Quality Assurance Programs consistent with the applicable criteria of 10CFR50, Appendix B. The Quality Assurance Programs of Ebasco and CE are reviewed for compliance with Appendix B by the Supply System. Other Quality Class I contractor's Quality Assurance Programs are submitted for review by Ebasco.

Control of quality related activities including management and technical interfaces between the contractor, the A/E, the Nuclear Steam System Supplier, and the Owner during the phaseout of Design and Construction and system turnover will be exercised by Ebasco in its role as Construction Manager. The Supply System will maintain overview of this function to assure an orderly process of turnover is accomplished and that all applicable requirements for both prepurchased and construction contracts have been met prior to final closeout. Further control during this interim period will be exercised in written instructions and procedures governing provisional and final acceptance by the Supply System.

The details of the Ebasco and CE QA Programs are described in Sections 17.2 and 17.3 respectively.

### 17.1.3 DESIGN CONTROL

The Supply System has organized and followed a system of design review and approval by QA, Engineering, Licensing, Legal, Operations and Project Management of Supply System and Ebasco generated procurement documents for the Supply System Quality Class I systems, structures, subassemblies, components and design characteristics.

In all cases, prior to submittal to either the Supply System or Ebasco for review and/or approval, the design contractors, including Ebasco, are responsible for verifying that the design meets the requirements of the specification, is commensurate with good design practices and that the components can be readily inspected. This verification is achieved by the performance of design reviews, the use of alternate or simplified calculation methods, or by the performance of a suitable testing program as described in the Contractor Quality Assurance Program. The verification or checking process is performed by individuals or groups other than those who performed the original design. Where a test program is used to verify the adequacy of a specific design feature in lieu of other verification or checking processes, it includes suitable qualification testing of a prototype unit under the most adverse design conditions. Design control measures are applicable to items such as the following: reactor physics, stress, thermal hydraulic, radiation and accident analysis, compatibility of material; accessibility for in-service inspection, maintenance and repair, and the delineation of acceptance criteria for inspections and tests.

Supply System Project Engineering has the primary responsibility for the technical review and approval of Supply System and Ebasco generated prepurchased equipment and construction specifications. Each discipline (mechanical, electrical, nuclear and civil) reviews the specifications to assure technical adequacy. The depth of this review is outlined in an engineering design review checklist utilized by the reviewing engineer for each Supply System Quality Class I specification. The design review checklist outlines a review of:

- a) Design requirements, including the appropriate section of the PSAR and NRC Regulatory Guides;
- b) Codes and standards requirements;
- c) Classification of characteristics;
- d) Materials selection adequacy;
- e) Testing requirements;



17.1.3 DESIGN CONTROL (CONT'D)

- f) Welding requirements;
- g) Identification and serialization; and,
- h) Preservation, packaging and handling.

Supply System licensing reviews the specifications to assure conformance to PSAR and other regulatory requirements.

Supply System Operations reviews the specifications to assure that the item being specified can be inspected, operated and maintained.

Supply System Project Management reviews and approves the specifications to assure that the general and special conditions sections contain adequate requirements for contract administration.

Supply System QA reviews and approves the specifications to assure that adequate requirements are included in the specifications. The QA review assures that:

- a) The specifications contain the necessary QA requirements;
- b) The test and special processes are properly identified and contain appropriate acceptance/rejection criteria;
- c) That applicable codes and standards are specified;
- d) Quality classifications are identified; and,
- e) The applicable generic sections of welding, cleaning and packaging are included.

QA signs the design review route sheet for comment and approves concurrence issues of the specifications to assure that the QA requirements are included and that the specifications have been through the required Supply System design review. (See Section 17.1.3.1).

Design changes, including field changes, are subject to design control measures commensurate with those applied to the original design and are approved by the organization that performed the original design. Documentation pertaining to Design Control of Supply System Quality Class I procurement documents will become part of the objective evidence of the quality of the applicable items and will be filed and maintained in a traceable, retrievable, systematic manner.

The details of the design control measures implemented by Ebasco and CE are described in Sections 17.2 and 17.3 respectively.

17.1.3 DESIGN CONTROL (CONT'D)

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of a Quality Assurance Program for Supply System Quality Class I items and activities which specifically comply with 10CFR50, Appendix B criteria. In addition, the contractors and vendors of Supply System Quality Class I items and activities are required to have their Quality Assurance Program comply with applicable parts of ANSI N45.2 and additional requirements as delineated in the procurement documents.

The procurement documents specify that the contractors and vendors of Supply System Quality Class I items and activities develop and implement design and interface control procedures which assure:

- a) Translation of regulatory requirements and design bases correctly into the design documents;
- b) Incorporation of appropriate quality standards with deviations and changes being controlled;
- c) Application of design control measures;
- d) Proper design verification or checking methods such as design reviews, alternate calculations, or qualification testing is performed. Where a test program is used to verify the adequacy of a design, a qualification test of a prototype unit under the most adverse design conditions will be used;
- e) Individuals or groups responsible for design verification or checking are other than those who performed the original design;
- f) Design and specification changes, including field changes are subject to the same controls applicable to the original design;
- g) Design documents and revisions thereto are distributed to responsible individuals in a timely manner and controlled to prevent inadvertent use of superseded material;
- h) Errors and deficiencies which adversely affect safety related structures, systems and components in the design process are documented and that appropriate corrective action has been taken;
- i) Design documents, design reviews, records and changes thereto are collected, stored and maintained in a systematic and controlled manner;

17.1.3 DESIGN CONTROL (CONT'D)

- j) Standard "off the shelf" commercial or previously approved materials, parts and equipment (that are essential to the safety related functions of the structures, systems and components) are selected and reviewed for suitability of application.

.1 Supply System or Ebasco Generated Specifications and Drawings

Supply System or Ebasco Engineering prepares Client Comment, Client Concurrence and Bid Issues of specifications for WNP-3 and 5 in accordance with all applicable Codes and Standards and QA Procedures utilizing engineering data generated from technical memorandums, project criteria documents, PSAR commitments and/or Supply System requirements. Calculations and specification data are independently reviewed and checked by engineers experienced in the appropriate engineering discipline.

The Supply System or Ebasco Engineering prepares specifications and associated drawings which are reviewed and approved internally. The Client Comment Issue of the specifications and associated drawings are then sent to the Supply System for review and approval.

Client Comment Issues are reviewed at the Supply System and are assigned to a Reviewing Engineer. Copies of the Client Comment Issues are also assigned to QA, Licensing, Operations and Project Management. Each discipline reviews the specification in accordance with the Supply System design review procedures. The Reviewing Engineer is responsible for the overall review, obtaining sign-offs from the reviewers and resolution of comments. For Ebasco prepared specifications the form is transmitted to Ebasco for resolution; for the Supply System prepared specifications the form remains with the Reviewing Engineer for resolution.

Pages and drawings which are affected by Supply System review are corrected and returned to the Supply System for concurrence. The Reviewing Engineer is responsible for a review of these pages to assure that comments have been resolved and incorporated based on the Comment/Resolution form and to secure the original Supply System reviewers acceptance on comments which have been rejected. Rejections which are unacceptable to the Supply System will be resolved and so noted on the Comment/Resolution form.

17.1.3 DESIGN CONTROL (CONT'D)

.1 (Continued)

A Bid Issue is then prepared and sent to the Supply System for final approval. The Reviewing Engineer reviews the Bid Issue and signs the Bid Issue review sheet. Final Supply System approval is indicated by the signature of Supply System Project Manager on the bid issue approval sheet.

.2 Contractor and Vendor Generated Drawings and Specifications

When a contractor or a vendor initiates a design, he is required to perform design review activities in accordance with internal design review procedures which must include measures for controlling design interfaces. Upon completion of this review, his design drawings and specifications are forwarded to Ebasco for interface review.

Ebasco conducts a review of the drawings and specifications in accordance with Ebasco procedures which includes measures to control the receipt, approval and transmittal of vendor drawings and an approval of the procedures and specifications required to be submitted to Ebasco in accordance with the procurement documents.

Vendor drawings, specifications and other documents are transmitted to the Supply System staff in accordance with the contract submittal master list which lists and describes the material. Supply System personnel review these transmittals on a selective basis and transmit any comments to Ebasco for inclusion.



17.1.4 PROCUREMENT DOCUMENT CONTROL

Procurement of materials, parts, components and construction activities for WNP-3 and 5 is accomplished through prepurchased equipment and construction specifications and contracts prepared by the Supply System or Ebasco for the Supply System. The award of contracts is based on an evaluation of bidder proposals. Approval to award a contract is obtained from the Supply System Board of Directors and Executive Committee personnel.

Proposals which take exception to technical or quality requirements are evaluated by Supply System Engineering and Ebasco Engineering, and/or Ebasco Home Office, Project QA and Supply System QA. Exceptions to contracts must present acceptable alternatives to the specification requirements.

The Supply System QA Program requires that the Supply System and Ebasco develop and implement measures which assure that procurement documents are prepared, reviewed, approved and issued under controlled conditions. These control measures were established and in effect prior to the writing of this document. These measures are described in Section 17.1.3. In addition, addenda issued prior to bid opening and control change orders issued after bid awards, require a review and approval commensurate to that performed on the original procurement document.

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents be reviewed and approval sheets signed off by Supply System and Ebasco (of Ebasco generated) QA personnel. These reviews verify the inclusion of applicable quality requirements. The procurement documents require that contractors and vendors of Supply System Quality Class I items have a QA Program which meets the applicable requirements of 10CFR50, Appendix B and ANSI N45.2.

The Supply System QA Program requires that the Supply System and Ebasco generated procurement documents be reviewed and approval sheets signed off by Supply System and Ebasco (if Ebasco generated) Engineering personnel. These reviews verify the inclusion of applicable design, regulatory code, material, testing, metal joining, part identification, spare parts, cleaning, preservation, packaging, handling, storage, shipping, installation and other design procurement related requirements.

The review and approval of Supply System and Ebasco generated procurement documents is documented. This documentation consists of approval sheets, comment/resolution sheets, historical copies of the procurement documents representing the various stages of development that they progressed through and applicable correspondence. This objective evidence is filed and maintained in a controlled, traceable, retrievable and systematic manner.

#### 17.1.4 PROCUREMENT DOCUMENT CONTROL (CONT'D)

Documentation requirements are specifically delineated in the procurement documents indicating to the bidders, contractors and vendors which documents must be submitted for information or approval.

Procurement documents include requirements which assure the right of access by Supply System and/or Ebasco personnel to the contractor's operations or the vendor's facilities and records. QA requirements are incorporated in procurement documents in accordance with their quality class and complexity. Bidders on Supply System Quality Class I documents are requested to submit with their bids a comprehensive QA Plan describing their QA system, policies, responsibilities and procedures which will be, or are being, implemented to control quality throughout all phases from design to final shipment, erection, fabrication, installation, testing or start-up, as applicable.

After bid openings and prior to contract award, bids are reviewed by Supply System QA and Engineering personnel with assistance from Ebasco QA and Engineering personnel to determine the acceptability of the bidder's QA programs. This evaluation consists of an examination of their QA plans and evaluation of past quality performance based on previous experience with the Supply System or Ebasco. QA evaluations, if deemed necessary, are performed in accordance with approved procedures. After the documented bid evaluation, the Supply System Project Manager is notified as to the acceptability of the bidder's QA program.

Supply System QA reviews and approves the Architect-Engineer's and the NSSS Contractor's respective QA program. The Architect-Engineer in turn approves the QA programs of other contractors and suppliers as part of their contract with the Supply System.

The details of the procurement document control measures implemented by Ebasco and CE are described in Sections 17.2 and 17.3, respectively.

17.1.5 INSTRUCTIONS, PROCEDURES AND DRAWINGS

Supply System QA Program Manual delineates the methods by which the Supply System complies with the criteria of 10CFR50, Appendix B. Implementation of Supply System QA Program assures control of the activities affecting quality. A listing of the QA procedures comprising Supply System QA Program Manual is recorded in Section 17.1.2.

The Supply System QA Program requires Ebasco to have based the development of their QA Program and the procedures for its implementation on the requirements of 10CFR50, Appendix B. Ebasco generated procurement documents require that instructions, procedures and drawings relative to the work being performed will be maintained in the work area and available for reference by the personnel performing the work.

Contractors and vendors, including Ebasco and CE, are required to have written instructions, procedures, policies and/or drawings which govern their quality related activities and which include appropriate quantitative and qualitative acceptance/rejection criteria. Contractors and vendors, including Ebasco and CE, are required to impose similar documentation requirements on their subcontractors.

The details of the measures which Ebasco and CE implement to assure the development and issuance of instructions, procedures and drawings are described in Sections 17.2 and 17.3, respectively.

#### 17.1.6 DOCUMENT CONTROL

Document control is implemented by the Supply System, Ebasco and CE in accordance with the requirements delineated in their respective QA Manuals.

These requirements provide measures to assure that appropriate written instructions, procedures, policies, drawings and procurement documents including changes thereto, are properly reviewed and approved prior to release. Changes to these applicable documents require a review and/or approval commensurate to that performed on the original document. Changes to design documents are described in Section 17.1.3. These reviews and/or approvals verify the inclusion of adequate quality requirements and evaluate the impact of the changes on other project activities. Issuance of controlled documents is performed by personnel assigned distribution authority by the QA Program. This controlled issuance is designed to distribute controlled documents in a timely manner to the locations where the applicable activity is being performed and to prevent the use of obsolete or superseded documents.

The Supply System QA Program provides for the controlled updating of the Supply System QA Program Manual through a process that specifically requires holders of a controlled copy of the Supply System QA Program Manual to return a receipt verifying that the manual has been updated and that the superseded pages were removed. The Table of Contents for the Supply System QA Manual lists the latest revision for each QAR.

Procurement documents generated by the Supply System, Ebasco and CE require that contractors and vendors, including their subcontractors, of Supply System Quality Class I items have document control procedures in accordance with 10CFR50, Appendix B.

The Supply System QA Program document control measures, as delineated in the procurement documents, requires that quality related documentation be available prior to the performance of the activity to which they relate.

The Supply System QA Program document control measures pertain as a minimum to contract specifications, contract drawings, QA Program Manual procedures, operating procedures, quality related instructions and various process, test and inspection procedures as delineated in the contract specifications.

The details of the document control measures implemented by Ebasco and CE are described in Sections 17.2 and 17.3, respectively.

17.1.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

As described in Section 17.1.4, procurement for WNP-3 and 5 is accomplished through procurement documents. These documents contain sections which describe the general conditions, special conditions and technical specifications which the contractor is required to meet. The requirements of these sections assure purchased material, equipment and services, whether purchased directly or through contractors, conforms to design requirements. Measures to control these activities include a review and approval of procurement documents; source evaluation and selection, vendor surveillance, inspections and audits by the Supply System or Ebasco; and receiving inspection of these items upon receipt at the site.

QA requirements are incorporated in procurement documents in accordance with their quality class and complexity. Bidders on the Supply System Quality Class I contracts are required to submit with their bids a comprehensive QA plan describing their QA systems, policies, responsibilities and procedures which will be, or are being implemented to control quality throughout all phases from design to final shipment erection, fabrication, installation, testing or start-up, as applicable.

The Supply System QA Program requires surveillance of contractors and vendors be performed in accordance with written procedures and that surveillance activities be planned to verify and document that the contractors and vendors are conforming to the requirements of the procurement documents.

In addition, the Supply System QA Program requires that receiving inspection of items at the site be performed in accordance with written procedures, and that receiving inspection activities be planned to verify and document that the material, equipment or component being received documentation is available at the site prior to installation or use.

The Supply System QA Program requires that received items will be stored and handled on a controlled basis with nonconforming items being processed in accordance with the requirements described in Section 17.1.15.

Documentation pertaining to the control of purchased material, equipment and services will become part of the objective evidence of the quality of the applicable items and will be filed and maintained in a traceable, retrievable systematic manner.

The details of the measures which Ebasco and CE implement to assure the control of purchased material, equipment and services are described in Section 17.2 and 17.3, respectively.



17.1.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements for the development and implementation of measures for the identification and control of materials, parts and components. These reviews and approvals assure that identification and marking requirements have been adequately delineated and that the location and method of identification and marking do not adversely affect the function or quality of the subject item.

Procurement documents require a positive system of identification and control of materials, parts, components and partially completed subassemblies while in storage, warehousing and holding areas and during their fabrication, manufacturing, installation and construction.

These identification and control measures establish a means by which items can be traced to and conformance verified with their applicable documentation.

Verification that the items have been properly identified is to be performed during vendor surveillance activities prior to shipment of the items. Identification is further verified during receiving inspection at the site to assure that identification status was not adversely affected during shipping and to provide a verification check if the vendor surveillance verification was waived.

Documentation pertaining to the identification and control of materials, parts and components will become part of the objective evidence of the quality of the applicable items and will be filed and maintained in a traceable, retrievable systematic manner.

The details of the measures which Ebasco and CE implement to assure the identification and control of materials, parts and components are described in Sections 17.2 and 17.3, respectively.

#### 17.1.9 CONTROL OF SPECIAL PROCESSES

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements which provide for the development and implementation of measures for the control of special processes. These requirements specify applicable codes, standards, specifications and any special requirements necessary for the control of the delineated special processes.

In addition, the procurement documents specify that special processes will be performed and controlled in accordance with written procedures which delineate those special processes procedures which will be submitted to Ebasco for information or review and comments.

The procurement documents will require that procedures be developed to control such special processes as:

- a) Welding
- b) Cleaning
- c) Heat Treating
- d) Nondestructive Examination
- e) Repairing

Essential ingredients of these procedures shall include:

- a) Equipment utilized in the performance, inspection and control of special processes that require qualification shall be qualified to its intended usage prior to being installed or used.
- b) Personnel performing any special processes shall be qualified in accordance with applicable standards prior to the performance of work.
- c) Data collected in conjunction with the control of special processes shall include the type of operation, results, acceptability, action taken when deficiencies were noted and the identification of the inspector and/or data recorded.

Special processes procedures, qualification documentation, inspection and test results will become part of the objective evidence of the quality of the applicable item and will be filed and maintained in a traceable, retrievable, systematic manner.

The details of the measures which Ebasco and CE implement to assure that control of special processes are described in Sections 17.2 and 17.3, respectively.

#### 17.1.10 INSPECTION

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements which provide for the development and implementation of inspection measures. These requirements specify that inspections will be performed by contractor personnel who are independent from the individual or group responsible for performing the activity being inspected.

The procurement documents specify that inspection activities will be performed and controlled in accordance with written procedures, instructions and/or checklists. These procedures, instructions and/or checklists are required to include:

- a) Identification of quality characteristics to be inspected.
- b) Identification of those contractor individuals or the organization responsible for performing the inspection operation.
- c) Acceptance/rejection criteria.
- d) Description of the method of inspection.
- e) Evidence of completion of inspection.
- f) Record of the results of the inspection operations.

The procurement documents further require that procedures, instructions and drawings relative to the work being performed will be maintained in the work area and available for reference by the personnel performing the work.

Contractors and vendors are required by the procurement documents to specify the qualification requirements for inspection personnel and to assure that each inspector's qualifications are maintained current. The contractors and vendors are further required to perform inspection of modifications, repairs and replacement items, which are made after the initial inspections, in a manner commensurate with the original inspection requirements or to the Supply System and/or Ebasco approved alternatives.

Inspection equipment is required to be calibrated as described in Section 17.1.12.

Except at the facilities of the NSSS Supplier (CE) and its sub-vendors, Ebasco has been delegated the responsibility to perform source inspection, site receiving inspection of prepurchased items and surveillance of site construction inspection activities.

17.1.10 INSPECTION (CONT'D)

Pre-inspection planning developed by Ebasco QA will define inspection requirements, sequence of inspections, inspection methods, acceptance criteria and provide a tabulation of results for documented evidence that the particular quality characteristic inspected actually conforms to the specifications.

The Supply System QA will perform surveillance overview of the CM and contractor organizations for the purposes of evaluating their performance and verification of implementation of corrective action.

Source inspection will be accomplished by Ebasco's vendor surveillance group using inspection plans developed by Ebasco from the procurement documents. This inspection will assure adequate control of processes to assure that the required quality is obtained when inspection is not possible or disadvantageous.

The NSSS Supplier (CE) is responsible for source surveillance of its sub-vendors. The Supply System will provide surveillance, through the Home Office and Site Organizations, over both CE and its sub-vendors.

Inspection planning data sheets will become part of the objective evidence of the quality of the applicable items inspected and will be filed and maintained in a traceable, retrievable, systematic manner.

The details of the inspection measures implemented by Ebasco and CE and described in Section 17.2 and 17.3, respectively.

17.1.11 TEST CONTROL

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements governing tests to be performed by vendors and contractors. The test requirements shall include adequate test prerequisites, instructions for testing (including environmental conditions, if applicable), proper instrumentation, documentation and evaluation by qualified, responsible individual or group. The procurement documents require that testing be performed in accordance with written procedures, instructions and/or plans which define the overall inspection and test requirements, the acceptance/rejection criteria and the data to be recorded.

The Supply System QA Program further requires that site testing be monitored in accordance with testing inspection plans which provide for:

- a) An itemized list of the status identification system to be employed (i.e., tags, numbering system).
- b) An itemized list of the documents to be reviewed or referenced to verify the testing and inspection status of the system or component to be tested.
- c) An itemized list of the tests to be performed.
- d) An itemized list of the testing devices to be utilized.
- e) A detailed list of acceptance criteria together with adequate space to reflect actual results.

Construction testing will be performed by the contractors to ensure that installed equipment meets applicable codes, standards and design requirements.

The contractors will be required to prepare inspection and test procedures which define overall inspection and test requirements, test equipment to be used, criteria for acceptance and data to be recorded. These plans shall be approved by Ebasco. Integrity tests (i.e., hydrostatic, continuity, resistance, etc. and flushing tests) will be performed in accordance with these approved procedures. The contractor will be required to provide control of installed equipment in accordance with an accepted equipment tagging procedure. Upon completion of contractor installation and testing of a given system, all associated inspection and test records will be turned over to Ebasco and the Supply System for review and concurrence.



17.1.11 TEST CONTROL (CONT'D)

System inspections will be performed by the Supply System Start-Up Group to ensure that equipment is installed in accordance with design requirements and that the system installation is complete. Following resolution of any discrepancies, contractor tags will be removed, Supply System tags installed and control of the system will then be transferred to the Supply System for testing purposes. Contractor test documentation will become a part of the overall permanent plant testing records.

Test control documentation will become part of the objective evidence of the quality of the applicable items tested and will be filed and maintained in a traceable, retrievable and systematic manner.

The details of the test control measures implemented by Ebasco and CE are described in Sections 17.2 and 17.3, respectively.

17.1.12 CONTROL OF MEASURING AND TEST EQUIPMENT

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements which provide for the development and implementation of measures to control measuring and test equipment. These requirements specify:

- a) Contractor's and vendor's procedures describe the calibration technique, calibration frequency, maintenance and control of all measuring and test instruments, tools, gauges, fixtures, reference standards, transfer standards, and nondestructive examination equipment which are to be used in the measurement, inspection and monitoring of components, systems and structures.
- b) Allowable deviations from calibration standards (tolerances) will be specified in the contractor's and vendor's procedures and submitted to the Supply System and/or Ebasco for approval.
- c) Inspection, measuring, testing and maintenance devices are calibrated and adjusted at scheduled intervals against certified standards having known valid relationships to national standards, when such standards exist.
- d) Calibration intervals for each device are based on the type of equipment, required accuracy, intended usage and other conditions affecting inspection, measurement, testing and maintenance control.
- e) Calibration standards are maintained, calibrated and used in an environment having temperature and humidity controls that are compatible with required accuracy and operating characteristics of the standards.
- f) Records are maintained that indicate the calibration history and the next scheduled calibration date for each controlled device.
- g) Each inspection, measuring, testing and maintenance device is properly identified with serial numbers, or other suitable identification and has its last and next scheduled calibration dates clearly indicated.
- h) Devices that have not been properly maintained or calibrated in accordance with specified schedules have been identified and removed from service.
- i) An investigation will be conducted and documented to determine the validity of previous inspections performed when measuring and test equipment are found to be out of calibration.

17.1.12 CONTROL OF MEASURING AND TEST EQUIPMENT (CONT'D)

Documentation pertaining to the control of measuring and test equipment will become part of the objective evidence of the quality of the applicable items and will be filed and maintained in a traceable, retrievable and systematic manner.

The details of the measures which Ebasco and CE implement to assure the control of special processes are described in Sections 17.2 and 17.3, respectively.

17.1.13 HANDLING, STORAGE AND SHIPPING

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements which provide for the development and implementation of appropriate cleaning, preservation, handling, storage and shipping measures.

These requirements specify that procedures will be developed based on the requirements of the procurement documents, with consideration to the need for special tools, equipment and qualified personnel.

Cleaning, preservation, handling, storage and shipping requirements are incorporated into the procurement documents to assure that the item's designed integrity and ability to function are maintained.

Items delivered to the site are stored, handled and preserved in accordance with procurement documents and equipment manufacturer's requirements. These functions are performed in accordance with approved procedures and instructions on a scheduled basis and corrective action is taken when required. The overall program is under the surveillance of Ebasco's Site QA.

Documentation pertaining to the cleaning, preservation, handling, storage and shipping of the items will become part of the objective evidence of the Quality of the applicable items and will be filed and maintained in a traceable, retrievable and systematic manner.

The details of the measures which Ebasco and CE implement to assure control of the cleaning, preservation, handling, storage and shipping of the items are described in Sections 17.2 and 17.3, respectively.

17.1.14 INSPECTION, TEST AND OPERATING STATUS

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements which provide for the development and implementation of inspection, test and operating status measures. These requirements specify that procedures will be developed to assure that specified inspections and tests are performed and that the acceptability of the items with regard to their inspection, test and operating status are known throughout the manufacturing, installation and start-up testing phases. More specifically, the Supply System Quality Assurance Program requires that contractor's inspection, test and operating status procedures are written and submitted for review and approval by the AE. These procedures shall establish measures which provide for:

- a) The use of inspection and test status markings, such as stamps, tags, labels, routing cards or other suitable means;
- b) The identification of items which have satisfactorily passed required inspections and tests, where necessary to preclude inadvertent bypassing of such inspections and tests;
- c) Identifying the operating status of structures, systems and components to prevent inadvertent operation.

The Supply System QA Program also requires that Construction Management be responsible for developing, coordinating and implementing an inspection, test and operating status system with the site contractors.

Documentation pertaining to the inspection, test and operating status of items will become part of the objective evidence of the quality of the applicable items, and will be filed and maintained in a traceable, retrievable and systematic manner.

The details of the measures which Ebasco and CE implement to assure implementation of an inspection, test and operating status system are described in Sections 17.2 and 17.3, respectively.



17.1.15 NONCONFORMING MATERIALS, PARTS OR COMPONENTS

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of measures to assure control of nonconforming materials, parts or components. The Quality Assurance Programs of the Supply System, Ebasco, CE, other contractors, sub-contractors and vendors will provide for the identification, documentation, segregation, review, disposition and notification to affected organizations of nonconforming materials, parts, components, services or other program activities at any stage of manufacturing, fabrication, erection, or construction to prevent their inadvertent use or installation. Written procedures will provide for the handling, processing, dispositioning and reinspection of nonconforming materials, parts, components, services or other program activities.

Nonconforming items shall be identified and marked with a "HOLD" tag (when possible); removed to a "HOLD" area, roped off, or otherwise segregated to prevent their inadvertent use or installation.

.1 Detection and Documentation of Nonconformances

The detection and documentation of nonconformances detected is as follows:

## a) Site Nonconformances

Nonconforming items are identified and marked with a hold tag, removed to a hold area, roped off or otherwise segregated to prevent inadvertent use or installation. The nonconformance is either documented by the Supply System or Ebasco (using an Ebasco procedure) or contractor personnel (using the Contractors procedure). The nonconformance report is processed by the CM/AE in accordance with Ebasco's nonconformance procedures.

## b) Off-Site Contractor Nonconformances

Nonconforming material, parts, components, services or program activities detected during source surveillance activities will be brought to the attention of the Vendor's Quality Assurance personnel for their initiation of nonconformance control, using their procedure. Failure of the vendor to take appropriate action will result in corrective action initiated by the Supply System or Ebasco.

17.1.15 NONCONFORMING MATERIALS, PARTS OR COMPONENTS (CONT'D)

.1 (Continued)

Nonconformances detected during fabrication/manufacturing by the off-site contractor will be identified and controlled in accordance with the off-site contractor's QA Program. Closed copies of the off-site contractor's nonconformance reports are sent to the site as part of the QA Records package for the item.

.2 Disposition of Nonconformance (Site)

Corrective action for dispositioned nonconformances is performed by the organization responsible for the nonconforming conditions. The Supply System QA Program defines the responsibility for dispositioning as follows:

- a) Site Contractors can disposition nonconformances on items purchased by them as rework, or reject, without the approval of the AE's Engineering group.
- b) Site nonconformances that affect owner purchased items require approval of the AE's Engineering group.
- c) Site nonconformances dispositioned as repair or use-as-is require approval of the AE's Engineering group as a minimum and if the nonconformance affects any of the following criteria, it requires the approval of the Nonconformance Review Board (NRB).
  - 1) Commitments made with respect to the Safety Analysis Report or Environmental Report.
  - 2) Design bases or criteria.
  - 3) Design margins with respect to performance requirements, applicable codes and standards.
  - 4) Safety or quality classification.
  - 5) Operability or maintainability.

17.1.15 NONCONFORMING MATERIALS, PARTS OR COMPONENTS (CONT'D)

.2 (Continued)

The NRB consists of representatives from Supply System Engineering, Supply System Project Management, AE Quality Assurance and AE Engineering.

Reinspection of nonconformances which are dispositioned "repair" or "rework" shall be performed in accordance with the original inspection requirements or by a method which is equal to the original inspection methods.

.3 Review of Nonconformances

Ebasco QA is responsible for assuring that nonconformance documents generated by the Supply System, vendors, contractors or Ebasco, which identify significant or possibly significant deviations as outlined in 10CFR50.55(e) or 10CFR21, have been properly evaluated and processed.

Supply System QA will conduct a review of nonconformance documents which identify significant defects as defined in 10CFR50.55(e) and 10CFR21. A report of this review shall be prepared for the Supply System's Project Management.

The details of the measures which Ebasco and CE implement to assure the control of nonconforming materials, parts or components are described in Sections 17.2 and 17.3, respectively.

17.1.16 CORRECTIVE ACTION

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements which provide for the development and implementation of measures to assure that conditions adverse to quality are identified, evaluated, corrected documented and reported to the appropriate levels of management. In addition, the cause of significant conditions adverse to quality are required to be identified, evaluated, corrected to preclude repetition, documented and reported to the appropriate levels of management.

The Supply System QA Program requires that Supply System QA conduct a review of nonconformance reports and other documents which identify significant conditions adverse to quality to assure that dispositions have been effected, proper corrective actions have been taken to preclude the repetition of similar nonconformances and that items pertaining to the conditions outlined in the requirements of 10CFR21 and 10CFR50.55(e) have been properly processed. Corrective action measures require correspondence between the Supply System and Contractor Upper Management.

The procurement documents require the contractor or vendor to take timely corrective action when requested by the Supply System and/or Ebasco. This requirement is in addition to their own procedure for implementing corrective action which the procurement documents specify. Where timely action is not instigated by the Contractor, the Supply System QA Program provides for initiating corrective action correspondence between Supply System Management and the Contractor's Management to resolve the discrepancy and to prevent future lapse in timely action.

Documentation pertaining to corrective actions will become part of the objective evidence of the quality of the applicable items and will be filed and maintained in a traceable, retrievable, systematic manner.

The details of the corrective action measures implemented by Ebasco and CE are described in Sections 17.2 and 17.3, respectively.

17.1.17 QUALITY ASSURANCE RECORDS

The Supply System QA Program requires that Supply System and Ebasco generated procurement documents contain requirements which provide for the development and implementation of measures to assure that documentation necessary to provide objective evidence of the activities affecting quality are generated, reviewed, approved, filed and maintained in accordance with Appendix B of 10CFR50.

Procurement documents require that contractors or vendors:

- a) Have written measures to control the filing and retrieval of QA Records.
- b) Have QA records which provide sufficient information to permit identification between the records and the item or activity to which they apply.
- c) Have QA records which are legible, complete and authenticated and dated by authorized personnel.
- d) Maintain control over the QA records to assure that revisions are performed by authorized personnel under controlled conditions in accordance with written procedures. Revisions will include the date of the revision and identification of the person making the revision.
- e) Maintain their QA records in a retrievable, identifiable and systematic manner.
- f) Have their QA records accessible for review by the Supply System and/or Ebasco.
- g) Have QA record storage facilities which are constructed and located to prevent destruction by fire, flooding, or theft and to prevent deterioration from temperature or humidity conditions.

Ebasco has been given the responsibility to receive, store and maintain QA records for the Supply System at the site.

QA records will be kept at the site in a storage facility constructed and located to prevent the contents from being destroyed by fire, flooding or theft, or deterioration by temperature or humidity conditions.



17.1.17 QUALITY ASSURANCE RECORDS (CONT'D)

Ebasco has been given the responsibility to review QA records to assure their correctness and completeness. QA records shall be submitted to Ebasco in accordance with the requirements of the procurement documents. QA records are utilized to verify that activities affecting quality have occurred, and that they have been performed in compliance with specified requirements. Analysis of conditions adverse to quality are performed as indicated in Section 17.1.15 and 17.1.16. These analyses utilize QA records as one means of disclosing discrepancies and nonconforming conditions. Further more, QA records provide the basis upon which dispositioning and verification of resolutions are accomplished.

Safety related equipment will not be installed until it is assured that the on-site documentation for that equipment does meet the applicable specification and/or code requirements, or that a certification, stating this documentation is available and will be furnished and signed by an authorized representative of the manufacturer, is received and acceptable.

The details of the Quality Assurance record measures that are implemented by Ebasco and CE are described in Sections 17.2 and 17.3 respectively.

17.1.18 AUDITS

The Supply System QA Program requires the contractors and vendors and their sub-contractors to develop and implement a comprehensive system of planned and documented audits. These audit activities are required to be performed in accordance with written procedures or checklists. Audit measures are to assure that:

- a) Audits are performed by appropriately trained personnel not having responsibility in the areas being audited.
- b) Audits are conducted periodically based on a preplanned schedule.
- c) Audits include an objective evaluation of quality related practices, procedures, instructions, work areas, activities items and documentation. In addition, audits include an evaluation of the effectiveness of implementing compliance to specified requirements.
- d) Audit results are documented and reported to the appropriate levels of management who review and evaluate these reports to determine quality trends and program effectiveness.
- e) Management action is taken to correct deficient areas.
- f) Follow-up audits are performed to verify corrective action and to evaluate the effectiveness of implementation.

Audits determine the adequacy of, and adherence to, the Supply System, Ebasco and other contractors QA programs and the effectiveness of their implementation as follows:

The Director, Quality Assurance, and the Project QA Manager review reports of audits performed by the Supply System's Corporate QA on Ebasco Home Office, NSSS Home Office and Supply System. The Project QA Manager reviews reports of audits performed by Ebasco and Supply System Site QA on Ebasco, contractor and vendor activities.

Each applicable criteria of 10CFR50, Appendix B, is scheduled to be audited by Ebasco annually. Additional follow-up audits may be scheduled to verify implementation of corrective action to findings identified by audits. The frequency of audits may be increased or decreased based on findings. Ebasco will be audited on an annual basis by the Supply System for compliance to the applicable criteria of 10CFR50, Appendix B.

17.1.18 AUDITS (CONT'D)

The Supply System audit results are documented and reported to the appropriate levels of management for implementation of corrective action. The responses to the Supply System audit findings are verified for implementation and effectiveness during follow-up audits.

Documentation pertaining to audits will become part of the objective evidence of quality of the applicable items and will be filed and maintained in a traceable, retrievable, systematic manner.

The details of the audit activities implemented by Ebasco and CE are described in Sections 17.2 and 17.3, respectively.

# WPPSS CORPORATE STRUCTURE

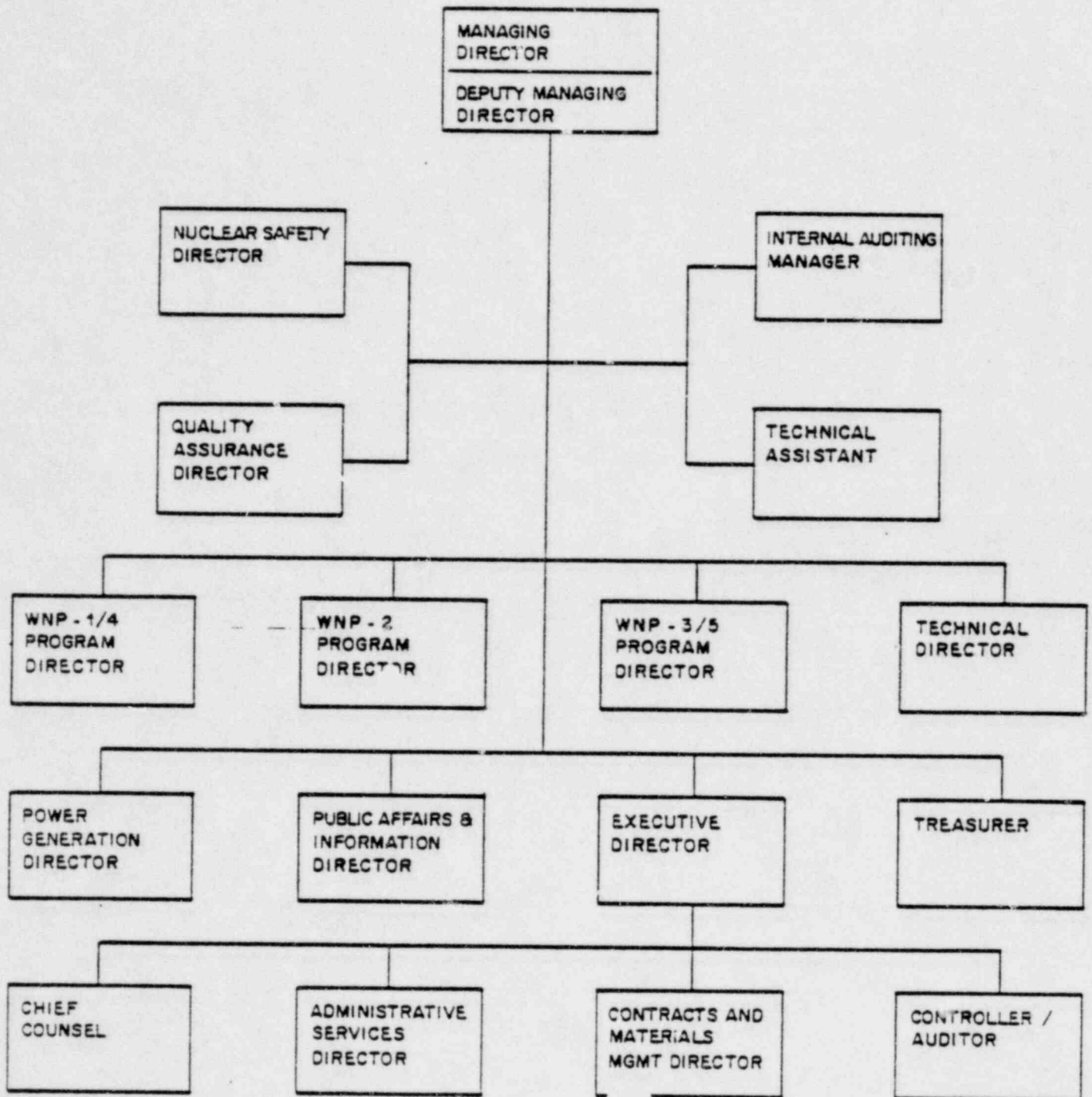
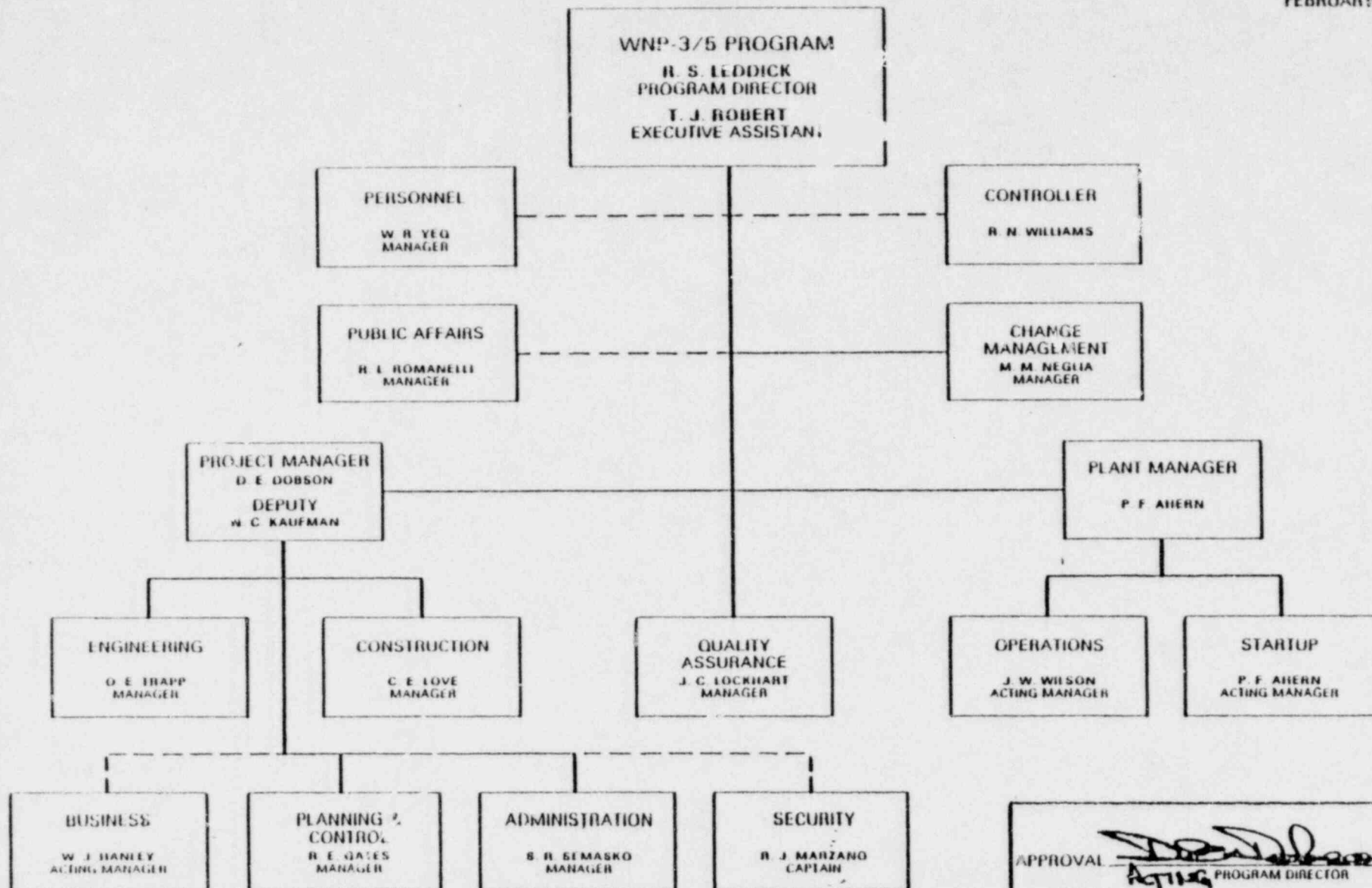


FIGURE 17.1 -1

# WASHINGTON PUBLIC POWER SUPPLY SYSTEM

FEBRUARY 1, 1981



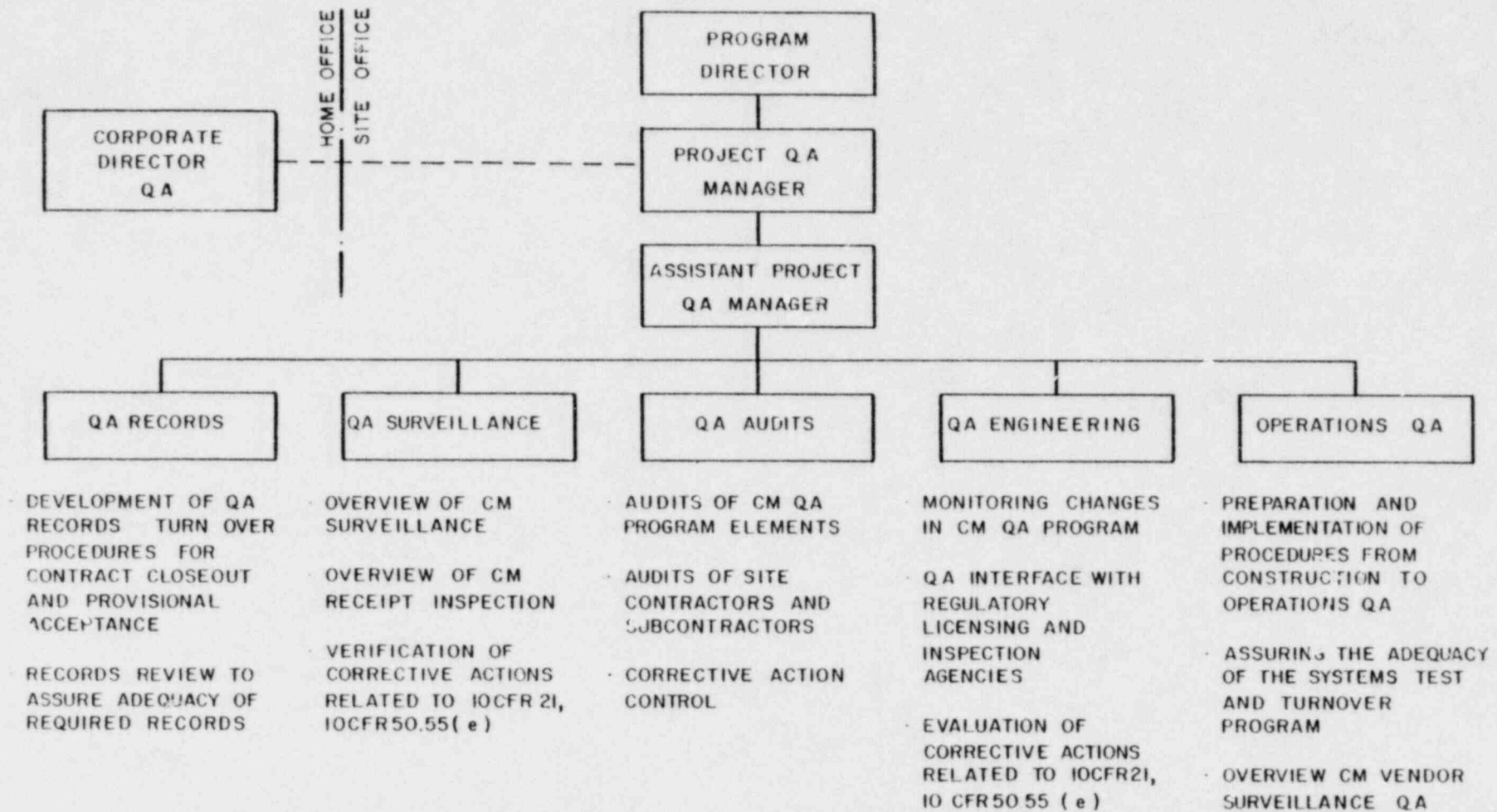
APPROVAL	<i>[Signature]</i>	2-7-81
	ACTING PROGRAM DIRECTOR	DATE
APPROVAL	<i>[Signature]</i>	2-7-81
	DEPUTY MANAGING DIRECTOR	DATE
CONCURRENCE	<i>[Signature]</i>	2/5/81
	COMPENSATION & ORG. PLANNING	DATE

Figure 17.1-2



# WNP-3/5

## PROJECT QA ORGANIZATION



APPROVAL: *[Signature]*      3/12/81  
 PROJECT QA MANAGER      DATE

Figure 17.1-3

## 17.2 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION - EBASCO SERVICES

### 17.2.1 ORGANIZATION

The Ebasco organization, which includes the Quality Assurance organization, established for the WPPSS Nuclear Projects 3/5 is shown on Figure 17. 2.1. Reporting to the President through the Executive Vice President-Operations are the Senior Vice President-Engineering & Construction, the Vice President-Materials Engineering & Quality Assurance, the Senior Vice President-Projects and Procurement, and the Senior Vice President-Consulting Engineering.

Reporting to the President through their respective Senior Vice Presidents and through the Executive Vice President-Operations are the Vice President-Plant Operations and Betterment, the Vice President-Engineering, the Vice President-Operations and Control, the Vice President-Construction, and the Vice President-Procurement. The Ebasco WPPSS 3/5 Project General Manager reports directly to the Senior Vice President-Projects & Procurement. The Ebasco Project General Manager is responsible for all matters relating to the overall execution of the project and is the primary contact with the client.

The Ebasco Quality Program is prepared by the Quality Program Committee. This is a permanent committee representing each Vice President's department. This committee is responsible for, and has the authority to make changes to, the policies and procedures in this program. Ebasco's Quality Program and policy is established in the Ebasco Nuclear Quality Assurance Program Manual, ETR-1001, as modified by addendums to insure its uniqueness to the WPPSS 3/5 Project. The primary responsibility for administering the Quality Assurance Policy rests with the Ebasco Vice President-Materials Engineering and Quality Assurance.

The Ebasco Materials Engineering and Quality Assurance Department is technically and administratively independent of the Construction and Engineering organizations and reports directly to the Executive Vice President-Operations.

The Vice President-Materials Engineering and Quality Assurance is responsible for administering the Quality Assurance Policy of Ebasco and the Materials Engineering and Quality Assurance Engineering functions. He has been vested by Corporate Management with the authority to enforce the requirements of the Quality Assurance Policy. The Vice President-Materials Engineering and Quality Assurance Engineering has the unqualified support of Corporate Management. His decisions may not be overridden by other individuals or groups without written consent of Corporate Management.

Reporting to the Vice President-Materials Engineering and Quality Assurance are a Chief Engineer-Materials Application, a Chief Engineer-Quality Assurance Engineering, and a Chief-Vendor Quality Assurance. The Chief Engineer-Materials Applications is responsible for metallurgical functions such as the development of materials and welding specifications, and processes such as welding and joining. The Chief-Vendor Quality Assurance is responsible for implementation of the Ebasco Vendor Quality Assurance program. The Chief Engineer-Quality Assurance Engineering directs the quality-related activities of the Materials Engineering and Quality Assurance Department, including overall program planning. He is also responsible for the Ebasco Vendor and Site Quality Assurance programs, and the implementation of the Ebasco Site Quality Assurance Program. He or his designee also represents Ebasco in NRC and in Client audits. In addition, he designates a Project Quality Assurance Engineer (PQAE) for each nuclear project.

The Quality Assurance policy functions at two levels: Quality Assurance and Quality Control. Quality Assurance is an auditing and advisory function over engineering, construction, purchasing, and vendor and subcontractor quality control operations. It is administered by the Chief Engineer-Quality Assurance Engineering and the Chief-Vendor Quality Assurance, for their respective areas. A Project Quality Assurance Engineer (PQAE), who reports to the Chief Engineer-Quality Assurance Engineering through a Supervising Engineer -Quality Assurance, is responsible to plan and ascertain implementation of the Quality Assurance policy, and is assigned to coordinate the efforts of the Materials Engineering and Quality Assurance Engineering Department. The responsibilities of the Project Quality Assurance Engineer, include:

- a) Supervising and coordinating the Quality Assurance activities within the Materials Engineering and Quality Assurance Department.
- b) Designating the quality requirements in Ebasco component specifications and reviewing these specifications and drawings for inclusion of Quality Assurance requirements. He also reviews and/or coordinates supplier's procedures relative to quality (e.g. document control, special process procedures, qualification records, in-process procedures) to assure their existence, acceptability, and implementation as explained in d) below.
- c) Conducting audits of various Ebasco engineering disciplines.
- d) Surveillance of vendor's and contractor's Quality Assurance programs auditing them to verify the implementation of their programs.
- e) Preparing Quality Assurance Plans for use by Ebasco's Vendor Quality Assurance Representatives (VQAR) for surveillance activities to monitor fabrication at the vendor facility. The PQAE reviews Ebasco

VQAR reports to assure that the QA Plans are being implemented.

- f) Auditing of Ebasco's Vendor Quality Assurance Representatives
- g) Auditing of project Quality Assurance Reports
- h) Conducting audits of the Ebasco Site Quality Control and Quality Assurance organization and activities.
- i) Distributing and controlling the Project Quality Assurance Manual, including the enforcement of all sections.

A Quality Program Site Manager (QPSM), who reports to the Chief Engineer-Quality Assurance Engineering, is assigned to the construction site and is subordinate to no individual on site. He is responsible for the overall planning, direction, and implementation of the Site Quality Assurance Program. His responsibilities include:

- a) The independent authority to identify Site quality-related problems, to initiate or recommend solutions, to control existing nonconformances, to verify implementation of approved dispositions, and when necessary, to stop work.
- b) Assuring that all personnel working for him are qualified for their respective positions and are properly trained.
- c) Assuring that the Contractor Site Quality Programs are consistent and in full compliance with the Project Quality Program.

Quality Control includes the inspection/surveillance function, and is the responsibility of the individual departments. This is applicable to site activities such as Construction and Purchasing. At the construction site, the Quality Control organization is under the Senior Quality Control Supervisor and the Receiving Inspection Supervisor who report to the Quality Program Site Manager for their respective areas.



The Senior Quality Control Supervisor is responsible for administering the jobsite Quality Control activities including:

- a) Performing surveillance in all areas of construction, establishing and enforcing quality control documentation requirements, including procedures, specifications, drawings and purchase documents.
- b) Identifying nonconformances and initiating their correction to the requirements indicated by the drawings, specifications, codes, or procedures for such items, or initiating a Stop Work Order until such nonconformances are corrected.
- c) Assisting in organizing and administering training seminars, as required, to assure proper level of quality control.

The Senior Quality Control Supervisor has Lead Project Quality Engineers, in each discipline (Electrical, Mechanical, etc.) reporting to him.

The Quality Assurance Engineering Supervisor is responsible for the development and maintenance of the Site Quality Assurance procedures/instructions; review of Pre-Bid evaluations to assure adequate coverage of quality requirements; review of a contractor's Quality Assurance program/procedures for adequacy; review and evaluation of 10CFR50.55 (e) and 10CFR Part 21 conditions, preparation of responses to NRC Inspection items; review and evaluation of site-generated procurement documents for adequate quality requirements; provide principal interface with state and ASME Authorized Inspection Agency; review of NCRs for trends and reporting; provide NDE review of contractor's radiographic film and other functions as may be described by site-specified procedures.

The Receiving Inspection Supervisor is responsible for having appropriate receiving inspection performed on all incoming materials and equipment upon arrival at the jobsite, obtaining necessary documentation, enforcing quality control receiving and storage requirements, and submitting information to the Quality Program Site Manager.

Site Quality Control/Receiving Inspection personnel are responsible for:

- a) Development of written procedures for the surveillance or inspection of safety-related items and services which list the required surveillance or

inspection activities when existing surveillance or inspection documents such as standard specifications and drawings do not provide an adequate basis for surveillance or inspection.

- b) Submittal of all Quality Assurance/Quality Control procedures to the Quality Assurance Engineering Supervisor for review, prior to implementation, to assure compliance with the QA Manual, code, and any additional requirements as applicable. All comments resulting from this review shall be resolved.

As stated above, the Quality Program Site Manager (QPSM), by following procedures established in the Ebasco Nuclear Quality Assurance Program Manual, has the responsibility and authority to reject unsatisfactory on-site work already performed on safety-related structures, systems, and components when audits indicate nonconformance with the applicable specifications, drawings, and procedures. He also has the authority to stop work until such nonconformance is corrected. However, in a vendor's shop, an Ebasco Vendor Quality Assurance Representative (VQAR) may "reject" an item, but does not actually order work to be stopped. He is only indicating that if work continues in the present manner, the item will not be accepted. The VQAR needs no action or approval of others prior to the implementation of the rejection directive.

The Ebasco Quality Program provides measures which establish the requirements and guidelines for preparation, performance, reporting, and follow-up of Quality Assurance Audits, both internal and external, as performed by Ebasco Quality Assurance Engineering and the Ebasco Management Audit Committee. These requirements apply to audits performed on activities affecting safety-related items and services.

Ebasco Quality Assurance Engineering performs internal audits of the various activities within Ebasco that affect safety-related structures, systems, components, and services. These audits are generally performed on a project basis by the Project Quality Assurance Engineer (PQAE) or his designee in accordance with departmental implementing procedures. Internal audits by Quality Assurance Engineering shall be scheduled regularly on the basis of the status and the safety importance of the activities to assure conformance to the Ebasco Quality Assurance Program. Applicable elements of the Quality Assurance Program shall be audited at least semi-annually or once within the life of the activity, whichever is shorter. However, supplemental internal audits may be conducted when:

- a) Significant changes in the Quality Assurance Program are made.
- b) There is a suspicion or evidence of deficiencies or nonconformance in the Quality Assurance Program.
- c) An assessment of the effectiveness of the Quality Assurance Program is necessary.
- d) It is necessary to verify implementation of corrective action.

Ebasco Quality Assurance Engineering is responsible to perform audits of suppliers of safety-related structures, system components, and services in accordance with the applicable requirements.

Periodic Audits of Site Quality Assurance activities are performed by the Chief Engineer-Quality Assurance Engineering or his designee. These in turn, are audited by the Ebasco Management Audit Committee to assure compliance with the Ebasco Nuclear Quality Assurance Program Manual requirements and shall

be primarily aimed at evaluating the effectiveness of the Chief Quality Assurance Engineer's audits.

The Ebasco Management Audit Committee is responsible to perform planned and periodic management audits of the Ebasco Quality Program. These audits are performed on a functional basis and use specific projects as a method of departmental sampling.

The organization under the Vice President of Engineering is responsible for the planning and implementation of the design and engineering activities of the Ebasco Quality Program as described in Section 17.2.3. The individual positions of groups performing quality-related design activities, independent design review, and checking and auditing activities are described in Section 17.2.3. (Design Control), and in the Ebasco Nuclear Quality Assurance Program Manual.

Quality Assurance aspects of the procurement process are subject to review by the Materials Engineering and Quality Assurance Engineering Department. Personnel performing quality assurance functions concerning suppliers of equipment and services have sufficient and well-defined responsibility, authority, and organizational freedom to identify quality problems; initiate, recommend or provide solutions through designated channels; verify implementation of solutions; and control further processing, until the proper disposition of the deficiency or unsatisfactory condition has been approved. The quality-related procedures for procurement activities are presented in the Ebasco Nuclear Quality Assurance Program Manual.

The Ebasco Contract Administration Manager, who reports to the Ebasco Site Manager, is responsible to administer all field construction contracts. The Construction Contractor will be treated in essentially the same manner as any other supplier of safety-related equipment or services. The Construction Contractor will be required to have a quality program which addresses the requirements of Appendix B to 10 CFR 50. This program will be subject to review by the Site Quality Assurance Engineering Department. During the course of construction, the activities of the Construction Contractor will be under surveillance by Ebasco Quality Assurance Audit Representatives on the site, under the direction of the Quality Program Site Manager, who in turn reports directly to the Chief Quality Assurance Engineer.

This responsibility is carried out by four functional subdivisions:

- a) Project Quality Assurance Engineer
- b) Quality Program Site Manager
- c) Nondestructive Examination Quality Assurance personnel
- d) Quality Assurance Engineers/Specialists which provide various other quality-related services and functions. Supervisors and Specialists in charge of the subdivisions report directly, or through other supervisors, to the Chief Quality Assurance Engineer.



Qualification requirements for the position responsible for directing and managing the Ebasco Quality Assurance Program are: Bachelor of Science Degree in Engineering; 10-15 years 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 or project positions; thorough knowledge of the Ebasco Quality Assurance Program.

Quality-related activities, responsibilities, and authority of Engineering, Construction, and Purchasing are further discussed in Section 17.2.2, Quality Assurance Program; Section 17.2.3, Design Control; and Section 17.2.7, Control of Purchased Materials, Equipment, and Service.

#### 17.2.2 QUALITY ASSURANCE PROGRAM

The Ebasco Quality Program described in the Ebasco Nuclear Quality Assurance Program Manual has been established, documented, and implemented. The Quality Program has been structured to comply with the requirements of the Nuclear Regulatory Commission's Rules and Regulations, Title 10, Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants." The requirements of the Ebasco Nuclear Quality Assurance Program Manual cover quality-related activities for safety-related structures, systems, and components from the various stages of design, procurement, shipment, storage, and installation.

A Quality Program committee which is a permanent committee representing the Vice President of Construction, Vice President of Procurement, Vice President of Materials Application and Quality Assurance, Vice President of Engineering and Vice President of Projects and Procurement is responsible for distributing to various Ebasco Departments the Ebasco Nuclear Quality Assurance Program Manual for

implementation as applicable. The Senior Vice President of Engineering and Construction has declared compliance with the requirements of the Ebasco Nuclear Quality Assurance Program Manual mandatory and has directed the Vice President of Materials Engineering and Quality Assurance, who has his unqualified support, to enforce its requirements.

The Ebasco Nuclear Quality Assurance Program Manual includes a table which identifies sections of the manual complying with each of the criteria of 10CFR50 Appendix B (Table 17.2-2). Safety-related structures, systems, and components covered by the requirements of the Ebasco Nuclear Quality Assurance Program Manual during engineering, design procurement, inspection, and testing phases are identified in Table 3.2-1 of this PSAR.

The quality requirements for the WPPSS Project Nos. 3/5 are contained in specifications, codes, standards, and the Ebasco Nuclear Quality Assurance Program Manual for WPPSS Project Nos. 3/5. The Ebasco Nuclear Quality Assurance Program Manual includes provisions which require planned and periodic audits of the Ebasco Quality Program. A Management Quality Assurance Audit Committee (chaired by the Consulting Quality Assurance Engineer) regularly assesses the implementation and effectiveness of the Quality Program to assure that the Program is meaningful and effective.

The Ebasco Management Audit Committee is responsible to perform planned and periodic management audits of the Ebasco Quality Program. These audits are performed on a functional basis and use specific projects as a method of departmental sampling. The Committee shall conduct periodic audits on different Ebasco departments or organizations to assure their compliance with those Sections of the QA Manual that govern their operations.

Checklists and/or written procedures prepared during audit planning shall be used to conduct the audit. An informal pre-audit conference may be arranged at the audit site in order to confirm audit scope and discuss the audit plan. A post-audit conference shall be conducted to:

- a) Inform those audited of the audit results, which shall include all nonconformances.
- b) Assure understanding of audit results.
- c) Establish the course of corrective action, if necessary.
- d) Draw special management attention to any conformances identified that need immediate corrective action.

Personnel assigned to WPPSS Project are knowledgeable in their respective fields and versed in the quality requirements for the plant. The indoctrination and training program devised and implemented by various departments participating in the implementation of the Ebasco Nuclear Quality Assurance Program Manual assures that personnel conducting quality-related activities are familiar with and knowledgeable in the purpose, scope, and implementation of the appropriate quality-related manuals, instructions, and procedures. The indoctrination and training program also assures that personnel performing quality related activities are adequately trained and qualified in the principles and techniques of quality related activities. An indoctrination and training program procedure has been incorporated in the Ebasco Nuclear Quality Assurance Program Manual. This program for indoctrination and training of Ebasco personnel engaged in activities subject to the quality assurance requirements of the Ebasco Quality Program provides maximum assurance of their proper understanding and proper implementation of Quality Assurance Program

requirements. Units of instruction shall comprise the substance of this training and indoctrination program. Each unit will consist of a self-contained course of instruction dealing with a quality-related topic and complete in itself to achieve a stated educational objective. The program shall include units or instruction in at least the following areas:

- a) General Information
- b) Quality Assurance Engineering
- c) Vendor Quality Assurance
- d) Site Quality Assurance
- e) Nondestructive Examination
- f) Quality Control/Surveillance
- g) Design and Engineering

The Ebasco Nuclear Quality Assurance Program Manual requires that quality-related activities such as inspections and tests are performed under suitable conditions and using appropriate equipment. This is achieved by inclusion of necessary requirements in procurement documents. Vendors of safety-related systems, structures, components and services are required to submit to Ebasco for

review, their procedures for activities such as inspection and testing. Ebasco Vendor Quality Assurance Representatives monitor these activities in Vendor shops to assure that the applicable Vendor procedures are implemented. The Quality Control receiving, inspection and surveillance activities performed on the site contractors are also monitored by the Site Quality Assurance Engineering personnel.

The Ebasco Quality Program is structured so that modifications can be made to comply with NRC regulations and industry standards as they are adopted.

The Ebasco program follows the guidance provided in the Gray Book, "Guidance on Quality Assurance Requirements During Design and Procurement Phase of Nuclear Power Plant", and the Green Book, "Guidance on Quality Assurance Requirements During the Construction Phase of Nuclear Power Plants."

### 17.2.3 DESIGN CONTROL

Ebasco utilizes a modified matrix type of organization for engineering and design, wherein specific engineers from the various disciplines are assigned to a project. Primary technical responsibility for project design rests with the Vice President of Engineering. The Chief Engineers of the various engineering departments report directly to the Vice President of Engineering. Each nuclear project has one Lead Discipline Engineer assigned to it from each engineering discipline. For a particular project, he is responsible to a Supervising Engineer who in turn reports to his respective department Chief Engineer. Each design group, consisting of draftsmen, designers, and engineers who work on the preparation of drawings for the project, is under the supervision of individual Design Supervisors for each discipline of the design (Electrical, Mechanical, instrumentation and Control, and Civil).



Each Design Supervisor reports to a Division Chief, who in turn reports to the applicable Chief Engineer.

The development of plant design, including preparation of criteria, calculations, drawings, and specifications, follows a procedure which minimizes the possibility of error. The procedures are established to assure that the design activities will be carried out in a planned, controlled and orderly manner, as described below.

A system of reviewing and checking design documents by parties other than the originator is conducted to minimize the possibility of errors and deficiencies which could adversely affect safety-related items. However, when an error or deficiency is evident, it is documented as a matter of record, and appropriate corrective action is taken.

The system of design reviews and checks extends to and provides controls applied to items, such as: Stress, thermal, hydraulic, radiation, and accident analysis; compatibility of materials; accessibility for in-service inspection, maintenance, repair; and specifying criteria for inspection and test. The process of checking and/or verifying the adequacy of the design may include methods such as actual design reviews, alternate or simplified calculating methods, or suitable testing programs.

The following material is in accordance with the requirements presented in the Ebasco Nuclear Quality Assurance Program Manual.

The first stage of the design process included definition of the major structures, systems and equipment. This ~~was~~ coordinated by the Project

Engineer and accomplished by a working group composed of members of the Engineering Departments and Nuclear Sections in consultation with Construction. The first written definition of the plant occurred with the preparation of the PSAR. The PSAR sections on design criteria, plant description and safety evaluations were prepared by respective Discipline Engineers. These sections and criteria were reviewed and approved by the Supervising Engineer for technical content and by the Nuclear Licensing Section of EnviroSphere Company and the Advanced Technology Department for nuclear safety and licensing aspects. Preliminary general arrangement drawings and diagrams were prepared by the Design groups under the direction of the Lead Discipline Engineers utilizing criteria developed during the PSAR presentation phase of the project.

The Nuclear Licensing Section provided guidelines for classification of safety-related structures, systems and components and reviewed the safety classifications assigned by the Project Engineer for the PSAR. They also participated in the review of the preliminary general arrangements and system flow diagrams to ascertain that nuclear safety requirements were met. Inter-discipline coordination and resolution of internal interface problems were the responsibility of the Project Engineer who administered and documented these activities in accordance with Engineering and Projects Department's procedures.

The general design work which followed the PSAR presentation phase, and is a continuing effort, includes preparation of specifications, flow diagrams, general arrangements, design information sheets and other detailed engineering documents by the Lead Discipline Engineers, with technical review by the Supervising Engineers. General arrangement

drawings, safety system flow diagrams, electrical one-line diagrams and other preselected drawings and specifications will all be reviewed by the Licensing Section. At any stage in the design process, the project personnel may request consultation with the Nuclear Licensing Section for review of any safety-related drawings or specifications. Each Lead Discipline Engineer and Design Supervisor reviews the design work of the other disciplines as applicable for interface compatibility with their work. Together with the Supervisor, they compile and transmit information on criteria and interface and determine problems involved in design and methods of resolving them. The Design Supervisor assigns responsibility for design drawings and calculations to appropriate engineers, designers and draftsmen. These persons initial all completed work performed by them. This work is then reviewed for design verification and signed by checkers from the same design section who were not involved in the details of preparation, as assigned by the design supervisor.

A checker is responsible for cross-checking of interdisciplinary separation criteria, verifying the accuracy of the drawing, correctness and completeness of all work performed by the originator, including the application of the discipline criteria to the design.

All supporting calculations and/or other data prepared by Design for the drawings are verified for accuracy and signed and dated by a checker. The checker accepts or mutually, with the commenter, discards comments received. If the comments are significant, he advises the design supervisor, who advises the Lead Discipline Engineer. Otherwise, if the comments are acceptable, the Checker incorporates them into the check print. Should the Checker disagree, and resolution cannot be achieved

with the commenter, the respective discipline Design Supervisor and Engineer resolves differences. Resolution of conflict areas progresses through the organization chain until resolved. The checker must review and compare the finished drawing with this check print to insure all comments were properly incorporated or mutually discarded prior to printing his name in title block.

Each Lead Discipline Engineer (LDE) retains responsibility for work performed in his discipline and is responsible for correctly translating applicable regulator requirements and design basis into specifications, drawings, procedures, and instructions. It is required that appropriate quality standards be specified in design documents and the design review measures assure that such standards have been included. Deviations or changes from specified quality standards are processed in a manner similar to the manner in which other design changes are made. This process includes a documented review by the same group or organization responsible for having reviewed the particular area of the original design document. Each Lead Discipline Engineer is responsible for the inclusion of suitable design analyses where applicable. The section of the Ebasco Nuclear Quality Assurance Program Manual and procedures covering control activities requires that proper selection and accomplishment of design verification or checking methods such as design reviews, alternate calculations or qualification testings are performed. The Licensing Section provides the LDE with acceptable safety criteria for design and keeps the LDE informed of the latest applicable licensing requirements. These criteria are identified in the PSAR.

Safety-related equipment specifications and drawings are also reviewed by other Ebasco departments. This includes review by the Materials Engineering

and Quality Assurance Engineering Department with respect to the suitability of the application of material parts, equipment and processes, and quality assurance requirements; by the Licensing Section with respect to adherence to Nuclear Licensing safety guidelines criteria as established in the PSAR; and by the Construction Department with respect to constructability, as appropriate to the drawings and specifications. The Project Quality Assurance Engineer reviews and comments on the design documents from the viewpoint of materials application, quality assurance requirements, and quality control of vendor supplied materials and equipment, including the specification and inclusion of appropriate quality standards in the design documents. Such reviews are documented on Specification and Drawing Routing Sheet Forms. Each Lead Discipline Engineer retains responsibility for including in the design documents inputs from other pertinent departments after they complete their review. If any errors and deficiencies in the design process are uncovered, the Lead Discipline Engineer is responsible for their documentation and disposition, and initiating corrective actions. Deviations and changes from appropriate quality standards are processed and controlled in a similar manner to other design changes, as stated herein. Following a final review by the Design Supervisor, Division Chief, Discipline Engineer, Supervising Engineer and (as appropriate) Chief Engineer, each signs the completed drawing and the Chief Engineer or Supervisor places his professional engineer's stamp on the drawing where applicable. Similarly, completed specifications are signed by the Discipline Reviewing Engineer; and in cases where certification is required, a registered professional engineer shall affix his signature to the statement set forth in Engineering Department Procedure E-13, entitled "Cover Sheets for Ebasco Specifications," for such certification. Completed design documents are sent to WPPSS for their review, comments and approval.



Design interfaces between WPPSS and Ebasco will be handled by concurrent review of criteria and of interface drawings with coordination of review and approval by WPPSS, as applicable.

Interfaces between Ebasco and Combustion Engineering are handled by the respective Lead Discipline engineers and coordinated by the Project Engineer. The Project Engineer is responsible for identification and resolution of all the interfaces, and coordinating the accommodation of these interfaces into the plant design through the Lead Mechanical Engineer. He is also responsible for documenting all correspondence resulting from this interface. All correspondence with outside parties are documented by correspondence between affected individuals, including requests for technical information. Ebasco transmits copies of drawings involving CE/Ebasco interfaces to CE. Ebasco also reviews drawings received from CE for interface compatibility.

The procedure for major design changes, revisions to specifications, drawings and criteria, including field changes, follows the same design control process, including documentation and review by authorized personnel, as outlined above, for the original design.

A project distribution schedule list is maintained for specifications and drawings. Revisions are then sent to the appropriate persons on this list. Drawings and specification schedules showing dates and number of latest revisions are issued monthly by the Coordinator. The Lead Discipline Engineers and Design Supervisors have the responsibilities to assure that the latest drawings and specifications are used in engineering and design. Major changes are those changes to engineering documents which will affect safety-related structures, systems, and components. In design the Ebasco

Lead Discipline Engineer for that part of design and engineering is responsible for judging whether a change to a specification or drawing due to a change in requirements or a fabricator change request is a major or minor change. He does this in consultation as needed with his Supervising Engineer.

Any major change is processed through the same channels used in specification and drawing preparation and reviewing by the affected departments. The actual flow pattern for engineering documents is delineated in detail in the Ebasco Nuclear Quality Assurance Program Manual. It should be noted that any standard "off-the-shelf" commercial or previously approved materials, parts, and equipment, that are essential to the safety-related functions of the structures, systems and components are selected and reviewed for suitability of application under the same requirements employed for all such safety-related items. The Ebasco Nuclear Quality Assurance Program Manual specifies that safety-related items must be purchased from a vendor whose QA program has been evaluated and must be qualified to meet design requirements.

A system of planned and periodic management audits of the engineering and design control process are performed in accordance with a documented procedure, as described in Section 17.2.18, - Audits.

Engineering records, including design reviews, design documents, records and changes thereto, are collected, stored and maintained in accordance with the disposition based on the Ebasco Office Practices and Procedures.

Drawings and specifications, once concurred upon by Ebasco and WPPSS Engineering, are sent to the field by written transmittal where they are received.

by the Resident Engineer. He opens file cards on each new document received and distributes copies to appropriate field personnel by written transmittal. When revised drawings or specifications are sent to the field, the revision number and date are entered on the appropriate file card, and copies of the revision are distributed to the users by an assistant to the Resident Engineer (Office Engineer) who marks "void" on all superseded copies of the revised document. In this way, it is assured that the field staff are always working from the latest drawings and are cognizant of all design changes, and that obsolete documents are controlled to prevent their inadvertent use. Copies of all transmittals are retained in the Resident Engineer's file.

If the field staff needs to institute a design change, it is brought to the attention of the Construction Operations Manager. If he determines that a change is major, then the appropriate Lead Discipline Engineer is notified by means of a field change report form. The Construction Operations Manager can identify major changes since the specifications and drawings will identify safety-related structures, systems and components. Proposed major design changes are reviewed in accordance with the original design review procedures. Revised drawings are sent to the field when the change is approved.

Minor field changes require that a field change report form be completed, but need only be approved by the Construction Operations Manager. Minor field changes are documented and shown on drawings as "As-Built" revisions. Major and minor changes are easily identified because the specifications and drawings which are covered by the change are identified as safety or non-safety related.

When Engineering drawings and specifications are developed in the field office, the same procedure for control of those drawings designated as important to safety and plant reliability will be followed as for home office-originated specifications and drawings.

#### 17.2.4 PROCUREMENT DOCUMENT CONTROL

The Ebasco Nuclear Quality Assurance Program Manual provides measure, to assure the control of procurement documents as outlined here below:

Specifications and drawings are prepared by the cognizant engineering disciplines as specified in 17.2.3 above. All specifications and drawings receive a preliminary review by the Lead Discipline Engineers as specified on the Project Distribution List. The Project Quality Assurance Engineer shall at this time review the data submitted and shall include all pertinent quality assurance requirements to assure compliance with 10 CFR 50 Appendix B and standard Ebasco specifications controlling quality.

The engineers performing the review shall document their review by signing the Specification and Drawing Routing Sheet. Upon completion of their review, the engineers shall return all documents including the Routing Sheet to the Lead Discipline Engineer who shall incorporate the comment into the specification or drawing and maintain other documentation for record purposes.

The revised specification with a routing sheet shall be sent to those reviewers who have commented and to those of the original reviewers, who in the judgment of the originator, are affected by the comments. These parties shall review for their areas of responsibility and upon concurrence, sign the routing sheet attesting to their acceptance of the specification, and

return the documents to the Lead Discipline Engineer for record purposes.

The Project Quality Assurance Engineer (PQAE) shall assure that the specification contains the necessary provisions to assure right of access; applicable inspection requirements; preparation, identification, maintenance and retention requirements of documentation and requirements for the submittal of applicable documents for review and that provisions for all the special processes as required have been included.

This review of Ebasco Specifications and Drawings provides assurance that the applicable regulatory and design basis requirements as well as other quality-related requirements are suitably included or referenced in the specifications and drawings.

A copy of the reviewed specification is then forwarded to WPPSS by the Project General Manager, for approval. Upon receipt of WPPSS approval, the specification is ready to be issued for inquiry. The Lead Discipline Engineer shall forward the Inquiry Specification to Purchasing, who is responsible for preparing the procurement package for submittal to prospective Bidders. A copy of the procurement package is maintained by the PQAE for record purposes.

Proposals received from Bidders are reviewed by the Purchasing Department, the Design and Engineering groups which prepared the Specification, and other groups as appropriate including the Project Quality Assurance Engineer. The Project Quality Assurance Engineer is primarily responsible for



evaluating the Bidders' Quality Assurance Program in accordance with the specification requirements. The above groups evaluate Bidders and recommend to WPPSS the best evaluated Bidder. Upon receiving approval for award from WPPSS, the Purchasing Department shall prepare a formal purchase order package and issue it according to the Project Distribution Schedule.

Any revision to the specification or drawings which may be required after issuance of the Purchase Order shall be distributed as a formal supplement to the Purchase Order in accordance with the Project Distribution Schedule after the revision has followed the steps outlined above. Purchase documents for spare or replacement parts shall receive the same review requirements as the original document.

#### 17.2.5 INSTRUCTIONS, PROCEDURES AND DRAWINGS

The Ebasco Nuclear Quality Assurance Program Manual for this project contains methods of complying with each of the 18 criteria within 10 CFR 50, Appendix B. These methods are in the form of policies, instructions, and procedures to be followed by those individuals or groups charged with the responsibility for implementing or enforcing the Quality Assurance Program. Ebasco's methods of complying with each of the 18 criteria are briefly described herein, in Sections 17.2.1 through 17.2.18.

The Ebasco Nuclear Quality Assurance Program Manual is supplemented by internal procedures which describe the manner in which activities affecting quality are to be accomplished as dictated by the needs of the project. Such procedures include auditing procedures and specification review procedures, as well as Site Quality Assurance Engineering and Quality Control/Surveillance

Procedures, instructions or drawings describing activities affecting quality which are quantitative or qualitative in nature (i.e., inspections or tests), contain or reference criteria for determining that such activities have been satisfactorily accomplished. Vendors' procedures will be reviewed by Quality Assurance Engineering. During this review, it is assured that the required acceptance criteria are contained or referenced.

#### 17.2.6 DOCUMENT CONTROL

Ebasco procedures for the approval and release of drawings and specifications are described under Section 17.2.3 (Design Control). The issuance of revisions and changes are handled in the same manner. The individuals or groups responsible for reviewing and issuing such documents and revisions thereto, are identified in the Ebasco Nuclear Quality Assurance Program Manual. Internal Ebasco procedures for activities affecting quality are generated by various organizations within Ebasco but, in all cases, are subjected to a review cycle to assure that appropriate requirements are contained.

Issuance of the Ebasco Nuclear Quality Assurance Program Manual is the responsibility of the Ebasco Chief Quality Assurance Engineer or his designee. A list of all holders of the manual is maintained by him in the New York Office and copies of all revisions are sent to all holders with appropriate instructions for incorporation. The Ebasco Quality Program Committee is responsible for this program as described under Section 17.2.2 (Quality Assurance Program). Documents which have a bearing on safety-related activities are controlled. Such documents include the Ebasco Nuclear Quality Assurance Program Manual and implementing procedures, design documents (specifications, drawings, calculations), procurement documents (including purchase orders and supplements thereto), reports of design changes, deviations and objective evidence

(material certifications, test reports, etc.) of proper manufacture and construction of safety-related structures, systems and components. Changes to documents are reviewed by the same organizations that performed the original review unless delegated by the owner to a qualified responsible organization. Approved changes are promptly included where applicable into instructions, procedures, drawings and other appropriate documents associated with the change.

Documents are available at the onset of the work for which they are needed. Obsolete or superseded documents are controlled to prevent inadvertent use.

Master lists which identify the current revision number of drawings, procedures, instructions and procurement documents are established and implemented. These lists are updated and distributed to predetermined responsible personnel on a timely basis.

Vendors, manufacturers and contractors are responsible to control the issuance of their drawings, instructions and procedures and the review of the documents and changes thereto, in accordance with their quality assurance program as required by Ebasco specifications.

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

Ebasco procedures for control of purchased safety-related material, equipment and services are contained in the Ebasco Nuclear Quality Assurance Program Manual for the project. The procedure for evaluation and qualification of vendors is also detailed in the Ebasco Nuclear Quality Assurance Program Manual. Under this, prospective vendors must submit their documented Quality Assurance

Programs for review and evaluation by the Ebasco Materials Engineering and Quality Assurance Department for conformance to specification requirements.

Qualification of a supplier with regard to capability shall be determined, as specified in the QA Manual, from results of the following:

- a) A review of the supplier's Quality Assurance manual.
- b) Manufacturing Certificate of Authorization (i.e. ASME N-type stamp), if applicable.

To be considered qualified with regard to Quality Assurance capability, a supplier must have satisfactorily met the requirements above.

Subsequent to the selection of a Vendor, a Quality Plan is prepared by the Project Quality Assurance Engineer in consultation with the cognizant Lead Discipline Engineer who prepared the purchase specifications. This is prepared in accordance with a procedure set forth in the Ebasco Nuclear Quality Assurance Program Manual for the project. The Quality Plan defines functional and documentation requirements and establishes the Vendor's fabrication steps to be monitored by the Ebasco Vendor Quality Assurance Representatives at the Vendor's shops. A "Records/Documentation Checklist" is prepared and executed as part of the plan.

The Ebasco Materials Engineering and Quality Assurance Department will review applicable Vendor procedures and personnel qualifications to establish that standards, codes and regulatory requirements are properly specified in order to meet the requirements. The Ebasco Nuclear Quality Assurance Program Manual contains procedures for the distribution and review of these Vendor procedures.

The Chief-Vendor Quality Assurance is directly responsible for the organization and direction of the Vendor Quality Assurance Representatives. He reports directly to the Vice President-Materials Engineering and Quality Assurance. Individual Vendor Quality Assurance Representatives implement the Quality Plan. It is the Vendor Quality Assurance Representative's responsibility to assure that quality requirements of the specification are met. The Ebasco Vendor Quality Assurance Representative has the authority to reject components and equipment which do not comply with the applicable Purchase order Requirements. Ebasco Vendor Quality Assurance Representatives have had experience in inspection and inspection methods of power plants and process plant components and systems. A Vendor Quality Assurance Representative inspects only those components in his area of expertise.

Sequence schedules are obtained from each Vendor to facilitate the establishment of the Quality Plan so that the specific check points for Ebasco Vendor Quality Assurance Representative visits can be designated. The check point system uses a random approach, but includes surveillance of the critical steps of fabrication. The Vendor is required to give adequate notice of any impending check point. The Quality Plan is sent to WPPSS for their information and use. The Vendor Quality Assurance Representative will fill out the appropriate quality compliance forms based on his checks and observations. These forms cover the Vendor material documentation, fabrication, and testing. These forms and applicable documentation will be sent to the construction site where they will be audited by the Ebasco Quality Program Site Manager and his staff, and filed in accordance with filing system described in the Ebasco Nuclear Quality Assurance Program Manual.



The Ebasco Vendor Quality Assurance Representative will audit applicable documentation in the Vendor's shop and upon completion of fabrication, but prior to the shipment of the components, a release for shipment form will be executed by him indicating evidence of compliance with purchase contract requirements. The release form will be sent to the Ebasco Project Quality Assurance Engineer and to the Quality Program Site Manager. The component or material can then be shipped.

When received at the construction site, material is examined primarily to determine whether any shipping damage has occurred. Exceptions to this are with materials ordered from the construction site such as concrete and reinforcing steel. For these, the receipt inspection includes assessment of proper documentation by qualified field personnel. Receiving inspection of the supplier furnished material, equipment and services is performed in accordance with the following:

- a) The material, equipment or component is properly identified and corresponds with the receiving documentation.
- b) Inspection of the material, component or equipment and acceptance records are performed and judged acceptable, in accordance with predetermined inspection instructions, prior to installation or use.
- c) Items accepted and released are identified as to their inspection status and forwarded to a controlled storage area or released for installation or further work.
- d) Nonconforming items are held in a segregated controlled area and/or clearly identified until proper disposition is made.

Equipment received at the construction site will not be released for installation until the Release for Shipment form or Quality Assurance records are available at the site. The release form is evidence of the availability of the Quality Assurance records at the vendor's facility.

The measures used by Ebasco to assure that organizational elements of their suppliers that perform acceptance inspections have the authority, organizational freedom, and independence to assure adequate quality are discussed in Section 17.2-10, Inspection.

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

The Ebasco Nuclear Quality Assurance Program Manual provides measures which assure that the purchase order will require that contractors of materials, parts and components important to safety, establish and utilize procedures to verify that items are properly identified and marked prior to the start of manufacturing operations and that the required identification and traceability is maintained as required by codes, standards or specifications as applicable. The identification methods must provide a high degree of confidence that they will prevent the use of incorrect or defective items as well as prevent the use of items which have not been subjected to the required inspections and tests. Consideration is given to assure that the location and method of identification do not affect the function or quality of the item being qualified. The verification of correct identification of material, parts and components is required prior to release for assembling, shipping and installation. This identification is maintained through receipt of the equipment at the construction site. Ebasco procedures provide for receipt inspection to assure proper identification. A system is provided for tagging and identifying materials received at the site. Rejected

material is clearly tagged and segregated or removed from the construction site, when feasible, to prevent inadvertent use. The Ebasco Quality Program requires that identification and traceability during construction be maintained where required by code, standard or specification as applicable.

#### 17.2.9 CONTROL OF SPECIAL PROCESSES

The Ebasco Nuclear Quality Assurance Program Manual assures that the purchase order will contain procedures for providing confidence that special processes are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications and criteria. Welding, heat treating, cleaning, and nondestructive examination are considered special processes.

Special processes and procedures, when required by the Purchase Order, must be submitted to Ebasco. These documents will be reviewed by Ebasco's Materials Engineering and Quality Assurance Engineering Department. On occasion, Vendors may have processes which because of their proprietary nature, are not submitted to Ebasco for review. In these instances, Ebasco will attempt to obtain copies of such written procedures under a proprietary and confidential agreement. If Ebasco is unable to obtain copies of these procedures under such an agreement, Ebasco personnel will review the documents at the Vendor's facility in order to assure that the processes are compatible with the requirements of procurement specifications. Notice as to the compatibility of such proprietary procedures with the specification requirements will be contained in the report prepared by the reviewing party. In this manner, all parties concerned are assured that the quality requirements are met. Furthermore, the suitability of a proprietary process can normally be verified during audits of the process at the Vendor's shop.

The Ebasco Nuclear Quality Assurance Program Manual provides the requirements for control of special processes used during the fabrication and erection of structures, and components at the construction site. The Manual requires that special processes be performed to written procedures and identifies the documentation required to verify conformance to the procedures. When qualification of personnel is required by the specification or its references, only personnel thus qualified are permitted to perform such operations or inspections.

The Ebasco Nuclear Quality Assurance Program Manual requires the establishment at the construction site of a procedure and qualification working file to contain welding procedures and nondestructive testing personnel qualification records. Also included in this working file are procedures for hydrostatic tests, leak tests, heat treatment and cleaning.

Ebasco's Vendors and contractors must demonstrate implementation of an acceptable program of control over special processes to include procedures and operator qualification. This must be done prior to award of a contract to the Vendor. The Ebasco Vendor Quality Assurance Representative during fabrication assures that this program is implemented.

#### 17.2.10 INSPECTION

The Ebasco Nuclear Quality Assurance Program Manual assures that Purchase Orders provide methods for inspection of activities affecting quality is established and executed both in the Vendors' shops and at the power plant construction site. The Ebasco Nuclear Quality Assurance Program Manual, and Paragraph 17.2.7 herein describe the program by which control is exerted over shop activities, one phase of which is the inspection program. Additional information pertaining

to inspection control is presented in Paragraph 17.2.9 herein, entitled "Control of Special Processes."

Inspection activities, both in Vendors' shops and at the construction site, must be performed by persons other than those accomplishing the operation which is being inspected. During the Ebasco evaluation of Vendors, one criterion for acceptability is this independence of inspection personnel.

As described in Paragraph 17.2.5 herein, activities affecting quality such as inspection activities must be provided for in writing. Such provisions may take the form of procedures, instructions and/or check lists. It shall be the responsibility of Quality Assurance Engineering Department to review such inspection procedures, instructions or check-lists for adequacy, whether they pertain to inspections in a Vendor's shop or at the construction site. In order to be acceptable, such inspection documents must provide for the following, either by inclusion or by reference:

- a) Quality characteristics to be inspected
- b) Individual or group to perform inspection
- c) Acceptance criteria
- d) Method of inspection
- e) Results of the inspection
- f) Appropriate certifying signatures and dates.

Ebasco Vendors of safety-related equipment must demonstrate the implementation of an acceptable quality assurance program prior to initiating fabrication. One aspect of this program is to require that inspections are to be performed



in accordance with written instructions, procedures and/or checklists. Such documents are required by the component specification to be submitted to Ebasco for review prior to performing the particular operation, and in this way Ebasco assures that the documents exist and are acceptable prior to performance of the operation. This requirement, included in the component specification, aids in assuring that inspection operations are performed in accordance with previously prepared and reviewed documents.

Inspection operations may be performed only by properly qualified personnel. Such qualification may be based on a formal program of training and examinations, or may be based on periodic evaluation of the inspector's activities coupled with indoctrination sessions for the purpose of remaining up-to-date with regard to industry developments.

The Ebasco Nuclear Quality Assurance Program Manual as well as Paragraph 17.2.12 herein requires that a system be in effect to assure that inspection equipment is calibrated so as to be within the required limits of accuracy. During Ebasco's Vendor evaluation process, the Vendor's calibration control program is assessed for adequacy and must be acceptable prior to that Vendor receiving a purchase order.

Adequate implementation of an acceptable inspection program shall be verified in the Vendors' shops through the activities of the Ebasco Vendor Quality Assurance Representatives during their periodic visits. As described in the Ebasco Nuclear Quality Assurance Program Manual, Vendor Quality Assurance Representatives perform surveillance over the Vendor's activities in order to establish and maintain confidence that all specification requirements are properly complied with. These Vendor Quality Assurance Representatives are

provided with a Quality Plan which includes a check list outlining those operations which require his witnessing, as well as the documentation requirements for the particular equipment. He is also provided with a list of Ebasco-approved Vendor drawings and copies of transmitted letters showing the status of Ebasco-reviewed Vendor procedures.

The Vendor Quality Assurance Representatives are responsible for the implementation of the requirements of the Vendor Quality Assurance Representation Program for the particular purchase order.

Their specific responsibilities are defined in approved written procedures and instructions. These procedures and instructions include the following:

- a) Witness inspections and special process
- b) Review supplier's personnel qualification record
- c) Review material certifications
- d) Review records of tests and inspections
- e) Review supplier's procedures for indication of Ebasco Review
- f) Complete forms and procedures as required by Quality Plan.

The Quality Plan consists of a checklist indicating those operations the Vendor Quality Assurance Representative is required to witness or observe, as well as the records and documentation he is to review such as: fabrication, inspection, and test records; personnel qualification, material certification; fabrication and test procedures (to be checked for indication of Ebasco review).

The Vendor Quality Assurance Representative will not issue a Release for Shipment form until he has verified that all required inspections were

performed, the results were acceptable, recorded and properly signed off. Where modifications, repairs, or replacements occur after initial inspection, a reinspection shall be performed which is based on the original design and inspection requirements.

Requirements for inspection/surveillance activities at the construction site are described in the Ebasco Nuclear Quality Assurance Program Manual as well as the Quality Assurance Instruction procedures in use at the particular construction site. It will be the responsibility of the Quality Program Site Manager or his designee to audit site contractor inspection activities.

#### 17.2.11 TEST CONTROL

The Ebasco Nuclear Quality Assurance Program Manual assures that Purchase Orders require Vendors and major Contractors to have a testing program, where applicable, which demonstrates that the item will perform satisfactorily in-service, in accordance with written, controlled procedures. These test procedures incorporate or reference the requirements and acceptable limits contained in applicable design and procurement documents.

Proof and functional test procedures will state the objective of the tests as well as instructions for testing method and that the tests are performed under suitable environmental conditions by qualified persons. The test procedures should include test prerequisites such as calibration requirements, using appropriate and adequate test equipment, preparation conditions and completeness of items to be tested, mandatory inspection hold points where applicable for witness by the Owners Authorized Inspector. Test procedures shall also establish acceptance and rejection criteria, methods of collecting and recording test data.

Ebasco reviews test procedures prior to use. The Vendors or Contractors performing these tests are required to demonstrate that the tests are performed in accordance with the reviewed procedures. The Ebasco Vendor Quality Assurance Representatives ascertain that such tests are performed and adequately documented; that test results are properly evaluated; that acceptance status is identified by a qualified responsible person or group.

Preoperational and start-up tests support services are provided as necessary. Ebasco will assist in reviewing the results of the preoperation and start-up tests for conformance to all applicable test requirements.

#### 17.2.12 CONTROL OF MEASURING AND TEST EQUIPMENT

The Ebasco Nuclear Quality Assurance Program Manual provides assurance that requirements for control of measuring and test equipment are included in the Purchase Order. Properly calibrated tools, gauges, measuring and test instruments, nondestructive test equipment and other testing devices are to be used in measurement, inspection and monitoring of safety-related components, systems and structures. These measuring and test instruments are to be calibrated and maintained at specified intervals based on the required accuracy, purpose, the degree of usage, stability characteristics and other conditions affecting the measurement details of these requirements are included in the Ebasco Nuclear Quality Assurance Program Manual and Quality Assurance Instruction Procedures.

Vendors are required to indicate that Reference and Transfer Standards shall have a known valid relationship to nationally recognized standards. Where national standards do not exist, provisions are established to document the

basis for calibration. When measuring and test equipment are found to be out of calibration, an investigation will be conducted and documented to determine the validity of previous inspections performed.

The Ebasco Vendor Quality Assurance Representative is responsible for verifying that: procedures are employed for measuring and test equipment; that measuring and test equipment are properly identified and have traceability to the calibration test data; that records are maintained which indicate the complete status of all items under the calibration system.

At the construction site, the Quality Program Site Manager is responsible for ascertaining that the requirements of the calibration procedures have been met and that appropriate documentation is provided.

#### 17.2.13 HANDLING, STORAGE AND SHIPPING

The Ebasco Nuclear Quality Assurance Program Manual assures that requirements for handling, storage, shipping, cleaning and preservation of equipment and materials are provided in Purchase Orders and Quality Control and Quality Assurance Procedures. The types of storage facilities required for various kinds of equipment and materials are provided. These requirements may be supplemented by special instructions from Vendors, Contractors or from Ebasco engineering in cases where special handling, storage and shipping is required due to weight, size, susceptibility to shock damage or other special circumstances. These requirements are determined and accomplished by individuals having adequate knowledge and experience.



Equipment and materials arriving at the jobsite must be accompanied by the Vendor Quality Assurance Representative's Release for Shipment form described in Section 17.2.7 above. They shall then be inspected to assure that no shipping damage has occurred. In addition to a general procedure, because of the special nature of some items, the construction contractor shall develop special procedures for receiving, handling and storage of items such as welding rods, electrodes, filler wire, electrical equipment and instrumentation and control components. These procedures shall be in accordance with the requirements of the Ebasco Nuclear Quality Assurance Program Manual.

A comprehensive storage plan is developed by Ebasco for the project based on a review of the project schedule and Status of Materials Report. Equipment shall be suitably and adequately protected from the time of arrival on the jobsite until installation and trial operation. Conformance after receipt in the field and during installation is verified by Receiving Inspection personnel and monitored by the Ebasco Quality Program Site Manager and his staff.

The Ebasco requirements for field storage of components and the basis for determining under what storage conditions an item will be stored are contained in the Ebasco Nuclear Quality Assurance Program Manual and Administrative Site Procedures. These requirements may be supplemented by instructions in the components specifications which detail specific mandatory or recommended Ebasco or Manufacturer's storage requirements for the particular component.

The Ebasco Nuclear Quality Assurance Program Manual and Administrative Site Procedures designate items that are permitted to be stored outdoors with tarpaulin

and shoring as specified in protected drained areas. It also designates items that must be stored on pallets in prefabricated or equivalent tear resistant enclosures which are weathertight, well-drained, well-ventilated with a paved floor or equivalent. The Ebasco Nuclear Quality Assurance Program Manual also indicates what must be stored indoors but also shall have temperature control or its equivalent to prevent condensation and corrosion. Items such as instrumentation and electronic equipment that are exceptionally sensitive to environmental conditions, such as moisture and temperature will be stored under special conditions agreed to by the Manufacturer and Purchaser.

#### 17.2.14 INSPECTION, TEST AND OPERATING STATUS

Ebasco procedures contained in the Ebasco Nuclear Quality Assurance Program Manual and Site Procedures provide means of identifying and verifying status of equipment during fabrication, installation and testing. Ebasco requires that Vendors maintain a system for identifying the inspection, test and processing status of materials, parts and components to preclude inadvertent bypassing of requirement inspection, tests and processing and that nonconforming items are clearly identified to prevent inadvertent use. Ebasco's vendors and contractors are required to submit their procedures for surveillance and inspection of work that affects quality which provides means for verifying that each process is performed in accordance with contract specifications. The Ebasco Vendor Quality Assurance Representative verifies that the Vendor is conforming to such a system.

The contractor shall control items and services that do not conform to requirements. The methods for control shall provide for prompt identification, documentation, segregation and notification of the nonconformances to Ebasco.

The control methods shall provide for immediate action to withhold work on items and services until disposition is determined.

In order to prevent inadvertent use, nonconforming items are identified, segregated when practical and documented in accordance with the requirements contained in the Ebasco Nuclear Quality Assurance Program Manual and, Ebasco and Site contractor's quality control procedures.

For installation and erection, Ebasco and site contractors shall employ a system administered by Quality Assurance personnel which utilizes inspection status and record cards, inspection checklists, stamp tags, labels or routing cards as necessary to clearly indicate inspection and test status.

#### 17.2.15 NONCONFORMING MATERIALS, PARTS OR COMPONENTS

The Ebasco Nuclear Quality Assurance Program Manual and Ebasco Site Procedures assure that Purchase Orders will require that nonconforming materials, parts or components be clearly tagged or otherwise identified. Requirements for contractors and Vendors to control nonconformances are detailed in the Ebasco Nuclear Quality Assurance Program Manual and Ebasco Site Procedures for this project. For purchased material, Vendors shall control items and services that do not conform to requirements. The methods of control shall provide for prompt identification, documentation, segregation and notification of the nonconformances to Ebasco. The control methods shall provide for immediate action to withhold work on items and services until disposition is determined.

Nonconforming items and services shall be reviewed, repaired or reworked, retested and reinspected and then accepted or rejected in accordance with

documented procedures reviewed by Ebasco. The Vendor shall remove rejected items from the fabrication process or to prevent inadvertent use or installation, and rejected services shall be removed and corrected in a satisfactory manner. The Vendor shall obtain the concurrence of Ebasco prior to any repair or disposition of items and services furnished by the Vendor. A nonconformance report shall be filed for all conditions which are adverse to quality. Nonconformances to the purchase order specification requested by the Vendor after placement of the order are fully evaluated by the engineering discipline originating the initial design and specification. Nonconformances to the specifications observed by Ebasco's Vendor Quality Assurance Representative are submitted on the Nonconformance Report to the Vendor for recommended disposition and then to Ebasco Quality Assurance Engineering Department (New York Office), for processing and evaluation of the recommended disposition. Provisions in the Nonconformance Report shall provide for reinspection and/or retest to assure compliance to the disposition instruction, and to determine that the item shall function as originally specified. Written instructions with regard to the recommended disposition are required.

At the construction site, nonconforming materials, parts or components are identified and controlled in accordance with the requirements of the Ebasco Nuclear Quality Assurance Program Manual and Ebasco Site Procedures. Materials, parts or components must be clearly tagged or otherwise identified. If the material does not meet the minimum specified requirements, and the responsible Quality Assurance representative believes that the materials should be accepted, he will initiate action as to disposition by documentation on a Nonconformance Report Form. This report will be forwarded to the Ebasco Materials Engineering and Quality Assurance Department for technical evaluation and concurrence by the engineering discipline originating the initial design

and specification. The report describes the nonconformance, and outlines the recommended disposition. Depending on the nature on the nonconformance, it is discussed with the cognizant engineer and/or Project Engineer for resolution. Written instructions with regard to the recommended disposition are required. All nonconformance reports are incorporated into the Site Quality Program Manager's files.

All Vendor nonconformance reports dispositioned "use as is," or "rework," shall be made part of the permanent inspection records and formally reported to WPPSS and maintained as part of the Vendor's file. Vendor files are turned over to WPPSS as part of the total QA documentation at the conclusion of the project.

#### 17.2.16 CORRECTIVE ACTION

The Ebasco Quality Assurance and Ebasco Site Procedures include measures to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective materials and equipment, and nonconformances are promptly identified, corrected, documented, and reported to appropriate levels of management. Particular attention will be paid to those areas which exhibit recurring instances of conditions adverse to quality so that the cause of these conditions can be identified, analyzed, and eliminated.

Ebasco Quality Program provides measures which assure that required corrective action is properly implemented and documented. At the Vendor's shop, Ebasco's Vendor Quality Assurance Representative 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. The Vendor Quality Assurance Representative shall document the satisfactory correction or resolution of all nonconformances on a Quality Assurance Report and on the appropriate Release for Shipment Form. These forms shall provide sufficient detailed information for as-built records. Nonconformances not corrected in accordance with the requirements of the Nonconformance Report shall not be accepted by the Vendor Quality Compliance Assurance Representative. Item or services shall not be accepted by the Vendor Quality Assurance Representative until such time as the appropriate corrective action has been accomplished. At the Construction Site, verification of the implementation of required corrective action rests with the Quality Program Site Manager or his designee. He shall be responsible to verify and assure that corrective action of nonconformances, if required, shall be implemented 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 Program Site Manager shall contact successively higher levels of management as necessary until resolution is obtained.

#### 17.2.17 QUALITY ASSURANCE RECORDS

The Ebasco Nuclear Quality Assurance Program Manual and Ebasco Site Procedures insure that records are clearly delineated in Purchase Orders. These records prepared by Ebasco or obtained from Vendors and contractors furnish documentary evidence of the quality of items and of activities affecting quality and are collected during the design, procurement, fabrication, construction and start-up phases of the project. These records include the operating

logs, results of reviews, inspections, tests, audits, and monitoring of work performance and material analysis; the qualification of personnel, procedures and equipment, other documentation such as drawings, specifications, procurement documents, calibration procedures, calibration reports, and non-conforming and corrective action reports. The inspection and test records include the following:

- a) A description of the type of operation
- b) Evidence of completing and/or verifying a manufacturing inspection or test operation.
- c) The results of the inspection or tests.
- d) Information related to nonconformances.
- e) Inspector or data records.
- f) Acceptability.

Ebasco Vendor Quality Assurance Representatives audit applicable documentation in the Vendor's shops. Upon completion of fabrication, but prior to shipment of a component, a Release for Shipment form is filled out by the Ebasco Vendor Quality Assurance Representative. The Release for Shipment form is sent to the Ebasco Project Quality Assurance Engineer and to the Quality Program Site Manager. The component or material can then be shipped.

Quality Assurance records compiled at Vendor facilities after normal processing and checking will be sent to the Ebasco Quality Program Site Manager for further review and filing.

Each Lead Discipline Engineer is responsible for the records generated in his department. The Project Quality Assurance Engineer is responsible for the

records in the Materials Engineering and Quality Assurance Department files. The requirements and responsibilities for record transmittals, retention and maintenance subsequent to completion of work are consistent with applicable codes, standards, and procurement documents.

A specific filing system is maintained at the construction site for the collection and maintenance of all Quality Assurance records. This file is under the control and responsibility of the Quality Program Site Manager and includes both Vendor and Site Quality Assurance Records. The filing system will provide records which are identifiable and retrievable. Storage facilities are constructed, located, and secured to prevent destruction of the records through fire, flooding, theft, and deterioration by temperature or humidity conditions.

The Quality Program Site Manager shall also audit site contractors during construction to assure that their Site Quality Assurance Documentation files contain documents which have been properly reviewed, approved and filed in a planned and systematic manner.

#### 17.2.18 EBASCO AUDITS

Ebasco Quality Program provides measures which describe the various audits that Ebasco performs. These audits are:

##### a) Management Audits -

The Ebasco Management Audit Committee is responsible to perform planned and periodic management audits of the Ebasco Quality Program. The audits are performed on a functional basis and use specific projects as a method of departmental sampling.

- b) Periodic audits of Site Quality Assurance activities are performed by the Chief Quality Assurance Engineer or his designee. They are in turn audited by the Committee to assure compliance with the Ebasco Nuclear Quality Assurance Program Manual requirements.
- c) Internal Quality Assurance Engineering Audits:  
Ebasco Quality Assurance Engineering performs internal audits of the various activities within Ebasco that affect safety-related structures, systems, components and services. These audits are generally performed on a project basis by the Project Quality Assurance Engineer or his designee in accordance with departmental implementing procedures.
- d) External Quality Assurance Engineering Audits  
Ebasco Quality Assurance Engineering is responsible to perform audits of prospective suppliers of safety-related structures, systems, components, and services.
- e) Quality Assurance Audits at the Construction Site
  - 1) Internal Audits  
The Site Quality Assurance Engineering representative shall audit the various quality-related activities performed by Ebasco departments on the construction site.
  - 2) External Audits  
Site Quality Assurance Engineering shall audit the various quality-related activities performed by Construction forces.

The Ebasco Nuclear Quality Assurance Program Manual and Ebasco Site Procedures provide for conducting planned and periodic management audits of the

Ebasco quality program to verify compliance with all aspects of the program to determine its effectiveness. Audits are performed in accordance with documented procedures by a committee consisting of personnel not having direct responsibilities in the areas being audited. This committee is chaired by the Consulting Quality Assurance Engineer.

The Ebasco Quality Assurance Audit Committee shall be responsible to the Vice President-Materials Engineering and Quality Assurance. The committee shall perform the management audits specified in the Ebasco Nuclear Quality Assurance Program Manual, and shall provide the Vice President any deficiencies found in the Ebasco Quality Assurance Program with respect to NRC requirements and shall make such recommendations to the Vice President-Materials Engineering and Quality Assurance as it deems necessary to remedy the deficiencies. The Vice President-Materials Engineering and Quality Assurance shall be responsible for informing other Ebasco Officers of the results of the QA Program audit. He shall also be responsible for initiating the implementation of any changes deemed necessary by officers to improve the effectiveness of Ebasco's QA Program in accordance with procedures established in the Ebasco Nuclear Quality Assurance Program Manual.

The prompt resolution of deficiencies indicated by internal Quality Assurance Audits shall be accomplished by the responsible parties. A quarterly review will be performed by the Audit Committee to assure that timely resolutions have been achieved. A quarterly review report by the Audit Committee on the resolution of deficiencies will be forwarded by the Audit Committee to the Vice President-Materials Engineering and Quality Assurance with a copy to the Chairman of the Quality Program Committee.

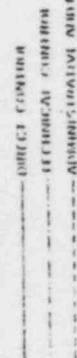


At the construction site, the Ebasco Site Quality Assurance group audits construction quality control activities. These audits are performed in accordance with the requirements of the Ebasco Nuclear Quality Assurance Program Manual and the Ebasco Site Procedures. The Ebasco Chief Quality Assurance Engineer or his designee conducts a planned audit of the Ebasco Vendor Quality Assurance Representatives, the planned activities at the construction site and the various Ebasco departments participating in the implementing of the Ebasco Nuclear Quality Assurance Program Manual, for WPPSS-Nuclear Project No. 3/5.

Audit results are documented and transmitted for review and commitment of corrective action by management having responsibility in the area audited. The frequency of audits is established in the Ebasco Nuclear Quality Assurance Program Manual and is also based on the status and safety importance of the activities being performed. They are initiated in a timely manner to assure effective Quality Assurance during design, procurement, and contracting activities. The Ebasco Quality Program requires that personnel conducting audits be appropriately trained and qualified.

The Ebasco Quality Program provides measures for the identification, analysis and implementation of corrective action for safety-related items and services. Determination and review of corrective action items shall be made as early as possible in order to preclude the possible repetition of deficiencies. Dissemination of corrective action information to responsible individuals shall be performed in a minimum length of time

Contractors and Vendors that supply safety-related structures, systems, and components are also required to establish and implement an audit program of their suppliers. These audits shall be accomplished in accordance with written procedures or checklists and shall assure that the supplier's Quality Assurance Programs are being implemented and effectively comply with applicable procurement specification requirements.



PSAR  
Fig. 17.2.

TABLE 17.2-1

CROSS REFERENCE OF EBASCO  
QA MANUAL WITH 18 CRITERIA OF  
NRC, 10CFR50 APPENDIX B

10CFR50 Appendix B Quality Assurance Criteria	Sections of Ebasco Nuclear Quality Program Manual Covering Quality Assurance Criteria
I - Organization	QA-I-2
II - Quality Assurance Program	QA-I-1, QA-I-3
III - Design Control	QA-I-4
IV - Procurement Document Control	QA-II-3, QA-III-3
V - Instructions, Procedures, and Drawings	QA-II-1, QA-III-1
VI - Document Control	QA-II-2, QA-III-2
VII - Control of Purchased Material, Equipment, and Services	QA-I-5, QA-II-2, QA-II-4, QA-III-2, QA-III-4
VIII - Identification and Control of Materials, Parts, and Components	QA-III-10
IX - Control of Special Processes	QA-II-8, QA-III-8
X - Inspection	QA-II-5, QA-III-5, QA-III-11
XI - Test Control	QA-III-12
XII - Control of Measuring and Test Equipment	QA-III-13
XIII - Handling, Storage and Shipping	QA-III-14
XIV - Inspection, Test, and Operating Status	QA-III-15
XV - Nonconforming Materials, Parts, or Components	QA-II-6, QA-III-6
XVI - Corrective Action	QA-II-7, QA-III-7
XVII - Quality Assurance Records	QA-I-6
XVIII - Audits	QA-II-9, QA-III-9

CROSS REFERENCE OF EBASCO  
QA MANUAL WITH 18 CRITERIA OF  
NRC, 10CFR50 APPENDIX B

10CFR50 Appendix B Quality Assurance Criteria	Sections of Ebasco Nuclear Quality Program Manual Covering Quality Assurance Criteria
I - Organization	QA-I-2,QA-I-1,QA-I-4,QA-II-4,QA-II-5,QA-III-5 QA-III-1
II - Quality Assurance Program	Entire Program
III - Design Control	QA-I-2,QA-I-4,QA-I-5,QA-II-5,QA-III-5
IV - Procurement Document Control	QA-II-3, QA-II-4,QA-III-3,QA-III-4,QA-III-5
V - Instructions, Procedures and Drawings	Entire Program
VI - Document Control	QA-I-4,QA-II-4,QA-II-5,QA-I-2,QA-II-2, QA-III-2
VII - Control of Purchased Material, Equipment, and Services	QA-I-1,QA-I-2,QA-I-5,QA-II-3,QA-II-4,QA-II-5, QA-III-3,QA-III-4,QA-III-5
VIII - Identification and Control of Materials, Parts, and Components	QA-I-2,QA-II-3,QA-III-3,QA-III-4,QA-III-5
IX - Control of Special Processes	QA-I-2,QA-I-5,QA-II-3,QA-II-4,QA-II-5,QA-III- QA-III-4,QA-III-5
X - Inspection	QA-I-1,QA-I-2,QA-II-5,QA-II-6,QA-II-7, QA-III-11
XI - Test Control	QA-I-1, QA-I-2,QA-III-12
XII - Control of Measuring and Test Equipment	QA-I-1,QA-I-2,QA-III-13
XIII - Handling, Storage and Ship- ping	QA-I-1,QA-I-2,QA-III-14
XIV - Inspection, Test, and Operat- ing Status	QA-I-1,QA-I-2,QA-III-15



TABLE 17.2-3(Cont'd)

10CFR50 Appendix B Quality Assurance Criteria	Sections of Ebasco Nuclear Quality Program Manual Covering Quality Assurance Criteria
XV - Nonconforming Materials, Parts or Components	QA-I-1,QA-I-2,QA-II-6,QA-III-6
XVI - Corrective Action	QA-I-1,QA-I-2,QA-III-7,QA-III-7
XVII - Quality Assurance Records	QA-I-1,QA-I-2,QA-I-6
XVIII - Audits	QA-I-1,QA-I-2,QA-I-5,QA-I-6,QA-II-9, QA-III-9