STANDARD NUCLEAR QUALITY ASSURANCE PROGRAM

STONE & WEBSTER ENGINEERING CORPORATION

7812270218

STONE & WEBSTER ENGINEERING CORPORATION

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DESIGN
CONSTRUCTION
REPORTS
EXAMINATIONS
CONSULTING
ENGINEERING

December 31, 1974

TO WHOM IT MAY CONCERN:

The Policies, requirements and tasks described in this Stone & Webster Engineering Corporation standard Nuclear Quality Assurance Program (SWSQAP) have been developed to fulfill a recognized need for assurance that requisite quality is achieved in design, procurement and construction.

Stone & Webster Engineering Corporation procedures which implement this program are described in various manuals which are referenced herein.

The development and overall responsibility for this Quality Assurance Program lies with the Vice President of Quality Assurance; who shall report conditions adverse to quality and/or in conflict with these program requirements to the President and affected Department Heads as appropriate.

The Manager, Quality Assurance is responsible for the administration and management of the Quality Assurance Program as applied to procurement and construction activities. The Chief Engineer, Engineering Assurance Division of the Engineering Department is responsible for the administration and management of the Quality Assurance Program as applied to engineering and design activities. Revisions, additions to, and audits of this program are the responsibility of the Manager, Quality Assurance and the Chief Engineer, Engineering Assurance Division, for their respective assigned areas. Any revisions or additions shall be approved by affected Departments prior to the incorporation of such changes into the Program.

W. F. Allen, Jr.
President

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A

INTRODUCTION

It is the policy and objective of the Stone & Webster Engineering Corporation to engineer and construct a quality power station, on a timely basis, in accordance with contractual and regulatory requirements. To this end the company has established this standard Nuclear Quality Assurance Program which delineates the requirements and tasks assigned to the various elements of the Stone & Webster organization to achieve our stated objectives.

This program is organized into 18 basic sections which correspond to the management principles delineated in Appendix B to 10CFR50 and is responsive both to Appendix B and the regulatory guidance as delineated in the position taken in Appendix VII of this Program. Actions to implement the assigned tasks are found in departmental procedures delineated in Appendix I.

A

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
ORGANIZATION	SECTION 1
	REVISION: B
	EFFECTIVE DATE: 12/1/78

APPROVALS

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W J Kennedy
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SECTION 1

ORGANIZATION

1.0 REQUIREMENTS

1.1 A S&W organization shall be established to develop and implement the quality assurance program.

1.2 The authority and duties of individuals and groups performing the required quality assurance functions shall be documented.

1.3 Individuals or groups who check, audit, inspect, or otherwise verify a quality activity shall not be the same individuals or groups responsible for performing the specific activity.

2.0 TASKS*

The responsibilities for the administration and management of the S&W quality assurance program have been set forth in the President's Policy letter promulgating this document. The S&W quality assurance organization and its relationship to the company organization is shown in Figure 1. The Quality Assurance Department organization is shown in Figure 2. The qualifications and experience level requirements for quality assurance personnel are contained in Appendix II. The organization of the Engineering Assurance Division, Engineering Department is shown in Figure 3. Figure 4 shows quality assurance interrelationships within the project organization. B

2.1 Engineering Department

2.1.1 Engineering Assurance Division (EA), Engineering Department shall:

A. Assure the implementation and operation of management systems for the control of technical work.

B. Assure that completed designs and specifications conform to S&W procedures.

C. Perform source control for engineering service suppliers.

2.1.2 Advisory Operations Division (AOD), Engineering Department shall implement and control the Standard Nuclear Test Program.

2.1.3 Licensing Division, Engineering Department shall implement and control the positions and responses to Regulatory Guidance and interfaces with commitments made in Appendix VII of this program.

2.1.4 Project Engineering is headed by a Project Engineer provided by the Engineering Department. The Project Engineer is responsible for all the design and engineering activities conducted by the Project.

* See Appendix I for reference to implementing documents.

2.2 Quality Systems Division (QSD), Quality Assurance Department shall:

2.2.1 Develop, establish, and improve standardized quality systems.

2.2.2 Analyze data and prepare reports for S&W management on quality related activities.

2.3 Procurement Quality Assurance Division (PQAD), Quality Assurance Department shall:

B 2.3.1 Perform inspections, verifications, and other tasks at seller facilities to ensure that the quality of materials, components, and the equipment meet the requirements of drawings, specifications, and other procurement documents.

B 2.3.2 Establish and maintain an inspection staff at district offices throughout the United States to carry out the required tasks at seller facilities.

2.4 Field Quality Control Division (FQCD), Quality Assurance Department shall:

B 2.4.1 Ensure by audits, inspection activities, and document review as appropriate, that the requirements of drawings, specifications, instructions, and procedures are fulfilled at the site during fabrication, erection, and installation and at selected local sellers' facilities.

2.4.2 Establish and maintain a field quality control organization at the site for the implementation of the quality control systems.

2.5 Nondestructive Test Division (NDTD), Quality Assurance Department shall establish and maintain systems which control the qualification of personnel and equipment, test methods, and documentation of required nondestructive test activities.

B 2.6 The Project Quality Assurance Program Administrator shall:

2.6.1 Assist the Project in implementing all phases of the quality assurance program.

B 2.6.2 Perform liaison between the Quality Assurance Department, Project, Nuclear Steam Supply Systems (NSSS) supplier, and other sellers regarding quality assurance activities.

2.6.3 Furnish information to the Project on matters pertaining to quality assurance.

2.6.4 Coordinate the Project quality assurance program with the Client quality assurance program.

2.6.5 Provide quality assurance inputs for safety analysis reports using material provided by QSD.

2.6.6 Assure that quality assurance reviews of specifications have been conducted.

2.6.7 Assist the Client in modifying his quality assurance program, as requested.

2.6.8 Prepare quality assurance activity reports, at least annually, for submission to the Client, based on inputs from EA, QSD, QACAD, FQCD, PQAD, and NDTD. B

2.6.9 Attend regulatory agency audits as the quality assurance representative, if requested. Assist the Project in providing effective and timely corrective action replies for deficiencies found in these audits.

2.6.10 Coordinate applicable quality control procedures with Project procedures.

2.6.11 Assist Project management in assuring that the quality assurance program fulfills the Safety Analysis Report commitments. B

2.7 The QA Cost and Auditing Division (QACAD) shall provide Department cost control, program evaluation, special management studies and audits, and information and support services within this program. The following summarizes the specific activities of the Division.

2.7.1 Department Cost Control Section - The Cost Control Section maintians the internal QA Department cost control system, providing inputs for the QA program estimates to Stone & Webster management as required.

2.7.2 Evaluation Section - The Evaluation Section has investigative responsibilities, management and/or quality related, to determine the adequacy, effectiveness, and adherence to quality related procedures and systems; these include project quality program evaluations, site audits, contractor audits, ASME Section III program audits, and Quality Assurance Department and Engineering Assurance Division performance audits, as well as the appraisal of a quality system or function, to determine adequacy and effectiveness of implementation.

2.7.3 Information Section - The Information Section maintains the QA Department central files containing all incoming and outgoing general and project quality related correspondence. In addition, it maintains the QA Department library providing reference material such as PSAR/FSAR's, technical literature, Project manuals, Codes, and standards. B

2.7.4 Support Services Section - The Support Services Section provides general administrative support for selected activities to the overall Quality Assurance Department.

2.8 Project Management Department - The Project Management Department is responsible for assigning the Project Manager who has the authority for the overall planning, organizing, staffing, directing, and controlling of those activities required to achieve project objectives within approved schedules, budgets, and product specifications. Included in this authority is the establishment and implementation of a records management system.

3.0 DISCUSSION

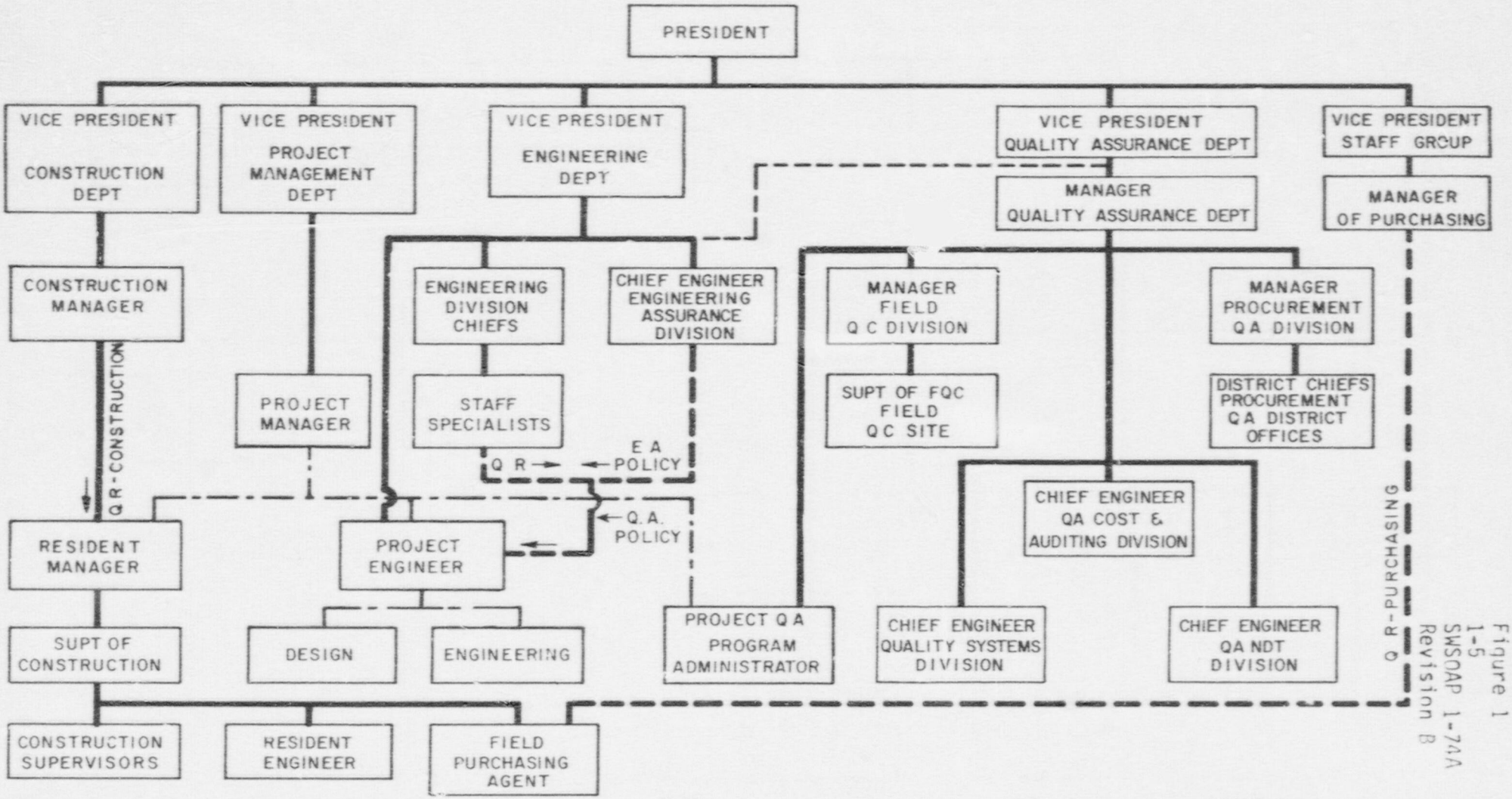
3.1 Reference Paragraphs 1.2 and 1.3

The authority and organizational freedom of personnel and organizations which perform quality assurance functions to identify problems, initiate, recommend,or provide solutions, and verify implementation of solutions is delineated in the charter of each organization performing these functions. Failure to satisfactorily resolve a quality problem on the lowest appropriate management level will result in an escalation to the next higher level. This could ultimately result in the problem being brought to the attention of the President by the Vice President of Quality Assurance for resolution. These documents can be found in the manuals shown in Appendix I. The assurance that the above fulfills Criterion I of Appendix B to 10CFR50 is gained through the audit program delineated in Section 18.

3.2 Reference Paragraph 2.4.2

The Superintendent of Field Quality Control has total authority for the management and implementation of the Quality Assurance Program at the construction site. This includes responsibility for quality verification inspection of work let to subcontractors who are working to their S&W approved quality assurance programs.

COMPANY ORGANIZATION
FOR QUALITY ASSURANCE
STONE & WEBSTER ENGINEERING CORPORATION



LEGEND

Q R – QUALITY REQUIREMENTS
Q A – QUALITY ASSURANCE
E A – ENGINEERING ASSURANCE
FUNCTIONAL AND ADMINISTATIVE DIRECTION
COMMUNICATION
PROJECT DIRECTION

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SWSQAP 1-74A
Revision B

CHART A

CHART EFFECTIVITY	
REVISION D	DATE 12/1/78
APPROVALS	
VP QA	F. G. Woodland
QA MGR	E. Dawson

QUALITY ASSURANCE DEPARTMENT ORGANIZATION

STONE & WEBSTER ENGINEERING CORPORATION

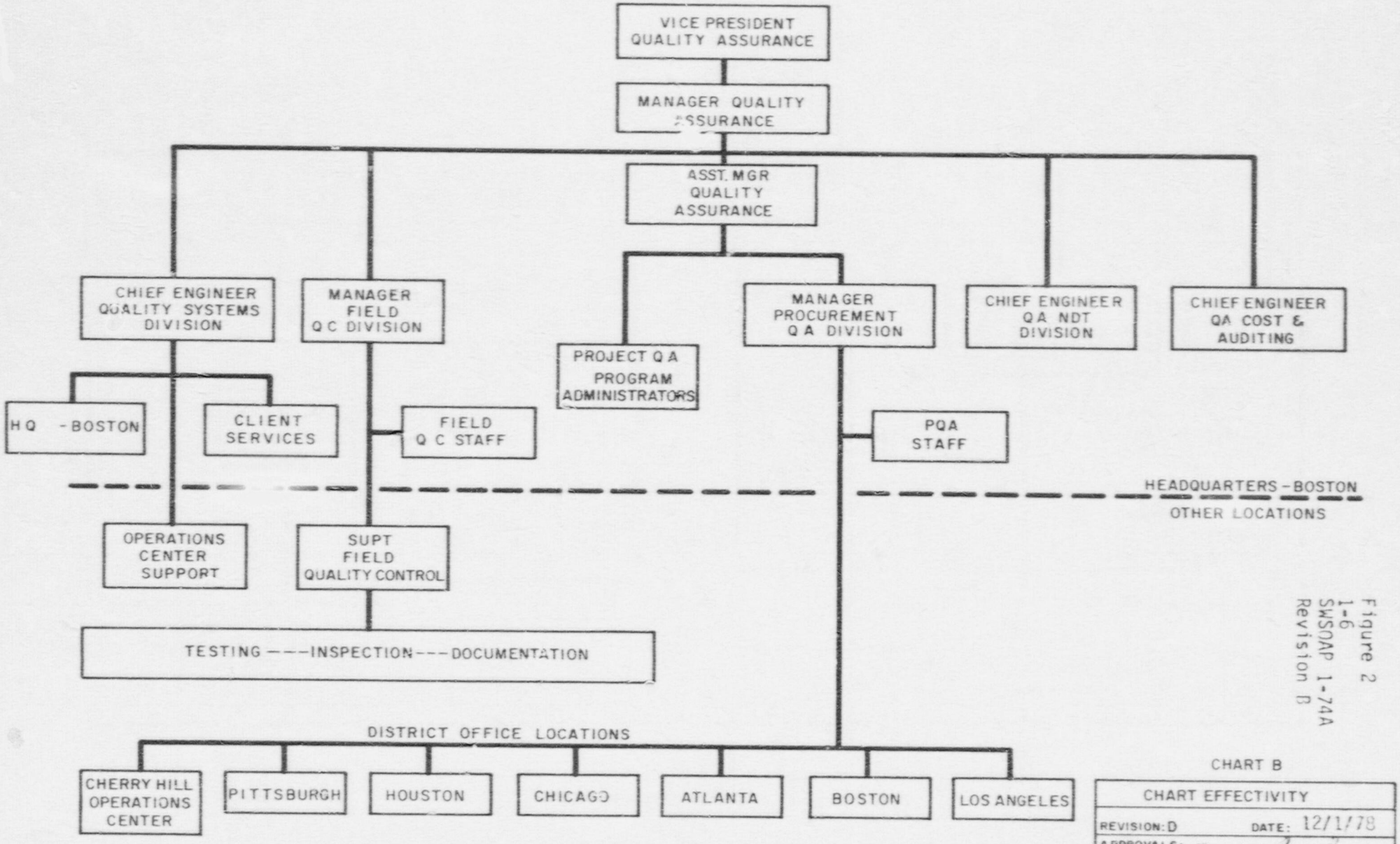

Figure 2
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Revision B

CHART B

CHART EFFECTIVITY	
REVISION: D	DATE: 12/1/78
APPROVALS:	
VP QA	W B Clinkard
QA MGR	E Trainor

ORGANIZATION
ENGINEERING ASSURANCE DIVISION (40)

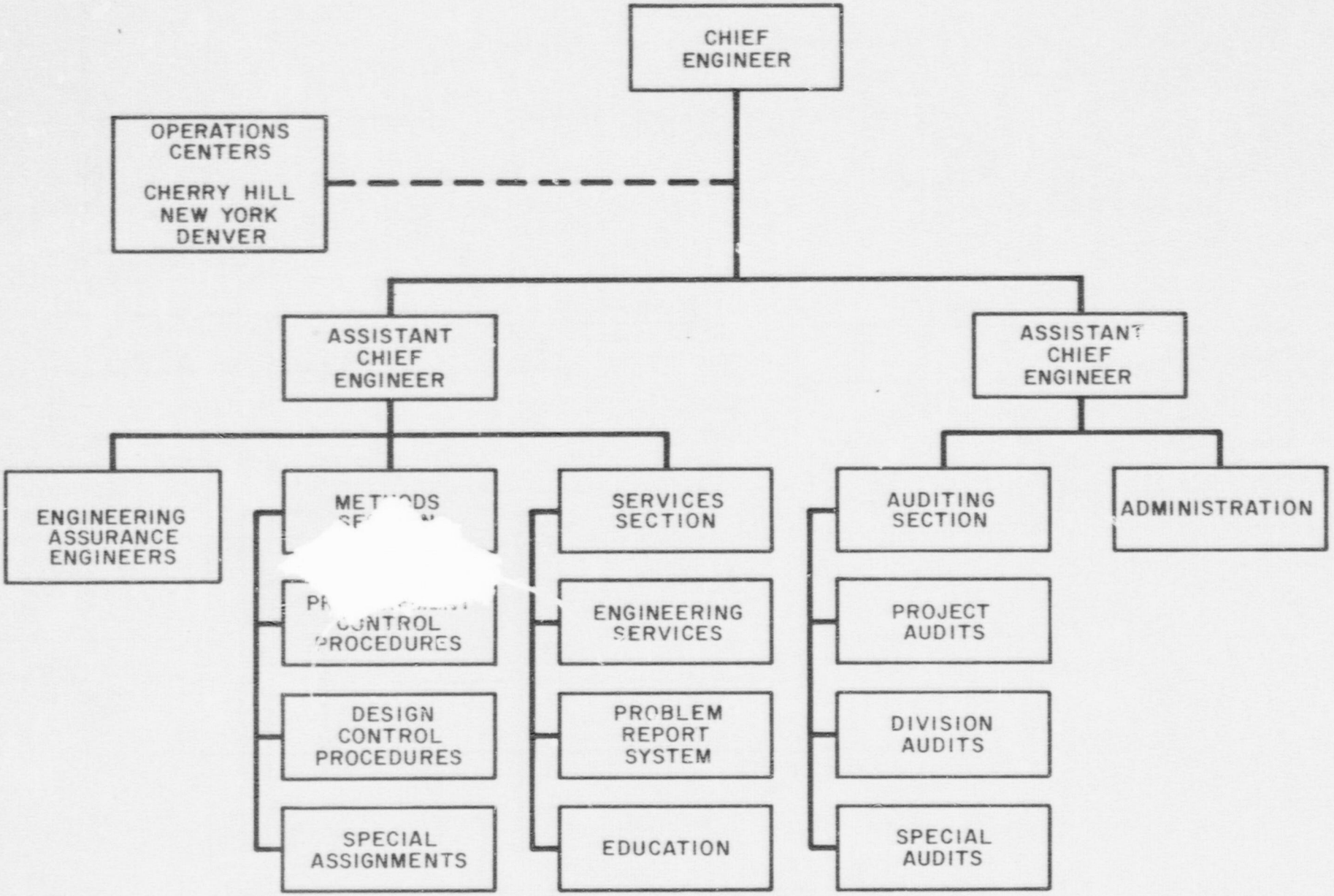

Figure 3
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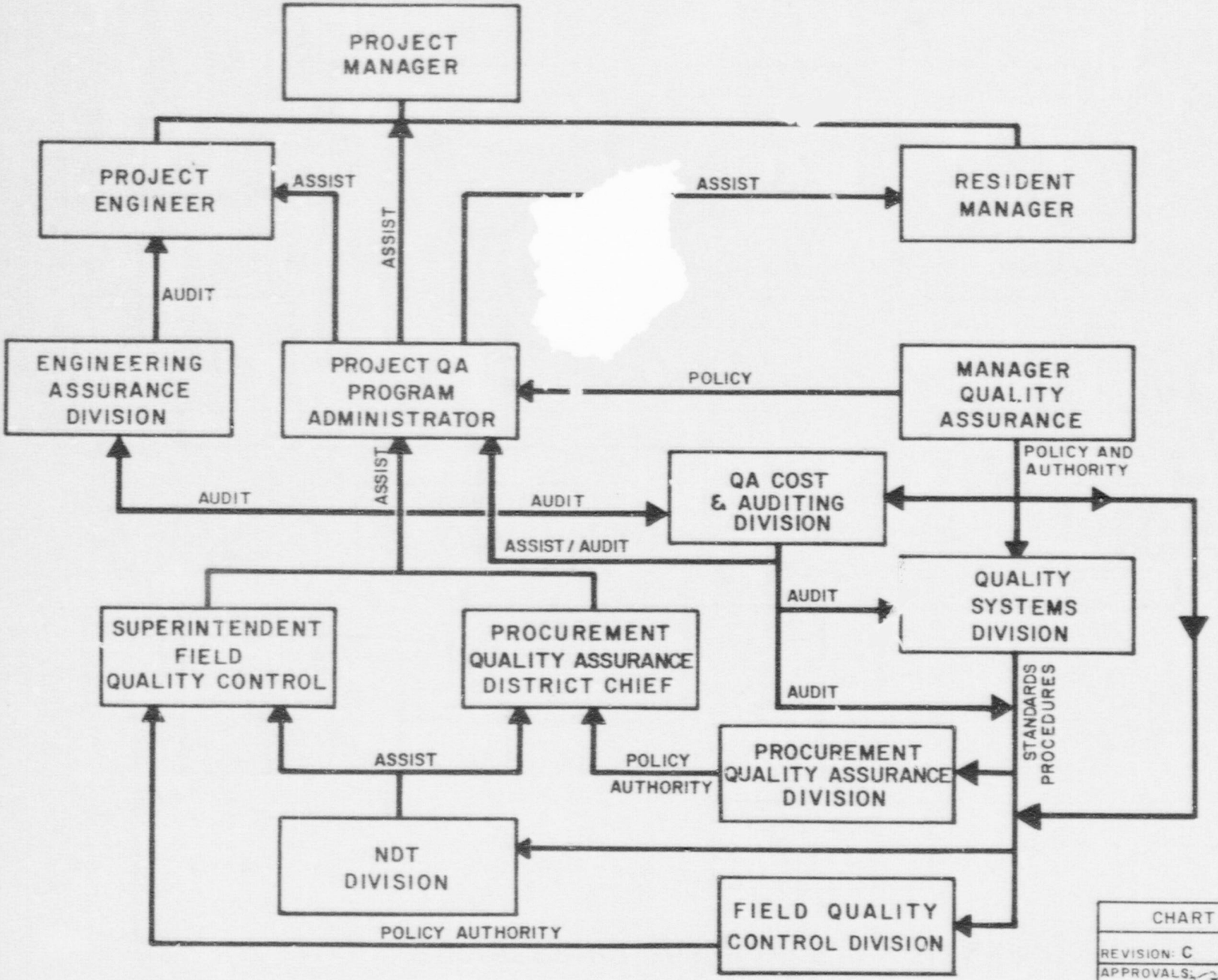
Revision B

QUALITY ASSURANCE INTERRELATIONSHIPS

STONE & WEBSTER ENGINEERING CORPORATION



QUALITY ASSURANCE CLIENT CONTACT

VICE PRESIDENT, Q.A.
MANAGER, Q.A.
Q.A. PROGRAM ADMINISTRATOR
PROJECT MANAGER
PROJECT ENGINEER
SUPERINTENDENT FIELD Q.C.

CHART C

CHART EFFECTIVITY	
REVISION: C	DATE: 12/1/78
APPROVALS:	
VP QA	N B Cleveland
QA MGR	J Drawn

Figure 4
1-8
SWSQAP 1-74A
Revision F

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
QUALITY ASSURANCE PROGRAM	SECTION 2
	REVISION: B
	EFFECTIVE DATE: 12/1/78

APPROVALS

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SECTION 2

QUALITY ASSURANCE PROGRAM

1.0 REQUIREMENTS

1.1 This program applies to Stone & Webster design, procurement, construction, and testing responsibilities for nuclear power stations as defined in utility's Preliminary Safety Analysis Report. B

1.2 The design, procurement, construction, and testing of Category I structures, components, and systems shall be controlled through implementation of the criteria of Appendix B, 10CFR50. Category I structures, components, and systems are designated in the utility's PSAR/FSAR and are further defined in applicable drawings and specifications. Applicable criteria of Appendix B, 10CFR50 shall be imposed on sellers.

1.2.1 Activities affecting quality shall be documented, as appropriate, in drawings, specifications, instructions, and procedures.

1.2.2 Activities affecting quality shall be conducted under controlled conditions. These shall include appropriate equipment, such as tools and test equipment, suitable environmental conditions, and assurance that all specified conditions have been met. Specified conditions include such items as qualification of personnel and processes and verification that required inspection or test operations have been satisfactorily completed.

1.3 The design, procurement, construction, and testing of Category II and Category III structures, components, and systems shall meet applicable codes and standards and good design and construction practices (see Appendix III, "Glossary", for definitions applied to various Categories). B

1.4 All construction work at the site, which falls within the scope of Section III, ASME Boiler and Pressure Vessel Code shall be controlled by Stone & Webster in compliance with the Stone and Webster Certificate of Authorization issued by ASME.

1.5 Stone & Webster's commitments to quality assurance related regulatory guides are identified in Appendix VII.

1.6 Stone & Webster shall, as directed by the Client, audit and witness tests of selected Nuclear Steam Supply System equipment.

1.7 Sellers employed at the site shall be required to comply with applicable parts of this program and use applicable Stone & Webster manuals and procedures or their own Stone & Webster approved manuals and procedures.

1.8 Indoctrination and education programs shall be established, as appropriate, for Stone & Webster personnel performing activities affecting quality.

1.9 A report of this program's status shall be provided, at least annually, to the Client by the Quality Assurance Program Administrator.

2.0 TASKS*

2.1 Engineering Department

2.1.1 Project Engineering, headed by the Project Engineer, shall ensure that design and engineering activities affecting quality are documented, as appropriate, in drawings, specifications, instructions, and procedures. These documents shall, as appropriate:

A. Designate the Category of structures, components, and systems.

B. Extend applicable criteria of Appendix B, 10CFR50 to sellers.

C. Indicate applicable codes and standards.

D. Include requirements for controlled conditions.

2.1.2 Engineering Assurance shall:

A. Develop management systems and methods to implement the quality assurance program for engineering and design activities. Document these procedures in the Engineering Assurance Manual.

B. Indoctrinate and provide continuing education for personnel performing activities affecting quality of engineering and design.

C. Coordinate the formulation of S&W's position with respect to code requirements and the preparation of requests for codes, special rulings, or interpretations of codes and standards, all upon request.

*See Appendix I for reference to implementing documents.

2.1.3 Licensing Division shall coordinate the program of establishing an SWI position guideline on NRC Regulatory Guides and revisions; publish and maintain the listing of these Guides, and inform SWI personnel of newly issued and proposed Regulatory Guides. C

2.2 Construction Department

Develop management systems and methods to implement the quality assurance program for construction activities. Document these procedures in the Construction Methods Procedure Manual. B

2.3 Quality Assurance Department

2.3.1 Quality Systems Division shall:

A. Develop management systems and methods needed to implement the quality assurance program within the Quality Assurance Department.

B. Establish and maintain a program for the indoctrination and continuing education of Quality Assurance Department personnel, and maintain program records.

C. Maintain qualification and certification records of personnel qualified or certified by QSD.

2.3.2 Procurement Quality Assurance Division shall:

A. Provide input to QSD for procedures affecting procurement quality control for necessary updating.

B. Audit and witness tests of selected equipment procured by the NSSS Supplier, as requested by the Client.

C. Employ and maintain a staff of qualified inspection personnel.

D. Maintain qualification and certification records for personnel qualified or certified by the PQAD.

2.3.3 Field Quality Control Division shall:

A. Provide input to QSD for procedures affecting field quality control for necessary updating.

B. Employ and maintain a staff of qualified inspection personnel.

C. Maintain qualification and certification records for personnel qualified or certified by FQCD.

B

2.3.4 Nondestructive Test Division shall:

A. Provide input to QSD for necessary updating of procedures affecting nondestructive testing.

B. Establish and maintain a training program for the qualification and certification of S&W personnel involved in nondestructive testing and evaluation.

C. Maintain qualification and certification records documenting competency of S&W personnel performing nondestructive testing and evaluation.

D. Perform surveillance of nondestructive test operations, including periodic review of examinations, and provide technical assistance, as required.

2.3.5 QA Cost and Auditing Division shall:

A. Provide input to QSD for necessary updating of procedures affecting DSG activities.

B. Employ and maintain a staff of qualified audit personnel.

C. Maintain qualification and certification records for personnel qualified or certified by DSG.

2.3.6 The Project Quality Assurance Program Administrator (QAPA) shall prepare at least annually a report to the Client on the status of the S&W Quality Assurance Program for the Manager, Quality Assurance Department.

3.0 DISCUSSION

3.1 Reference Paragraph 1.2

This program document communicates the corporate QA policy and commitments to Department heads who develop the implementing procedures. These are in manuals with a controlled distribution to all affected departments as determined by department management. Scheduled training is conducted within the department on applicable quality policies, manuals and procedures. A scheduled audit program assures that they are implemented.

3.2 Reference Paragraph 1.7

Where sellers employed at the construction site perform work and provide quality control services to their own S&W approved manuals and procedures, the Field Quality Control Division will perform seller quality verification inspection and provide documentation appropriate to the individual seller consistent with the work or service provided. FQCD will perform specified inspections for Sellers employed at the construction site who do not provide quality control services. 3

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER: SECTION 3
ENGINEERING AND DESIGN CONTROL	REVISION: B
	EFFECTIVE DATE: 12/1/78

APPROVALS

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V.P. CONSTRUCTION

SECTION 3

ENGINEERING AND DESIGN CONTROL

1.0 REQUIREMENTS

1.1 An engineering and design control system shall be established to document the method of accomplishing and controlling the essential engineering and design tasks.

1.2 Design activities, documents, and interfaces shall be controlled to assure that applicable inputs such as design bases, regulatory requirements, codes and standards are correctly translated to the final design.

1.3 Design input requirements shall be documented and their selection reviewed and approved. Changes to specified design input requirements shall be documented, reviewed and approved.

1.4 Design documents such as diagrams, specifications, and drawings shall specify the quality characteristics including the materials, parts, equipment or processes that are essential to the functions of the structures, systems and components. Design documents shall also include, as appropriate, acceptance criteria for inspections and tests.

1.5 Design control measures shall be applied to seismic, stress, thermal, hydraulic and accident analyses as they apply to the development of design inputs or as they are used to analyze the design.

1.6 Design adequacy shall be verified through independent objective reviews by individuals competent in the subject activity. These reviews may include the use of alternate or simplified solution methods or qualification testing, as appropriate.

1.7 Design accuracy shall be verified through review of design documents by individuals other than the originator.

1.8 Design changes shall be controlled in a manner commensurate with the control imposed on the original design.

2.0 TASKS

2.1 The Engineering Assurance Division (EA) shall prepare procedures, as necessary, to establish the system for control of engineering and design.

2.2 Engineering Divisions and Project Engineering shall implement the applicable Engineering Assurance Procedures in the performance of the following tasks.

2.2.1 Design input requirements shall be documented, reviewed and approved. Design input requirements include items such as design bases, regulatory requirements, codes, standards and requirements for testing, inspection, maintenance, handling, storage, and shipping which must be considered for their effect on the final design.

2.2.2 Design documents shall be prepared to develop the design. The design process (see Appendix IV) provides for developing the design in progressing detail resulting finally in production drawings and procurement documents used to procure and erect the structures, systems, and components.

2.2.3 The nuclear safety related features of the design shall be reviewed by individuals or groups having no direct or immediate supervisory responsibility for developing the design. This review is an independent objective review to assure that the design inputs have been correctly selected and that the design is adequate and meets the input requirements.

This review encompasses the upper level "key design documents" Documents designated "key documents" establish design criteria, describe the design approach or otherwise define the design to the detail necessary to allow preparation of final design output documents. The "key design documents" are:

Technical Topical Reports

Calculations (see Paragraph 2.3.6 below)

Electrical Design Criteria

Flow Diagrams

General Arrangement Plants

Logic Diagrams

One-Line Diagrams

Plot Plans

PSAR

Site Plans

Specifications (see Paragraph 2.3.4)

Structural Design Criteria

Systems Descriptions

This review is performed according to procedures which assign specific responsibilities to individuals or groups in compliance with the provisions for design verification imposed by Regulatory Guide 1.64. When qualification testing is selected for design verification, it is performed according to approved test procedures.

2.2.4 Standard "key design documents" shall be qualified through an independent objective review by individuals or groups having no direct or immediate supervisory responsibility for preparation of the standard. Therefore, "key design documents" which are based on qualified standards do not require any additional independent objective review unless changes are made to the qualified standard.

For example, a master (standard) specification prepared by an Engineering Division specialist is qualified through a review by the Quality Assurance Department for adequacy of the quality assurance requirements, by Materials Engineering for adequacy of materials and material processes and by another individual (other than the specialist or his immediate supervisor) who is competent in the subject activity for the remaining technical requirements. Therefore, specifications prepared for a specific Project, which are based on the master, need only non-independent review for applicability to that Project. When changes from the master are necessary to meet specific Project requirements, the changes are subjected to independent objective review by the Quality Assurance Department, Materials Engineering, or the Division Specialist as appropriate.

2.2.5 Design documents shall additionally be reviewed and approved before issue to users. This review and approval includes a review for accuracy to assure conformance to the design reflected in previously reviewed and approved design documents. This function is a non-independent review conducted by individuals, other than the preparer, experienced in the activity. The individuals responsible for this review function may include the originator's supervisor or any other individual having direct responsibility for the design.

2.2.6 Calculations shall be subjected to a non-independent review to assure that proper inputs from previously approved design documents have been used and that the results are consistent with the input and method. In addition, the calculation method, including assumptions, if any, shall be subjected to independent objective review by an individual other than the preparer or his immediate supervisor to assure that the approach is appropriate to the purpose of the calculation. Therefore, calculations which are prepared using prequalified methods need only the non-independent review. **These reviews may include the use of alternate or simplified solution methods or qualification testing, as appropriate.** B

2.2.7 All individuals responsible for approval of design documents, including those responsible for the non-independent review and the independent objective review functions, shall assure that their comments are resolved and incorporated prior to approving the final document. Their approval indicates fulfillment of their assigned responsibility according to the applicable procedure and may be indicated by the signature or initials of the individual on the final document or, when appropriate, by a separate written endorsement. In addition, individuals responsible for the independent objective review apply an additional marking to the document (e.g., an "I" after their initials or signature) as additional evidence that their review was the independent objective review required by the applicable procedure.

2.2.8 Changes to design documents shall be approved by the same individuals or groups responsible for approval of the original document. Exceptions to the approval requirements are allowed in those cases where the change does not affect a designated approver's area of responsibility. In these cases, procedures specifically assign responsibility for making this determination to an individual competent in the subject activity.

2.2.9 Internal design interfaces are controlled through sign-off of design documents by individuals and groups responsible for the design reflected in the document and through controlled distribution of approved design documents to other individuals and groups who use the documents in support of their activities.

2.2.10 Interface with the NSSS supplier design is controlled by identification and review of NSSS supplier documents which define the design interfaces with the balance of the plant.

2.2.11 Interface with other supplier designs is controlled by review of supplier design documents which define the interface. These documents are normally identified in the purchase specification.

3.0 DISCUSSION

3.1 Reference Paragraph 1.1

Stone & Webster's System of Engineering and Design Control is graphically depicted in Appendix IV.

3.2 Reference Paragraph 1.4

Stone & Webster assures that design characteristics can be controlled, inspected and/or tested; that test criteria are identified through a Quality Assurance review and sign off of procurement and erection

specifications prior to issue; and that QA will review all changes to such specifications and disposition all nonconformances to such specifications. Quality requirements/parameters are established in the specification, the primary engineering document. Drawings convey quality requirements by reference to the appropriate specification.

3.3 Reference Paragraph 1.4

Standard "off the shelf" commerical or previously approved items essential to safety related functions are reviewed for suitability prior to selection by the cognizant engineering equipment specialist. The procurement document is further reviewed and approved by Quality Assurance personnel to assure that essential quality control features have been included.

3.4 Reference Paragraph 1.2

Feedback information on nonconformances is transmitted from shop and field activities to headquarters. This data, plus audit data on Engineering/Design activities, is analyzed and evaluated by quality assurance personnel, after which corrective action is recommended to assist in preventing recurring nonconformances.

3.5 Reference Paragraph 1.2

Design documents and changes thereto are maintained and filed by project in accordance with the requirements of Regulatory Guide 1.88.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
PROCUREMENT DOCUMENT CONTROL	SECTION 4
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

W J J Kennedy
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Warren Piper
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SECTION 4

PROCUREMENT DOCUMENT CONTROL

1.0 REQUIREMENTS

1.1 Procurement documentation shall include the requirements necessary for establishing the quality of the procured material, equipment, and services.

1.2 Design criteria including applicable codes, standards, and regulatory requirements shall be translated into procurement specifications and the associated design drawings. Items not procured with a specification, i.e., a purchase order, shall contain all necessary quality provisions.

1.3 Procurement documents shall be subject to appropriate reviews as indicated in Appendix V.

1.4 Sellers who perform Category I work shall be required to have quality assurance programs consistent with applicable provisions of Appendix B, 10CFR50. These provisions shall be imposed on their suppliers, as appropriate. A

2.0 TASKS*

2.1 Quality Systems Division shall be responsible for the review and approval of procurement documents (specifications and requisitions when no specification exists). Review and approval shall include the preparation of inspection plans as appropriate and verification that the specifications include sufficient information pertaining to codes, standards, methods of testing, inspection, and documentation so that quality assurance activities can be performed.

2.2 Procurement Quality Assurance Division shall:

2.2.1 Review project procurement specifications when requested by QSD, for procurement quality control requirements and perform inspection planning as appropriate.

2.2.2 Review and approve quality assurance manuals for shop fabrication of Category I items submitted by sellers in accordance with procurement specifications.

2.3 Field Quality Control Division shall:

2.3.1 Review project erection specifications when requested by QSD and perform inspection planning as appropriate for field quality control requirements.

*See Appendix I for reference to implementing documents.

2.3.2 Review and approve purchase requisitions issued at the site.

2.3.3 Review and approve subcontractors' quality assurance manuals and changes submitted thereto for field erection work.

2.4 Nondestructive Test Division shall review procurement specification for subcontractor nondestructive test requirements when requested by QSD.

2.5 Engineering Assurance Division shall:

2.5.1 Review and approve QA requirements of Engineering Services Scopes of Work (ESSOW) and Purchase Requisitions when procuring engineering services.

2.5.2 Review and approve quality assurance programs of suppliers of engineering services and supply this information to PQAD.

3.0 DISCUSSION

3.1 Reference Paragraph 1.1

Changes and/or revisions to procurement documents (i.e., procurement specifications) are accomplished by either an addendum to the specification, a disposition of a nonconformance, or Engineering and Design Coordination Report. All three methods have the same review and approval requirement as the original documents which includes a Quality Assurance Department sign off. The implementation and operation of these methods are subject to audit.

3.2 Reference Paragraph 2.0

3.2.1 Procurement specifications identify the documentation to be prepared, controlled, retained, and submitted, when required, to S&W for review and/or approval. The review, approval, and sign off of the procurement document by the Quality Assurance Department and the auditing activity delineated in Section 18 provide the required assurance.

3.2.2 Quality requirements for spare or replacement parts are normally delineated in the original equipment procurement specification which is reviewed and signed off by the Quality Assurance Department for "QA" requirements and acceptance criteria. Field procurement documents are reviewed and signed off by the Quality Assurance Department.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER: SECTION 5
INSTRUCTIONS, PROCEDURES AND DRAWINGS	REVISION: B
	EFFECTIVE DATE: 12/1/78

APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

W J L Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 5

INSTRUCTIONS, PROCEDURES AND DRAWINGS

1.0 REQUIREMENTS

1.1 Quality activities shall be based on engineering specifications, drawings, procedures, and instructions as appropriate. These documents shall indicate any necessary special process controls, the applicable codes and standards, and qualitative and quantitative acceptance criteria. Further, they shall establish which documents prepared by sellers must be submitted to S&W for review before use. B

1.2 Quality activities shall be conducted in accordance with quality assurance procedures which shall identify individuals or groups responsible for performing specific tasks and indicate quality record requirements. The procedures shall include sufficient definition to ensure that activities affecting quality have been satisfactorily performed in accordance with the specified requirements.

2.0 TASKS*

2.1 Project Engineering shall:

2.1.1 Indicate necessary quality activities (including special controls) in drawings, specifications, and procedures as appropriate. Criteria for the acceptance of specific tasks shall be included in the related document.

2.1.2 Establish which documents prepared by sellers must be submitted to S&W for review before use. B

2.1.3 Conduct reviews of drawings prepared by Design according to the requirements for design control (see Section 3).

2.2 Quality Assurance:

2.2.1 QSD shall prepare and publish procedures which govern the performance of quality activities, excluding engineering and design activities (see Paragraph 2, Section 3).

2.2.2 The appropriate Division shall prepare Quality Control Instructions, as needed, which shall not degrade or conflict with any higher level procedure.

*See Appendix I for reference to implementing procedures.

3.0 DISCUSSION

3.1 Reference Paragraph 2.2

The normal sequence of events in the preparation, review, approval, publication, and revision of procedures is as follows:

B A. A preparer develops the procedure.

B. A lead Engineer or supervisor reviews the preparer's material.

C. A draft is then circulated within the discipline or department for internal review.

D. Internal review comments are incorporated or resolved by the preparer and a preliminary procedure is prepared for external (outside discipline or Department) review.

B E. A preliminary procedure is then circulated for comment by personnel authorized to sign the final procedure.

F. Comments are received, incorporated, or resolved by the preparer.

G. A final or original issue of the procedure is then circulated for signature.

H. Revisions are processed in a similar manner except that the draft stage may be eliminated if the procedure is not significantly altered.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
DOCUMENT CONTROL	SECTION 6
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
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Warren Piper
V.P. CONSTRUCTION

SECTION 6

DOCUMENT CONTROL

1.0 REQUIREMENTS

1.1 The review, approval, and distribution of documents, including changes thereto, which prescribe activities affecting quality shall be controlled. These documents include drawings, specifications, instructions, procedures, and test procedures.

1.2 The procedures for the preparation of documents shall include reviews to ensure adequacy before release as well as requirements for the approval of each document by authorized personnel through signatures or initials.

1.3 A method of change control shall be established that includes approval by the same individuals or groups having responsibility for the initial document issue. The method shall include a revision identification system so that the effective revisions can be readily determined.

1.4 Document control shall be accomplished in a manner which ensures the timely inclusion of changes into the parent document.

1.5 The distribution of document shall be controlled to ensure that only approved documents are in use at the locations prior to the prescribed activity being performed. Provisions shall be included for the retrieval, control, or destruction of out-dated documents. A

2.0 TASKS*

2.1 EA shall prepare and issue procedures for establishing a control system for engineering assurance and engineering and design documents which prescribe activities affecting quality.

2.2 QSD shall prepare and issue procedures which provide control over documents which are used by Quality Assurance Department personnel and which prescribe quality assurance activities.

3.0 DISCUSSION

3.1 Reference Paragraph 1.1

Applicable procedures in Section 5 of the Quality Standards Manual, Engineering Assurance Manual, and the Quality Assurance Directives Manual establish the requirements to maintain master indexes of instructions, procedures, drawings, and procurement documents and to publish updated indexes in a scheduled manner. For example the quality standard entitled "Quality Standards Procedural System" states as follows:

*See Appendix I for reference to implementing documents.

3.1 Cont'd

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"4.4.1.D - Applicability - The applicability of a specific QS to a Project shall be established in the Table of Contents and Project Applicability Matrix, Attachment 3.2. Actual usage in part or whole will depend upon other project documents which establish the scope of work to be done by Stone & Webster. This matrix shall be reviewed on a monthly basis and updated periodically depending on activity, with an annual update as a minimum."

STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	SECTION 7
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

W J F Kennedy
V.P. ENGINEERING

R C Sudley
V.P. PURCHASING

Warren Piper
V.P. CONSTRUCTION

SECTION 7

CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

1.0 REQUIREMENTS

1.1 Controls shall be established to ensure that purchased material, equipment, and services, whether purchased directly from the manufacturers or through the manufacturers' representatives, conform to procurement documents. These controls shall include source evaluation and recommendations, periodic source assessment and inspection, and site receiving inspection as applicable.

1.2 A proprietary Quality Rating List shall be prepared and maintained which shall indicate the capability of a seller's quality assurance program. The assessment of the seller's capability may be based on a survey, past performance and a review of the seller's quality assurance manual as applicable.

1.3 Bid specifications shall be submitted to the Client with a list of recommended bidders, based on an evaluation of the capability of the bidders to meet the specification quality requirements. Bids may be solicited from sellers whose quality programs have not been evaluated and approved; however, before placing a purchase order for Category I work, the bidder's program shall be evaluated and approved. If a plant survey is necessary, the Client shall be notified so that he may participate.

1.4 Field purchase orders for Category I items shall be placed only with approved Category I sellers. In establishing that a seller for Category I items is approved, the following guidance may be used in addition to the Quality Rating List.

1.4.1 If the seller is a distributor and does not handle the item, and if the source of the item is an approved Stone & Webster supplier, then the seller (distributor) need not be on the approved list, provided that the seller furnishes copies of documentation to indicate that the items were obtained from the approved Stone & Webster source supplier. EXAMPLE: Company "A" is an approved Stone & Webster supplier for Category I electrodes. Company "B" is a distributor that sells Company "A" electrodes. Further, Company "B" does not handle these electrodes (i.e., they are shipped directly from Company "A"). Company "B" need not be on the approved seller list, provided that Company "B" furnishes objective evidence to show that the electrodes supplied came from Company "A" and that applicable documentation is furnished by Company "A".

1.4.2 If the acceptability of an item is based on inspections and tests performed after the item has been delivered to the site and before its use, then the seller need not be on the approved list.

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1.4.3 Sellers who furnish items which are referenced in a specification by manufacturer and specific model or other identification, are considered as approved for the specified items. By referencing a specific manufacturer's product, approval of the product is established during the review of the specification. Example: Type "X" admixture is supplied by Company "A" and is specified as an acceptable product in a specification. Company "A" is an approved seller for Type "X" admixture. However, if Company "A" were to offer Type "Y" admixture as an "approved equal", then Type "Y" would have to be evaluated and approved by Project Engineering before it could be used and before Company "A" could be accepted as an approved seller for Type "Y" admixture.

1.5 The Client may designate "notification points" for specific operations performed at seller's facilities. The Client shall be advised by Stone & Webster when "notification point" operations are scheduled.

1.6 The NSSS supplier is responsible for source inspection and documentation of all NSSS procured items.

1.7 Receipt inspection includes verification that all required documentation has been received and that the items conform to the procurement documents. Inspections for conformance shall make use of objective quality evidence received with the items, as well as selected physical inspection.

1.7.1 Receipt inspection activities shall be documented.

1.7.2 Acceptable Category I items received at the site shall be identified.

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1.7.3 All items received at the site which do not conform to the specified requirements shall be tagged, reported as unsats, and segregated when practicable. If receipt inspection cannot generally be performed within a working day, the Construction Department shall place a Product Hold Tag on the item and segregate the item when practicable.

1.7.4 Unsat/nonconforming items or items in a hold status may be released on a risk basis. Items shall not be released for any operation when rework, replacement or certification of acceptability of the item is impossible after the operation is performed. Copies of risk release documentation shall be provided to the Client.

2.0 TASKS*

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2.1 Procurement Quality Assurance Division shall:

2.1.1 Establish criteria for source evaluation and conduct source evaluations.

2.1.2 Maintain a Quality Rating List.

2.1.3 Assess active sellers, generally on a 12-month basis. While PQAD is responsible for seller evaluation, PQAD may request the assistance of other divisions to conduct the evaluation. A

2.2 Bid specifications shall be submitted to the Client with a list of recommended bidders by Project Engineering. In preparing this list, an evaluation by PQAD on the capability of each bidder to meet the specification quality requirements shall be used.

2.3 If bids are solicited from bidders whose quality assurance programs have not been evaluated and approved for Category I work, the Bidder's quality assurance program shall be evaluated and approved by PQAD before the purchase order is placed. If a plant survey is necessary, PQAD shall notify the Client so that they may participate, if desired.

2.4 For field purchases, FQCD shall:

2.4.1 Review purchase requisitions and assure they contain the necessary quality assurance requirements including inspection forms when applicable. This review and approval applies to revisions to field purchase requisitions.

2.4.2 Review all field purchase orders for Category I items and verify that an approved seller has been engaged.

2.5 PQAD shall visit seller facilities to verify, witness, and perform the various tasks required by procurement documents. A

2.5.1 The Client shall inform PQAD of their designated "notification points." When the visit includes Client designated "notification points," PQAD shall advise them for their participation.

2.5.2 The Client may request additional seller visits. These will be conducted by PQAD on a basis mutually agreed to by the Client and Stone & Webster.

2.5.3 PQAD shall document visits to seller facilities on Inspection Reports. Copies of Inspection Reports shall be provided to the Client.

2.5.4 When source inspection by PQAD is required by the procurement document or requested by the Project Engineer or site Resident Manager, PQAD shall identify all acceptable source inspected items using a Certificate of Compliance (C of C).

2.5.5 Prior to issuing a C of C the inspector shall verify the seller's records for completeness. The inspector shall forward the records to the QA document reviewers.

2.6 FQCD shall perform site receipt inspection for Category I and other project designated items.

2.6.1 FQCD shall document receipt inspection activities.

2.6.2 An S&W Certificate of Compliance, forwarded with each shipment by PQAD to the site, shall be used by FQCD during the receipt inspection as objective evidence of previous Stone & Webster inspections and that seller documentation for that shipment is complete. Operations performed by PQAD during source inspection need not be repeated.

2.6.3 NSSS Certificate of Compliance - FQC shall consider NSSS Certificate of Compliance documents as objective evidence that quality requirements including documentation have been met and that all necessary documentation is in the possession of the NSSS supplier. Any items received without an NSSS certificate of compliance shall be placed in a hold status pending resolution.

2.6.4 FQCD shall indicate by appropriate means, items or groups of items found acceptable.

2.6.5 FQCD shall tag and segregate when practicable, items which do not conform to the specified requirements and report them as unsats.

2.6.6 Unsat/nonconforming items and items in a hold status may be released by FQCD on a risk basis when a formal written request is submitted to FQCD by Construction (field) and concurred in by Project Engineering and FQCD (field). FQCD shall provide copies of risk release documentation to the Client.

2.7 Engineering Assurance Division shall:

2.7.1 Establish criteria for source evaluation and conduct source evaluations of engineering services suppliers.

2.7.2 Supply information on evaluations of engineering services suppliers to PQA for maintenance of the Quality Rating List.

2.8 The Purchasing Department shall assist in the preparation of recommended bidders lists and process procurement documents and changes thereto.

3.0 DISCUSSION

3.1 Reference Paragraph 1.4

3.1.1 The Engineering Department (i.e., Project Engineering) in conjunction with the Purchasing, Quality Assurance and Construction Departments, is responsible for the preparation of a recommended bidders list, the evaluation of the bidder's proposal and the final determination of the specified bidder to be recommended to the Client. The Procurement Quality Assurance Division of the Quality Assurance Department is responsible to evaluate recommended bidders quality assurance programs and their ability to perform to the program. Engineering Department participation in the Quality Assurance bidder evaluation is to the extent deemed necessary by the Project Engineer. During the conduct of the work, the engineer is responsible for the review and approval of seller provided technical documentation as specified in the procurement specification. A

3.1.2 An exception to the policy of buying Category I items only from sellers on the approved Quality Rating List may be made under the following conditions. This exception provides for controls which comply with the requirements of Criteria 7 to Appendix B to 10CFR50. If the Engineering Department, in the development of Category I specification or purchase requisition, makes the determination that the acceptability of an item can be adequately judged by inspections and tests performed by Stone & Webster in the seller's shop or after delivery, the seller need not be prequalified by survey or audit. Quality Assurance, by their review of purchase documents as delineated in Section 4, assures that appropriate inspections and tests are specified. A

3.2 Reference Paragraph 2.5

Parameters to be inspected, tests to be witnessed and documents to be reviewed by Procurement Quality Assurance Division shop inspectors are delineated in the Test, Inspection, and Documentation Section of procurement specifications, which have been reviewed and approved by the Quality Assurance Department. The detailed techniques for the performance and documentation of these inspections are delineated in applicable Quality Assurance Department procedures. A

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	SECTION 8
	REVISION: B
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

W. J. J. Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 8

IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

1.0 REQUIREMENTS

1.1 Identification and control measures shall be established as necessary to prevent the uncontrolled use of nonconforming materials, parts, and components, including partially fabricated assemblies.

1.2 Identification and control of material, parts, and components which are to meet the requirements of ASME Section III shall be accomplished during field fabrication and erection in accordance with applicable procedures.

1.3 Category I materials, parts, and components shall be identified by heat number, serial number, part number, or other appropriate means. The identification may be on the item (physical markings are preferred) or on records directly and readily traceable to the item.

1.3.1 The type of identification shall be established by specifications, drawings, instructions, or procedures.

1.3.2 Traceability to records which will verify conformance of the materials, parts, and components to specified requirements (e.g., chemical and physical properties, tests, inspections, etc.) shall be provided from initial receipt of materials to installation and use, or up to user testing if applicable. For consumable materials (e.g., cadweld powder), traceability requirements shall be met by documentation which indicates that only acceptable materials have been used, unless requirements of codes and standards dictate otherwise.

1.4 Category II and Category III materials, parts, and components shall be identified by type and status or as required by the specifications.

2.0 TASKS*

2.1 Project Engineering shall establish requirements for the identification of materials, parts, and components in applicable drawings, specifications, instructions, and procedures.

2.2 PQAD shall perform tasks at seller's facilities relative to the identification and control of materials, parts, and components in accordance with the procurement documents. B

2.3 Field Quality Control Division shall:

*See Appendix I for reference to implementing documents.

2.3.1 Verify, during receiving inspection, that materials, parts, and components are properly identified and when applicable, traceable to supporting documentation.

2.3.2 Ensure that the required identification and traceability of materials, parts, and components is maintained from receipt through completion of construction.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY ASSURANCE PROGRAM

TITLE:	NUMBER:
CONTROL OF SPECIAL PROCESSES	SECTION 9
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 9

CONTROL OF SPECIAL PROCESSES

1.0 REQUIREMENTS

1.1 Special processes shall be controlled to ensure that approved special process procedures are used by qualified personnel in accordance with specified codes, standards, and any additional S&W requirements. The requirements for special process control, including personnel qualifications, shall be imposed by specifications, procedures, instructions, or other applicable documents.

1.2 Special processes are unique manufacturing, inspection, or test processes where written procedures are deemed necessary to accomplish a task affecting quality. Welding, welding repair, cadwelding, studwelding, heat treating, coatings, nuclear system cleaning, leak testing, and nondestructive testing are examples of special processes.

2.0 TASKS*

2.1 Engineering Department shall:

2.1.1 Review and approve all special process procedures excluding nondestructive test procedures, submitted by sellers in accordance with specification requirements.

2.1.2 Provide and maintain all special process procedures for use by S&W, except Quality Assurance Department NDT procedures and selected special process procedures assigned to the Construction Department. A

2.1.3 Review and approve all special process procedures prepared by the Engineering and Construction Departments.

2.1.4 Review and comment on NDT procedures prepared by the Quality Assurance Department.

2.1.5 Provide qualification testing of S&W special process procedures excluding NDT procedures.

2.1.6 Provide procedures for qualification testing and certification of personnel who perform special process work according to special process procedures prepared by the Engineering Department.

2.2 QSD shall review and concur in S&W generated special process procedures, including nondestructive test procedures.

*See Appendix I for reference to implementing documents.

2.3 Nondestructive Test Division shall:

A 2.3.1 Provide qualification testing and certification of S&W personnel who perform nondestructive testing (see also Paragraph 2.3.4, Section 2).

2.3.2 Review and evaluate nondestructive testing procedures submitted by sellers in accordance with specification requirements; and, prepare and maintain nondestructive testing procedures used by S&W in accordance with specification and code requirements.

2.4 When required by the procurement documents, PQAD shall verify that qualified personnel have performed special process work at seller's facilities using approved procedures.

2.5 Field Quality Control Division shall:

A 2.5.1 Assure that qualification testing, which is required of personnel who perform special process work at the site, is in accordance with specifications, procedures, instructions, or other applicable documents.

2.5.2 Maintain qualification records.

2.5.3 Assure that personnel performing special process work are retested or have their qualification revoked if their work is not in accordance with established quality standards that define qualification requirements.

2.5.4 Verify that only qualified personnel using approved procedures perform special process work at the site.

2.6 For special process work which is not covered by codes and standards, or when it is desired that an item's quality requirements exceed those in codes or standards, the necessary qualification of procedures, personnel, and equipment shall be defined by Project Engineering in specifications, procedures, or other appropriate documents.

A 2.7 The Construction Department shall:

2.7.1 Provide an adequate location and sufficient welding equipment and supplies to perform welder qualification tests.

2.7.2 Prepare selected special process procedures.

2.7.3 Review and approve Engineering Department prepared special process procedures.

3.0 DISCUSSION

3.1 Reference Paragraph 1.1

Audits are conducted to assure implementation of and conformance to approved procedures/specifications and that special processes are accomplished with written process sheets, procedures, checklists, travelers, or the equivalent, with recorded evidence of verification. The audit activity is described in Section 18 of the program while the implementation procedures are found in appropriate manuals indicated in Appendix I.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
	SECTION 10
INSPECTION	REVISION: B
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 10

INSPECTION

1.0 REQUIREMENTS

1.1 Drawings, specifications, instructions, and procedures shall include the necessary inspection requirements, with acceptance criteria, to provide assurance that material, equipment, and work conform to quality requirements. Acceptance and inspection activities shall not be performed by personnel who have performed the work to be inspected.

1.1.1 Inspections shall be performed at Seller's facilities in accordance with the requirements of the procurement document. B

1.1.2 Inspections shall be performed at the site on material, equipment, and work to ensure conformance to applicable specifications, instructions, codes, standards, and procedures.

1.2 Inspection requirements shall be translated into procedures and inspection reports to provide documentation of the inspection work required to ensure the specified quality. While direct in-process and final inspections are preferred, indirect control by monitoring of the process, equipment, and personnel may be used when direct inspection is impossible or not feasible. Direct and indirect controls shall be used when control is inadequate without both methods.

1.3 Sampling methods may be used for inspecting a group of homogeneous items which are received from one source, excluding Category I items, unless the method for specific Category I items is approved by the Client. If a sampling method is used to verify the acceptability of items, the sampling plan shall be based on a recognized standard sampling plan. The methods of applying standard sampling plan shall be documented to prevent misinterpretation of the plan or the sample results.

1.4 When notification or hold points have been established, the process control procedure or checklist shall include provisions to ensure that work does not progress beyond these points until released by the designated authority. Notification or hold points may be established by specifications, procedures, Construction (field), Quality Assurance Department or Authorized Nuclear Inspectors. B

1.5 Individuals or groups who have been designated to evaluate inspection data by specifications, procedures, or instructions shall indicate the conformance or nonconformance on the data sheet or other appropriate documents.

1.6 The Quality Assurance Department shall have the authority to stop work in those situations where continued work could cause damage, preclude further inspection, or preclude effective corrective action.

2.0 TASKS*

2.1 Project Engineering shall include necessary inspection requirements with acceptance criteria in drawings, specifications, instructions, and procedures.

B 2.2 PQAD shall perform inspection tasks at seller's facilities in accordance with the procurement documents (see Paragraph 2.5, Section 7).

2.3 FQCD shall perform the following field quality control inspections as required.

NOTE

See Paragraph 2.6, Section 7 for FQCD receipt inspection tasks.

2.3.1 FQCD shall perform inspection/testing of soils, concrete, reinforcing steel, structural steel, and special coatings in accordance with applicable specifications, instructions, and procedures.

2.3.2 FQCD shall perform specified inspections and tests of all Category I equipment. Unless there are specific requirements in applicable specifications, instructions, or procedures, Category II equipment shall be inspected on a sampling basis to a degree consistent with the relationship of the equipment to plant operational performance and Category III equipment shall be inspected on a surveillance basis.

2.3.3 FQCD shall perform inspection of welding in accordance with applicable specifications, instructions, and procedures. As a minimum, all Category I and Category II welding shall be visually inspected and Category III welding shall be visually inspected on a surveillance basis.

2.3.4 FQCD shall perform required NDT such as liquid penetrant, magnetic particle, ultrasonic, and radiographic testing and examinations.

2.3.5 FQCD shall make all necessary arrangements with and assist the Authorized Nuclear Inspector so that S&W may obtain code certification of fabricated and erected piping systems which are specified to meet the requirements of ASME Section III.

*See Appendix I for reference to implementing documents.

2.3.6 FQCD shall document inspection/testing tasks performed, including monitoring, witnessing, auditing, etc.

2.4 NDTD shall provide inspection services in specialty areas of nondestructive testing when adequate equipment and capability are not available in PQAD and FQCD. B

3.0 DISCUSSION

3.1 Reference Paragraphs 1.1.1 and 1.1.2

The Quality Assurance Department as part of the planning activity in both its Field Quality Control and Quality Systems Division, performs an ongoing review of construction schedules versus our inspection procedure/instruction library in order that the procedural needs are identified and the proced... completed well in advance of required dates. Inspections, as well as the work, are performed to specifications/drawings; therefore, a lack of a specification or drawing would preclude either work or inspections being performed.

3.2 Reference Paragraph 1.2

Assurance that inspection procedures, instructions and/or check lists contain the following is obtained as indicated next to each item: B

1. Quality Characteristics to be Inspected - These are delineated in the appropriate specification which is reviewed and signed by Quality Assurance personnel.

2. Individuals or Groups Responsible for Performing the Inspection - Delineated in the appropriate Quality Standard.

3. Acceptance and Rejection Criteria - Same as one (1) above.

4. A Description of Method of Inspections - Delineated in the appropriate Quality Assurance Department procedure; i.e., Quality Assurance Directive, NDT Procedure, etc.

5. Evidence of Completions and Certifications of Inspection Operations - An inspection report prepared in accordance with Quality Standard 14.2, Inspection Report or other documentation as may be specified in the particular specification.

6. Record of the Results of the Inspection Operation - same as five (5) above.

7. Verification that all Inspection Operations are Complete and Acceptable - By a comparison of the inspection reports/documentation prepared to the attribute list of inspections to be performed developed during the inspection planning stage by Quality Assurance.

B Final assurance of the satisfactory implementation of items one (1) through seven (7) is gained through an independent audit of the above activities performed by the QA Cost and Auditing Division.

3.3 Reference Paragraph 2.1

Modifications, repairs, and replacements are performed in accordance with approved engineering specifications, which are reviewed by Quality Assurance personnel. Such work is inspected in accordance with the specified requirements which, if changed from the original, would require a change to the specification and a subsequent Quality Assurance review.

3.4 Reference Paragraph 2.3

B The QA Cost and Auditing Division will conduct audits to verify that sellers employed at the construction site comply with the requirements of their own S&W approval manuals and procedures. The Field Quality Control Division will perform seller quality verification inspections and provide documentation appropriate to the individual seller, consistent with the work or service provided.

T-120

STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
TEST CONTROL	SECTION 11
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

W. J. J. Kennedy
V.P. ENGINEERING

Warren Lipka
V.P. CONSTRUCTION

SECTION 11

TEST CONTROL

1.0 REQUIREMENTS

1.1 A test program shall be established and documented by test program directives and test procedures to demonstrate that structures, systems, and components will perform satisfactorily in service.

1.2 Testing shall be accomplished by qualified personnel in accordance with written controlled test procedures.

1.3 Modifications, repairs, and replacement equipment shall be tested in accordance with the original testing requirements and acceptance criteria or approved changes.

1.4 Test procedures shall be prepared and controlled in accordance with requirements established in a test program directive, and they shall:

1.4.1 Include or reference the requirements and acceptance criteria for testing established by the design documents applicable to the structure, system, or component.

1.4.2 Specify calibrated equipment and instrumentation required to perform the test.

1.4.3 Identify the prerequisites that must be met prior to the start of testing.

1.4.4 Specify required environmental conditions if applicable.

1.4.5 Provide instructions for performance of the test and recording of required test data and results.

1.4.6 Identify, when applicable, mandatory hold points for witnessing of tests by the utility, authorized inspector, and S&W Quality Assurance Department.

1.5 Tests results shall be evaluated by qualified personnel to assure that test requirements have been satisfied.

2.0 TASKS

2.1 The Advisory Operations Division of the Engineering Department shall:

2.1.1 Develop and control Standard Test Program Directives (STPD's) which form the Standard Nuclear Test Program Manual. The STPD's establish S&W's standard administrative systems for implementing the test program. STPD's are approved by the Vice Presidents of the Engineering and Quality Assurance Departments and by the Vice Presidents of other effected Departments. Project Test Program Directives (PTPD's) are developed from STPD's.

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2.1.2 Develop and implement a program for indoctrination and qualification of test personnel.

2.1.3 Direct performance of tests required by the S&W test program and evaluate test results.

2.2 Project Engineering shall:

2.2.1 Establish the requirements and acceptance criteria for testing of structures, systems, and components in approved design documents.

2.2.2 Prepare and control PTPD's based upon the STPD's. PTPD's form the Project Test Program Manual.

2.2.3 Prepare, review, approve, and control test procedures for testing structures, systems, and components. At least one approver of test procedures, an individual other that the preparer, shall be a certified Level III test person certified in accordance with the Standard Nuclear Test Program Manual.

2.2.4 Identify QA Department Hold Points in Test Procedures.

2.2.5 Provide assistance for evaluation of test results.

2.3 Engineering Assurance shall review STPD's and PTPD's to assure conformance to the quality assurance program.

2.4 Quality Assurance Department shall:

2.4.1 Review and approve STPD's and PTPD's to assure compliance to quality assurance program requirements.

2.4.2 Review all test procedures to ensure that QA Department activities are specified, as appropriate, and approve those test procedures which require QA Department activities during testing.

2.4.3 Perform hold point activities in accordance with test procedures.

2.5 Construction Department shall review and approve STPD's and PTPD's affecting Construction to assure proper interface with Construction Department activities.

3.0 DISCUSSION

3.1 Reference Paragraph 1.4.3

Test prerequisites, as used herein, and those items specified in the individual test procedure that must be accomplished prior to the start of a specific test. S&W considers Regulatory Guide 1.116, Rev. 0-R, dated June 1976, to cover the major prerequisites to be addressed.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
CONTROL OF MEASURING AND TEST EQUIPMENT	SECTION 12
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland

V.P. QUALITY ASSURANCE

W J J Kennedy

V.P. ENGINEERING

Warren Piper

V.P. CONSTRUCTION

SECTION 12

CONTROL OF MEASURING AND TEST EQUIPMENT

1.0 REQUIREMENTS

1.1 When tools, gages, instruments, and measuring and testing equipment are used for measurements, inspections, and tests performed to document compliance with specified requirements, the calibration and use of such equipment shall be controlled.

1.2 The control program shall include the following:

1.2.1 Positive identification of the equipment and its calibration status.

1.2.2 A frequency of calibration schedule for types of equipment based on recognized industry standards, manufacturers' recommendations, or usage factors.

1.2.3 Written procedures describing the calibration control system. Standards traceable to national standards shall be used, when appropriate.

1.2.4 A records system which will indicate the calibration dates and the identification of personnel performing the calibrations.

1.2.5 A recall system to prevent use of equipment beyond the calibration due date.

1.2.6 A system for corrective action when uncalibrated or damaged measuring and test equipment has been used. Inspection records shall include traceability identification to the specific equipment used.

2.0 TASKS*

2.1 EA shall establish procedures for control and calibration of measuring and test equipment used in Engineering Department activities affecting quality.

2.2 PQAD shall perform tasks at seller facilities relative to the control of measuring and test equipment in accordance with the requirements of the procurement documents. A

*See Appendix I for reference to implementing documents.

2.3 Construction (field) shall control measuring and test equipment used by construction forces at the site and forward equipment due for calibration to FQCD.

A 2.4 QSD shall establish and maintain a calibration program for measuring and test equipment used at the site.

2.5 At the site, FQCD shall:

2.5.1 Calibrate, or have calibrated by approved calibration laboratories, measuring and test equipment.

2.5.2 Verify that properly calibrated equipment is used.

2.5.3 Ensure that measuring and test equipment is identified.

2.5.4 Maintain calibration records.

3.0 DISCUSSION

3.1 Reference Paragraph 1.2.6

"Corrective action" as used herein requires that an investigation be conducted and documented to determine the validity of previous inspections performed when uncalibrated, damaged, or out of calibration measuring and test equipment has been used.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
HANDLING, STORAGE AND SHIPPING	SECTION 13
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 13

HANDLING, STORAGE AND SHIPPING

1.0 REQUIREMENTS

1.1 The handling, storage, shipping, cleaning, and preservation of materials and equipment shall be controlled to prevent damage or deterioration. The specified work shall be accomplished by quality individuals in accordance with the preplanned work and inspection instruction.

1.2 Procurement documents shall include the following:

1.2.1 Requirements for sellers to establish special procedures which may be necessary to prevent damage or deterioration of the supplied items.

1.2.2 Requirements for the preparation of items for shipment, as necessary, to ensure cleanliness, identification, and proper handling.

1.2.3 Requirements for installation, operation, and maintenance instructions, when specified, to be available at the site on a timely basis.

1.3 A preventive maintenance program shall be established at the site. This program shall include a schedule of maintenance operations performed. The maintenance program shall be based on the manufacturer's recommendation or Project Engineering instructions.

1.4 The preventive maintenance program shall be applied to materials and equipment in storage and work areas, and after installation up to the time of release for preoperational testing.

2.0 TASKS*

2.1 Engineering Department:

2.1.1 Project Engineering shall prepare procurement documents, provide criteria for the storage level of items at the site, and resolve any problems relative to the assigned of storage levels.

2.1.2 AOD shall establish and implement a preventive maintenance program and maintain storage requirements during the test phase.

*See Appendix I for reference to implementing documents.

2.2 PQAD shall perform specified verification activities at seller facilities relative to the handling, cleaning, and preparation of items for shipment as required by the procurement documents.

2.3 PQAD shall audit the maintenance program of items in long term storage at seller facilities on an individual case basis as required by specific requests from the Client.

2.4 Construction (field) shall establish and implement a storage and preventive maintenance program of items stored at the site and at specified nearby locations, and maintain appropriate maintenance records. Construction (field) shall assign levels of storage for items based on criteria provided by Project Engineering.

2.5 FQCD shall ensure that the quality of items is maintained throughout storage so that no degradation or deterioration is evident. Field Quality Control Division shall:

2.5.1 Verify storage of items to assure that specified storage requirements are met.

2.5.2 Verify implementation of the maintenance program by Construction (field) and AOD.

2.5.3 Verify that only acceptable items are released for installation (risk released items are considered acceptable within the conditions of the risk release).

2.5.4 Document FQCD storage inspections/verifications.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
INSPECTION, TEST AND OPERATING STATUS	SECTION 14
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

W. J. Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 14

INSPECTION, TEST AND OPERATING STATUS

1.0 REQUIREMENTS

1.1 The status of inspections and test operations shall be identified during manufacturing, construction, installation, and test. The status shall be indicated by tags, marking, shop travelers, stamps, route cards, inspection records, or checklists or other suitable means, provided that the method used ensures that only accepted items are used, installed, or operated. The removal of such tags, shop travelers, route cards, checklists, etc., shall only be performed by authorized personnel. Removal by unauthorized personnel shall be prohibited.

1.2 Nonconforming items shall be uniquely identified and controlled.

2.0 TASKS*

2.1 In addition to the tasks listed in Section 7, PQAD shall:

2.1.1 Perform tasks relative to the assurance of inspection, test, and operational status of items at seller facilities in accordance with procurement documents.

2.1.2 Verify during inspections, audits, and surveys of Category I sellers that the seller is properly using a system for the identification of inspection and test operations, as appropriate, or as required by the procurement documents.

2.2 In addition to the tasks listed in Section 7, FQCD shall:

2.2.1 Identify the status of inspections and tests performed during construction and installation.

2.2.2 Ensure that only accepted items are incorporated into systems, structures, and components prior to the turnover of these items to the Licensee.

2.2.3 Maintain current documentation regarding the status of inspections and tests witnessed or conducted by FQCD.

2.3 The Advisory Operations Division shall:

2.3.1 Identify the status of inspections and tests performed during the test program.

2.3.2 Maintain current documentation regarding the status of inspections and tests during the test program.

*See Appendix I for reference to implementing documents.

3.0 DISCUSSION

3.1 Reference Paragraph 1.1

The bypassing or waiver of a required inspection, test, or critical operation shall be cause for rejection, unless Quality Assurance has reviewed and signed off on the document that authorized the bypass or waiver; i.e., an addendum to a specification and/or an E&DCR.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
NONCONFORMING MATERIALS, PARTS OR COMPONENTS	SECTION 15
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 15

NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

1.0 REQUIREMENTS

1.1 Nonconforming and unsatisfactory items shall be controlled to prevent their inadvertent use or installation. The controls shall include measures for identification, documentation, segregation (as appropriate), disposition, and notification to affected organizations. A

1.2 While physical segregation and marking are preferred, other means of identification (e.g., marking, tagging, etc.) are acceptable when physical segregation is impracticable.

1.3 Dispositions authorizing a change in requirements shall be made by the same (or equally authorized) personnel or group responsible for establishing the original requirements.

1.4 A system shall be established for reporting significant nonconformances as defined in Paragraph 50.55(e) of 10CFR50.

2.0 TASKS*

2.1 EA shall establish a system for complying with Paragraph 50.55(e) of 10CFR50 regarding the reporting of significant deficiencies in design and construction. The system shall include notification to the Client.

2.2 Project Engineering shall develop and approve dispositions for Nonconformance and Disposition (N&D) reports which originate from nonconformances noted in seller shops and at the site.

2.3 PQAD shall prepare, issue, distribute, and control N&D reports which originate from nonconformances noted in seller facilities and which cannot be corrected within the scope of the applicable drawings and specifications. Copies of all N&D reports including those dispositioned as "accept-as-is" or "repair" shall be provided to the Client. A

2.4 Field Quality Control Division shall:

2.4.1 Prepare, issue, distribute, and control N&D reports which are issued to resolve unsatisfactory conditions, noted at the site, that cannot be corrected within the scope of the applicable drawings and specifications. A

2.4.2 Review all dispositions and close-out all site originated N&D reports when actions have been completed.

*See Appendix I for reference to implementing documents.

2.4.3 Provide copies of N&D reports to the Client, if required.

2.5 Construction (field) shall request FQC to obtain Engineering dispositions for unsatisfactory conditions which cannot be resolved within the scope of the applicable drawings and specifications. This action shall include the preparation of N&D's for processing by FQC. They shall review dispositions made by Project Engineering to determine that the disposition can be implemented.

3.0 DISCUSSION

3.1 Reference Paragraph 1.1

Unsatisfactory and nonconforming conditions are analyzed by QSD. Copies of Inspection Reports and N&D Report Status reports are issued to Project Management, Project Engineering, and Quality Assurance Management to assure timely resolution of identified problems. Quality trend reports for specific activities are made and forwarded to S&W management, i.e., Vice President-Quality Assurance, Project Manager, Engineering Manager, Manager-Quality Assurance, Project Engineer, senior Construction site representatives. Further, a semi-annual summary review is made of all unsatisfactory and nonconforming conditions to ascertain significant trends or conditions and a summary report, with recommended courses of action, is forwarded to the President of the company and other appropriate top level management.

3.2 Reference Paragraph 1.2

Unsatisfactory and nonconforming material is rejected, identified, and controlled to prevent inadvertent use. Controls shall include segregation, if practicable, until the unsat or nonconforming condition is corrected either by rework to return it to the specified condition or by a change in the specified requirements by the Engineering Department. Both the rework and/or the change in the specified requirement is subject to Quality Assurance review or sign-off as specified herein. Assurance of compliance is gained through the audit program delineated in Section 18.

3.3 Reference Paragraph 2.2

Reinspection of rework and repair activities of nonconforming items is conducted in accordance with the requirements of the engineering specification/procedure. The work is evaluated to the accept/reject criteria delineated in the engineering specification/procedure and is documented on Nonconformance and Disposition reports.

3.4 Reference Paragraphs 2.3 and 2.4

Each N&D report identifies and describes the nonconformance, the disposition of the nonconformance, the appropriate inspection requirement either directly or by reference, and includes signature approval of the disposition.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
CORRECTIVE ACTION	SECTION 16
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W. B. Cleveland
V.P. QUALITY ASSURANCE

W. J. Hanna
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 16

CORRECTIVE ACTION

1.0 REQUIREMENTS

1.1 Major and recurring conditions, adverse to quality, such as failures, malfunctions, deficiencies, defective material and equipment, unsats, and nonconformances shall be identified, the main causes determined and corrective action taken to preclude repetition. These conditions include failures of the quality system. A

1.2 The conditions, their cause and the corrective action taken shall be documented and reported to responsible management. The area of concern shall be audited in a timely manner to assure that the corrective action has been accomplished.

1.3 Measures shall be taken to keep appropriate S&W personnel informed of potential problems by a feed-back system of reports on significant and recurring problems encountered on other S&W projects and in government and industry as determined from published literature.

2.0 TASKS*

2.1 The Quality Assurance Department and EA shall fulfill the requirements of this Section by implementing the tasks of Section 15 and 18 of this Manual.

2.2 EA shall analyze EA audit data to determine significant conditions and trends. Reports of findings shall be prepared for management.

2.3 EA shall review published government and industry literature for problems related to quality assurance so that applicable potential problems are brought to the attention of appropriate personnel.

2.4 EA shall establish a feed-back system for the reporting of significant and recurring problems for preventive action.

2.5 QSD shall utilize inspection and audit data based on inputs from FQCD, PQAD and QACAD to perform analyses to determine the cause of major and recurring nonconformances and submit reports to management with recommended corrective action. A

2.6 QACAD shall analyze QACAD audit data to verify adverse quality trends with reports to management with recommended corrective action.

*See Appendix I for reference to implementing documents.

3.0 DISCUSSION

3.1 Reference Paragraph 1.2

Corrective action taken to correct deficient conditions discovered by inspection, test, or audits shall be verified by the performance of audits to assure that the agreed upon corrective action has been implemented. These audits, in conjunction with the audit reports, completed infraction notices, or corrective action correspondence, are considered to close out the corrective action documentation and assure system effectiveness.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
QUALITY ASSURANCE RECORDS	SECTION 17
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
V.P. ENGINEERING

V.P. PROJECT MANAGEMENT

Warren Piper
V.P. CONSTRUCTION

SECTION 17

QUALITY ASSURANCE RECORDS

1.0 REQUIREMENTS

1.1 Measures shall be established for the collection and maintenance of quality assurance records which furnish objective evidence of the quality of items or the completion of those activities affecting quality.

1.2 Measures shall be established for the maintenance of those quality assurance records furnished to Stone & Webster by the NSSS supplier.

1.3 Applicable specifications and procurement documents shall specify the types of quality assurance records to be generated and their disposition.

1.4 Inspection and test records shall be reviewed to ensure that, as a minimum, they identify the inspector or data recorder, the type of operations, the results, the acceptability, and the action taken if deficiencies were noted. These records shall be signed by the reviewer.

1.5 Permanent plant records shall be stored in an area satisfactory to the Client in the temporary construction facility and issued on a controlled basis to prevent loss. Records designated by the Client as permanent plant records shall be transferred to the permanent plant file area as directed by the Client.

1.6 Permanent plant records shall be microfilmed, as appropriate.

1.7 Records shall be identifiable and retrievable.

2.0 TASKS*

2.1 Project Management Department shall establish a records management system. The Project Manager shall implement a records management system for the control of project quality assurance records and shall ensure the inclusion of such records in the permanent plant file.

2.2 Construction (field) shall:

2.2.1 Establish and maintain a records facility as defined by Project Management for the control of documents to ensure the inclusion of quality assurance records into the permanent plant file.

2.2.2 Transfer permanent plant records to the Client.

2.3 Project Engineering shall:

*See Appendix for reference to implementing documents.

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2.3.1 Implement the Project Engineering portion of the records management system established by Project Management for control of documents to assure the transfer of quality assurance records into the permanent plant file for design and engineering.

2.3.2 Verify the completeness of the engineering and design documents.

2.4 The Quality Assurance Department shall implement the Quality Assurance portion of the project records management system established by Project Management in addition to the following generic tasks:

2.4.1 Procurement Quality Assurance Division shall:

A. Ensure that specified quality assurance records are available before items are released for shipment from seller facilities, as required by procurement documents.

B. Verify the completeness of specified seller quality assurance records for other than field purchased items.

C. Release quality assurance records required by procurement documents to FQC (at the site).

2.4.2 Field Quality Control Division shall:

A. Implement the FQCD site portion of the project records management system established by Project Management to ensure that FQCD working quality related documents, when they are completed, are included in the permanent plant file.

B. Verify the completeness of specified seller QA records for field purchased items.

C. Assemble site generated inspection records into appropriate record packages and verify completeness prior to transmittal to the permanent plant file.

2.4.3 Quality Systems Division shall develop working file systems for Quality Assurance Department Records.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
AUDITS	SECTION 18
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland

V.P. QUALITY ASSURANCE

W J J Kennedy

V.P. ENGINEERING

Warren Piper

V.P. CONSTRUCTION

SECTION 18

AUDITS

1.0 REQUIREMENTS

1.1 Audit programs shall be established to ensure that quality activities are in compliance with the requirements of this manual and related procedures, and to determine the effectiveness of the quality assurance program.

1.2 The audit programs shall provide a planned and scheduled system of audits on Stone & Webster internal operations, seller's operations, and areas of identified concern. The programs shall include provisions for reporting nonconforming conditions to the responsible level of management for any necessary corrective action. Deficient areas shall be re-audited to assure accomplishment of the corrective action. A

1.3 Audits shall be performed in accordance with written procedures or checklists by appropriately trained personnel having no direct responsibility in the activity being audited.

1.4 Records shall be maintained of all audits performed.

1.5 Audit schedules shall be provided to the Client if requested.

1.6 Audit reports of his project shall be made available to the Client for review, upon request, at the Stone & Webster office having custody of the audit report files. In cases where the project is located in an operations center, QACAD audit reports shall be provided upon request to the senior QA Department representative for the Client's review. A

1.7 Upon request, Stone & Webster may act as the Client's agent and perform special audits in activities in which Stone & Webster has no direct responsibility.

2.0 TASKS*

2.1 The Vice President, Quality Assurance shall periodically assess the implementation of each project's quality assurance program for compliance with the Preliminary Safety Analysis Report and Appendix B to 10CFR50. Copies of the audit findings and recommendations shall be submitted to the President of Stone & Webster, the Manager of Projects, and the Project Manager. A

*See Appendix I for reference to implementing documents.

2.2 Engineering Assurance shall:

A 2.2.1 Establish audit schedules and provide copies to the Project Quality Assurance Program Administrator for forwarding to the Client.

2.2.2 Conduct audits of engineering and design activities including activities that determine site features that affect plant safety.

2.2.3 Maintain records of audits performed.

2.2.4 Conduct post-award audits performed.

A 2.2.5 Conduct audits of the QA Cost and Auditing Division of the Quality Assurance Department.

2.3 Procurement Quality Assurance Division shall:

2.3.1 Establish audit schedules and provide copies to the Client.

A 2.3.2 Conduct audits of sellers after the award of purchase orders for Category I items to determine whether the sellers are complying with their approved quality assurance programs.

2.3.3 Maintain records of audits performed.

2.4 QA Cost and Auditing Division shall:

A 2.4.1 Establish audit schedules. Provide copies to the Client if requested.

2.4.2 Conduct audits of all Quality Assurance Department Divisions as well as the Engineering Assurance Division activities.

A 2.4.3 Conduct site and contractor audits including records management and site testing activities.

2.4.4 Maintain records of audits performed.

A 2.4.5 Report to the QA Department Manager on adherence to and adequacy of quality related procedures and systems.

2.5 QA Department personnel shall support audits on request.

3.0 DISCUSSION

3.1 Reference Paragraph 1.2

3.1.1 Project audits are generally conducted on a quarterly basis and cover the scope of work being performed by the project at the time of the audit. The audit schedule starts at the time S&W is

3.1.1 Con't.

awarded the work and runs until the project is completed. Additional audits, relating to specific areas of interest, are conducted as determined by the appropriate management.

3.1.2 Engineering audit data is analyzed by the Engineering Assurance Division and reported to the Engineering Manager with copies to the Quality Assurance Department. QA Department audit data is analyzed by the Reports Section of Quality System Division and the QA Cost and Auditing Division and reported to the Manager and Vice President of Quality Assurance.

3.2 Reference Paragraph 2.1

3.2.1 This item requires that the Vice President, Quality Assurance periodically assess the total Quality Assurance program for compliance and effectiveness. During this review, the audit program is evaluated against the characteristics delineated below:

A. Work areas

B. Activities

C. Processes

D. Items (hardware)

E. Documents and records

F. Quality related practices, procedures, and instructions

G. Effectiveness of QA Program implementation

H. Conformance with policy objectives

3.2.2 These characteristics are made part of the evaluation plan. This evaluation has in the past been conducted either by QACAD or has been contracted to an independent third party consultant.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
CONTROL OF THE STANDARD QA PROGRAM DOCUMENT	SECTION 19
	REVISION: 0
	EFFECTIVE DATE: 12/1/78

APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

W. J. Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SECTION 19

CONTROL OF THE STANDARD QUALITY ASSURANCE PROGRAM DOCUMENT B

1.0 REQUIREMENTS

1.1 The Standard Nuclear Quality Assurance Program and all revisions to Sections therein shall be approved, prior to issue, by the Vice President of Quality Assurance, the Vice President of Engineering, and the Vice President of Construction. Each revision along with an analysis with respect to (1) compliance to Appendix B to 10CFR50 and (2) the program effectiveness, shall be provided to the NRC Division of Project Management of the Office of Nuclear Reactor Regulation at least 30 days prior to the revision's effective date. B

1.2 This Program document, including portions thereof, is controlled by the Quality Systems Division and will be issued only to those individuals named by either the Vice President or Manager of the Quality Assurance Department.

1.3 Program document holders are responsible for maintaining their assigned documents.

1.4 The Vice President of Quality Assurance shall be responsible for, as a minimum, an annual (12-month) interval review of this program and direct upgrading as appropriate.

1.5 Projects which choose to adopt the Standard Nuclear Quality Assurance Program by direct reference without a Project Quality Assurance Program Manual shall be subject to all applicable provisions of this program and all subsequent NRC approved changes to the program document. Projects which adopt the Standard Nuclear Program but choose to develop a Project QA Program Manual shall operate as described in Paragraph 1.6 below. B

1.6 A Project Quality Assurance Program Manual, modeled after this Standard Nuclear Quality Assurance Program, shall be prepared, reviewed by the appropriate Construction Manager, and approved by the Project Manager, Manager Quality Assurance and Chief Engineer, Engineering Assurance. This manual shall be consistent with the Standard Nuclear QA Program revision in force on the date of acceptance for use by the licensee and shall be the governing QA Document for the Project.

1.7 Any degradation of the Standard Program in the conversion to the Project QA Program Manual or by subsequent revision of the Project QA Program Manual shall be detailed in writing by the QA Manager and brought to the attention of the licensee for SAR change and/or approval by NRC before adoption.

1.8 Licensee additions to the Project QA Program Manual shall be entered in part 4.0, "Client Considerations", within each section and shall not be considered as a program revision.

B

1.9 Revisions to the Standard Nuclear Quality Assurance Program subsequent to initial issue of an approved Project Quality Assurance Program Manual shall be brought to the licensee's attention for consideration in adopting the changes to the Project Quality Assurance Program Manual. Such changes may be made on a Section basis. Adoption of Sections previously approved by NRC as part of the process described in Paragraph 1.1 shall not constitute a Project Quality Assurance Program Manual degradation.

2.0 TASKS

2.1 The QSD - Publication Section shall:

2.1.1 Assign unique identification numbers for each document issued.

2.1.2 Maintain a distribution list of all document holders and their locations.

2.1.3 Maintain history files for the originals, revisions, and cancellations issued against each section of the program document.

2.1.4 Maintain history files of any degradation in the conversion from the Standard Program to the Project QA Program Manual.

2.1.5 Distribute documents and record or file receipt achknowledgments.

2.1.6 Issue an updated Table of Contents with each new Section or Revision issued.

2.2 All Program Document Holders shall:

2.2.1 Upon receipt of their assigned program document, acknowledge receipt and completeness by signing, dating, and returning the attached letter of transmittal.

2.2.2 Notify the Publication Section of any discrepancies and changes of address.

2.2.3 Maintain the manual by replacing superseded material with the revised material received.

2.2.4 Destroy all superseded material immediately.

2.2.5 Return the program document to the Publication Section when it is no longer needed, requested by the Quality Assurance Department, or upon termination.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
CROSS REFERENCE MATRIX OF IMPLEMENTING DOCUMENTS	APPENDIX I
	REVISION: C
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

CROSS REFERENCE MATRIX OF IMPLEMENTING DOCUMENTS

NOTES:

1. X - MANUAL SECTION NUMBER CORRELATION

10CFR50 APPENDIX B QUALITY ASSURANCE CRITERIA	SECTION I ORGANIZATION	SECTION II - QUALITY ASSURANCE PROGRAM	SECTION III DESIGN CONTROL	SECTION IV - PROCUREMENT DOCUMENT CONTROL	SECTION V - INSTRUCTIONS, PROCEDURES & DRAWINGS	SECTION VI DOCUMENT CONTROL	SECTION VII - CONTROL OF PURCHASED MATERIAL, EQUIPMENT & SERVICES	SECTION VIII - IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	SECTION IX - CONTROL OF SPECIAL PROCESSES	SECTION X INSPECTION	SECTION XI TEST CONTROL	SECTION XII - CONTROL OF MEASURING & TEST EQUIPMENT	SECTION XIII - HANDLING, STORAGE AND SHIPPING	SECTION XIV - INSPECTION, TEST, & OPERATING STATUS	SECTION XV - NONCONFORMING MATERIALS, PARTS OR COMPONENTS	SECTION XVI CORRECTIVE ACTION	SECTION XVII - QUALITY ASSURANCE RECORDS	SECTION XVIII AUDITS	
S&W STANDARD NUCLEAR QUALITY ASSURANCE PROGRAM (or Project QAPM)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
QUALITY STANDARDS MANUAL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
QUALITY ASSURANCE DIRECTIVES MANUAL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
QUALITY CONTROL INSTRUCTIONS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
S & W EA MANUAL	1	1, 2, 3, 4, 5	3, 4, 5	3, 4	3, 4, 5, 9	3, 4, 5, 6, 9	3, 4, 5	8	1, 3, 6 9	4	1, 4	4, 12	4	N/A	3, 15, 16	15, 16, 18	17	18	
CONSTRUCTION METHODS PROCEDURES MANUAL	N/A	N/A	N/A	1	1 ENTIRE MANUAL	11	1	1, 3, 4, 5, 6, 7, 8, 9	2, 3, 4, 5, 6, 7, 8, 9, 10	N/A	N/A	1	10	N/A	1	1	11	1	
CALIBRATION MANUAL	N/A	N/A	N/A	1	ENTIRE MANUAL	1	1	N/A	N/A	N/A	N/A	SEE QS-12.1 ENTIRE MANUAL	N/A	N/A	N/A	N/A	1	N/A	
PROJECT MANUAL	3	4	5	7&8	ENTIRE MANUAL	6&7	8	5	5	8	16	4	8	16	4	4	7	4	
STD NUCLEAR TEST PROGRAM DIRECTIVES (or Project TPD'S)	2	2, 3, 6	N/A	N/A	1	1, 3, 5	N/A	5	N/A	5	ENTIRE MANUAL	8	7	5	5	5	3	N/A	
ASME, SECTION III, DIVISION 1 MANUAL	1, 3	1, 2, 3, 4, 19 21, 23	5, 6	7	5, 6	ENTIRE MANUAL	8, 7	8, 9, 11	10, 12, 14	13	22	16	8	8, 13, 15 17, 22	13, 15	15	20, 24	18	
ASME, SECTION III, DIVISION 2 MANUAL	1, 3	1, 2, 3, 4 19, 23	5, 6	7	10, 13	9	8, 7	8, 11, 12	21, 14, 12	13	13, 22	16	8	8, 13, 15 17, 22	13, 15	15	20, 24	18	

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
QUALIFICATION AND EXPERIENCE REQUIREMENTS S&W QUALITY ASSURANCE PERSONNEL	APPENDIX II
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

APPENDIX II

QUALIFICATION AND EXPERIENCE REQUIREMENTS S&W QUALITY ASSURANCE PERSONNEL

TITLE	EDUCATION*	BACKGROUND EXPERIENCE
V.P., Quality Assurance	BS/BA	Minimum of 10 years in responsible assignments in heavy construction management, engineering, or quality assurance. At least two years of this time should be in the nuclear field with emphasis on project/ division management.
Manager, Quality Assurance	BS/BA	Minimum of 10 years in responsible assignments in engineering, or quality assurance and control, power station construction or operation. A
Chief Engineer Engineering Assurance	BS/BA	Minimum of five years in responsible assignments in engineering, quality assurance and control, inspection or auditing.
Chief Engineer, Quality Systems	BS/BA	Minimum of five years in responsible assignments in quality assurance and control or construction of a power station.
Manager, Procurement Quality Assurance	BS/BA	Minimum of five years in responsible assignments in quality assurance and control or shop inspection.
Manager, Field Quality Control	BS/BA	Minimum of five years in responsible assignments in quality assurance and control or construction of a power station.
Chief Engineer, NDT Division	BS/BA	Minimum of five years in responsible assignments in nondestructive testing of materials or metallurgy.
Chief Engineer, QA Cost and Auditing Division	BS/BA	Minimum of five years in responsible assignments in quality assurance and control or construction of a power station.

TITLE	EDUCATION*	BACKGROUND EXPERIENCE
A Quality Assurance Program Administrator	BS/BA	Minimum of five years in quality assurance and related fields including manufacturing, construction, and/or installation activities. At least two years should be associated with the nuclear field.
Assistant Manager, FQCD, PQAD, and Supt. of FQC	BS or High School	A degree plus five years experience in quality assurance and related fields, including testing or inspection (or both) of manufacturing, construction, and installation activities. At least two years shall be in a supervisory capacity in the nuclear field.
		OR
		High School graduate plus 10 years of experience in general quality assurance or equivalent engineering, manufacturing, construction and installation activities. Five years of total experience is required in quality assurance, including testing or inspection (or both) of equivalent manufacturing, construction, and installation activities. At least two years should be associated with the nuclear field.
Assistant Supt. of FQC	BS or High School	A degree and five years of experience in quality assurance, including testing and/or inspection of equivalent manufacturing, construction, and installation activities. At least two years of this experience should be associated with the nuclear field.
		OR
		High School graduate and ten years of experience in general quality assurance or equivalent engineering, manufacturing, construction, and installation activities. Five years of this experience is required in quality assurance, including testing and/or inspection of equivalent manufacturing, construction, and installation activities. At least two years of this experience should be with the nuclear field.

TITLE	EDUCATION*	BACKGROUND EXPERIENCE
Sr. QC Engineer QC Inspection Supervisor	BS or High School	A degree and five years of experience in quality assurance, including testing and/or inspection of equivalent manufacturing, construction and installation activities. At least two years of this experience should be associated with the nuclear field. A
		OR
		High school graduate and ten years of experience in general quality assurance or equivalent engineering, manufacturing, construction and installation activities. Five years of this experience is required in quality assurance, including testing and/or inspection of equivalent manufacturing, construction and installation activities. At least two years of this experience should be associated with the nuclear field.
Sr. QA Engineer	BS/BA	Minimum of five years experience in quality assurance and related fields. The individual shall hold a P.E. registration or ASQC Certification as Quality Engineer.
QC Engineer	BS or High School	A degree and two years of experience in quality assurance including testing and/or inspection of equivalent construction and installation activities. A
		OR
		High school graduate and five years of experience in testing and/or inspection of power and/or nuclear plants, heavy industrial, or other similar equipment or facilities.
QA Engineer	BS/BA Associate Degree	Minimum of five years experience in quality assurance and related fields.
		OR
		An Associates Degree and eight years experience and hold a P.E. registration or ASQC certification as a quality engineer.

TITLE	EDUCATION*	BACKGROUND EXPERIENCE
Sr. QC Inspector	High School	High School graduate and four years of experience in quality assurance, including testing and/or inspection of equipment, construction, and installation activities.
Assistant QC Engineer	BS	A degree. No experience is required.
Quality Data Supervisor	BS or High School	High school graduate and four years of experience in testing and/or inspection of power and/or nuclear stations, heavy industrial or other similar equipment or facilities, or one year satisfactory performance as a Quality Data Reviewer.
QC Inspector II	High School	High school graduate and four years of experience in testing and/or inspection of power and/or nuclear stations, heavy industrial or other similar equipment or facilities, or one year satisfactory performance as a QC Inspector I.
QC Inspector I Quality Data Reviewer	High School	High school graduate and two years experience in quality assurance, including testing and/or inspection of equipment, construction, and installation activities, or one year satisfactory performance as a QC Technician.
QC Technician	High School	High school graduate and one year experience in quality assurance concepts such as testing or inspection.
Assistant QC Technician Quality Data Clerk	High School	High school graduate; no experience is required.

* Equivalent qualification may be substituted based on other education accomplishments, experience in related fields and technical achievements such as holding license as a Professional Engineer or Certification as a Quality or Reliability Engineer by the American Society for Quality Control. Assignment of S&W personnel to any position described in this Appendix is a management prerogative within the indicated guidelines.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
GLOSSARY	APPENDIX III
	REVISION: C
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

R. C. Yardley
V.P. PURCHASING

W J Kennedy
V.P. ENGINEERING

J. C. Logan
V. P. PROJECT MANAGEMENT

Warren Piper
V.P. CONSTRUCTION

APPENDIX III - GLOSSARY

INTRODUCTION

The primary reference or source of each definition included in this glossary is identified next to the term using the following "Base Source Acronym Key Code":

ANSI -American National Standard Institute N45.2.10-1973; Quality Assurance Terms & Definitions.

ASME -The American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section III, Division 1 and Division 2, 1977, including all applicable addenda. C

ASQC -American Society for Quality Control; A3-1971 (ANSI Z1.7-1971) General Terms Used in Quality Control.

EOQC -European Organization for Quality Control; Glossary of Terms Used in Quality Control, Third Edition - Rotterdam - 1972.

NRC -United States Nuclear Regulatory Commission.

RDT -Reactor Development and Technology C

S&W -Stone & Webster Engineering Corporation. The definitions are based on current and past acceptance usage at Stone & Webster.

10CFR50 -Appendix B to Part 50, Title 10, Code of Federal Regulations, "Quality Assurance Requirements for Nuclear Power Plants" as published June 27, 1970 in the Federal Register, as amended.

GLOSSARY

Accept-As-Is (S&W)

A disposition requiring Engineering Department justification and approval which is applied to nonconforming material that does not meet all specified requirements but will continue to meet its intended use and continue to meet applicable Code and functional requirements including safety.

Acceptance Criteria (S&W)

A limit placed on the variation permitted in the characteristics of an item expressed in definite quantitative terms or qualitative terms by use of comparative samples.

Accuracy (EOQC)

The degree of conformity of a measurement with a standard or true value.

Action Party (S&W)

The individual who is assigned responsibility by virtue of his position or capability which makes him able to take corrective or preventive action to rectify the deficiencies disclosed during an audit.

C Advisory Operations Division (S&W)

A Division of the Engineering Department which is responsible for test and start-up activities for power plants, including preparation of test procedures and qualification of test personnel.

Approval (ANSI)

The act of endorsing or adding positive authorization or both to an action or document.

Approved Procedures (S&W)

A written document, signed by authorized personnel, which prescribes actions required to implement a program, specification, method, or technique.

Appurtenance (ASME)

An appurtenance is an item similar to a part (NA-1231) which is attached to a completed and stamped component.

As Built Drawings (S&W)

C A drawing altered or suitably appended with related Engineering & Design Coordination Reports and Nonconformance and Disposition Reports to reflect actual installed conditions.

ASME Nuclear Symbol (ASME) <C

See "Code N-Type Symbol Stamp."

ASME Section III (S&W)

American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section III, Nuclear Power Plant Components, Division 1, Metal Components, or Division 2, Concrete Reactor Vessels and Containments, as applicable.

Assembly (ANSI)

A combination of subassemblies or components, or both, assembled to form a unit.

Attribute (EOQC)

A quality characteristic which may be qualitatively evaluated in terms of a yes or no decision.

Audit (ASME)

A documented activity performed in accordance with written procedures or checklists to verify by examination or evaluation of objective evidence that applicable elements of the quality program have to be developed, documented, and implemented in accordance with specified requirements. <C

Audit, Corrective Action (S&W)

A follow-up audit to verify that corrective action on discrepancies disclosed by prior audits has been taken and implemented.

Audit, Division (S&W)

See Division Performance Evaluation.

Audit, External (S&W)

Audit of those portions of an organization's quality assurance program not retained under its direct control and not within its organizational structure.

Audit Guideline (S&W)

An Engineering Assurance Division document which instructs the Auditor how to perform an audit.

Audit, Internal (S&W)

Audit of those portions of an organization's quality assurance program retained under its direct control and within its organizational structure.

Audit Observation (S&W)

C> A description of each program deficiency in sufficient detail to assure that corrective action can be effectively carried out by the audited organization. Adequate supporting data will be maintained in audit records.

Audit Plan (S&W)

A list of attributes for a particular audit developed from applicable procedures, instructions, codes, or regulations.

Audit, Project (S&W)

A major audit covering work performed by a particular Project Group and by other groups in support of that Project.

Audit Report (S&W)

An in-depth report which states the purpose of the audit, the auditors and personnel contacted, the observations listing details of deficiencies in systems or procedures requiring corrective action, recommendations for corrective or preventive action, names of action parties responsible for corrective or preventive action, and date by which action replies are expected.

Audit, Special (S&W)

An audit of a particular management or engineering function involving one or more Divisions and Projects.

Audit, Seller/Contractor (S&W)

C> An audit of a seller or contractor providing material or services to Stone & Webster.

Authorized Nuclear Inspector (ASME)

Inspectors who perform the inspections required by the ASME Section III Code. These inspectors shall have been qualified by written examination under the rules of any State of the United States or Province of Canada which has adopted the ASME Code. The Inspector shall be an employee of an Authorized Inspection Agency and shall not be an employee of the Certificate of Authorization holder.

Authorized Inspection Agency (ASME) C

The agency designated as such by the appropriate legal authority of a state or municipality of the United States or Province of Canada. For Stone & Webster Engineering Corporation, this agency is the Hartford Steam Boiler Inspection and Insurance Company, Hartford, Connecticut, 06102.

Calibration (S&W)

Comparison of a measuring or test device with a standard of sufficient accuracy to determine whether the device is within specified limits of accuracy over a required range of values and, if not, repairing and/or adjusting the device to conform to requirements.

Category I (S&W)

Plant systems, or portions of systems, structures, and equipment whose failure or malfunction could cause a release of radioactivity that would endanger public safety. This category also includes equipment which is vital to a safe shutdown of the plant and the removal of decay and sensible heat, or equipment which is necessary to mitigate consequences to the public of a postulated accident. This category includes Code items, regardless of Code class, fabricated or installed under Section III of the ASME Code.

Category II (S&W)

Plant systems, portions of systems, structures, and equipment essential for the reliable generation of electric power but which are not essential for a safe shutdown. Failure of this equipment could result in loss of power generation but would not endanger public safety. Equipment and systems which contain radioactive materials but whose failure could not release quantities sufficient to prejudice public safety are included in this category.

NOTE: The term "essential for the reliable generation of electric power" should be interpreted to mean structures, systems, and components whose failure would result in the halt of electric power generation in approximately eight hours or less.

Category III (S&W)

Plant systems, portions of the systems, structures and equipment which are not essential for the reliable generation of electrical power and which do not contain radioactive material or whose failure could not result in the release of radioactive material.

NOTE: The term "not essential for the reliable generation of electric power" should be interpreted to mean structures, systems and components whose failure would not result in the halt of electric power generation in approximately eight hours or less.

Certificate of Authorization (ASME)

C A document evidencing permission to perform a scope of work and to certify items or to use an appropriate symbol, expiring not later than the triennial anniversary date, signed by the Chairman and Secretary, or other duly authorized officers of the Boiler and Pressure Vessel Committee of the American Society of Mechanical Engineers.

Certificate of Compliance (ASME)

A document which certifies compliance with purchase order requirements and specifies the material specification, grade, class, heat treated condition, and Quality System Certificate (Materials) number and expiration date. The Certificate of Compliance is used in lieu of a Certified Material Test Report for material 3/4 inch nominal pipe size and less (pipe, fittings, flanges, materials for valves and tubes except heat-exchanges tubes) for bolting 1 inch nominal diameter and less.

Certificate of Compliance (ANSI)

A written statement, signed by a qualified party, attesting that the items or services are in accordance with specified requirements and accompanied by additional information to substantiate the statement. This may also be known as a Certificate of Product Quality.

Certificate of Conformance (ANSI)

A written statement, signed by a qualified party, certifying that the items or services comply with specific requirements.

Certifications (ANSI)

The action of determining, verifying, and attesting in writing to the qualification of personnel, material, and documentation.

CFR (S&W)

Code of Federal Regulations

Characteristic (ANSI)

Any property or attribute of an item, process, or service that is distinct, describable, and measurable, as conforming or nonconforming to specified requirements. Quality characteristics are generally identified in specifications and drawings which describe the item, process, or service.

Checks (ANSI)

The tests, measurements, verifications, or controls made on an activity by means of investigations, comparisons, or examinations to determine satisfactory condition, accuracy, safety, or performance.

Client (S&W)

The owner, person, group, company, or corporation who has or will have title to the Power Plant under construction or constructed with Stone & Webster under contract as Architect/Engineer, Constructor, and/or Consultant. C

Code (S&W)

A set of specific requirements, published under the cognizance of a recognized Technical Society or Trade Association, invoked to the degree stated in applicable Engineering Documents. The word is capitalized when describing ASME Section III.

Code N-Symbol Stamp (ASME)

The official ASME stamp which is applied to pressure vessels, components, parts, and appurtenances that are certified to Section III of the ASME Boiler and Pressure Vessel Code.

Company (S&W)

Refers to Stone & Webster Engineering Corporation.

Component (ASME)

Items such as vessels, piping systems, pumps, valves and storage tanks, and core support structures. Each component shall bear the required code N-type symbol and Manufacturer's Data Reports shall be prepared. C

Component (S&W)

Any individually manufactured or fabricated unit or piece of a system which is identifiable and installable. For ASME III work, see definition of component above.

Component Support (S&W)

Those metal supports which are designed to transmit loads from the pressure retaining barrier of the component to the load-carrying building structure.

Contract (S&W)

A form of agreement used to procure site services or labor and may include the procurement of material and/or equipment.

Contractor (S&W)

The business entity which enters into a Contract and becomes the primary obligor for the supply of labor and materials (or equipment) associated therewith and is deemed to be a principal Contractor.

Construction Drawings (S&W)

An approved engineering design drawing used for the fabrication or installation of parts, appurtenances, components, structures, or plant.

Construction Hold Point (S&W)

A preplanned point assigned by the Construction Department to verify that the construction activities have been accomplished in accordance with applicable requirements. See also "Hold Point."

Construction Phase (NRC)

Those activities associated with fabrication and manufacturing in addition to site related construction activities. From a Quality Assurance viewpoint, the construction phase commences with Limited Work Authorization (LWA), if granted, and continues on from first erection of safety related structures, systems, and components to fuel loading.

Construction-Site (S&W)

Designates responsibility for actions required of the Stone & Webster Engineering Corporation construction forces at the jobsite under the direction of the Senior Construction Site Representative.

Controlled Copy (S&W)

A copy of a procedure or a manual that is systematically updated and whose custodian is listed in the appropriate distribution list.

Controlled Documentation (S&W)

A document whose distribution, updating, and use is to be regulated.

C Corrective Action (ASME)

Action taken and documented to determine the cause and correct deficiencies or nonconformances adverse to quality (see preventive action).

Defective Material (S&W)

Material which has one or more characteristics that do not comply with specified requirements; also, termed to be unsatisfactory material.

Design (used as a verb) (S&W)

Technical and management processes, which lead to and include the issuance of documents such as drawings, specifications, and other documents, specifying technical requirements of structures, systems, and components.

Design Engineering (ASME)

Those engineering functions contractually assigned to S&W to fulfill the responsibilities of the Owner's agent as defined in ASME Section III.

Deviation (ANSI)

A nonconformance or departure of a characteristic from specified requirements considered to be synonymous with defective or unsatisfactory material.

Disposition (S&W)

The decision determining how to resolve a nonconformance.

Division Guideline (S&W)

In the S&W Engineering Department, a document issued by a Division Chief which establishes administrative or technical methods and controls within a Division.

Division Performance Evaluation (S&W)

An evaluation of a particular Quality Assurance Department, Division, or Section or of the EA Division to determine if management policies have been effectively implemented.

Documentation (ANSI)

Any written or graphic information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results.

Engineering Assurance Division (S&W)

A Division of the Engineering Department which is responsible for establishing a system of management control within the Engineering Department, including preparation of procedures, personnel training in their content, and auditing to assure compliance.

Engineering Guidelines (S&W)

A set of uniform criteria and engineering principles established by the Engineering Department to provide technical guidance.

Engineering Standards (S&W)

A set of uniform criteria and engineering principles established by Stone & Webster's Engineering Department to provide technical direction.

Engineering Service (S&W)

Work performed by others in connection with the design and licensing of power plants.

C Engineering Service Supplier (S&W)

The engineering consultant, contractor, scientist, mathematician, or other individual, group, or company that performs the engineering service under a contract or purchase order.

Engineering Service Scope of Work (ESSOW) (S&W)

A procurement document used to describe, in detail, an engineering service to be performed by an engineering service supplier.

Equipment (S&W)

Items or apparatus used as part or in connection with an installation.

Erection (S&W)

The process of constructing systems and structures in the field using manufactured or fabricated materials, components, assemblies, and subsystems. Synonymous with "Installation" as used by ASME Code.

Examination (ANSI)

An element of inspection consisting of investigation of materials, components, suppliers, or services to determine conformance to those specified requirements which can be determined by such investigation. Examination is usually non-destructive and includes simple physical manipulation, gaging, and measurements.

Fabrication (S&W)

The process of producing completed components, assemblies, or subsystems using material and/or other documents.

Fabrication/Installation Control Drawing (S&W)

A structural or isometric drawing used at the construction site for fabrication/installation of piping and components, together with the installation of hangers, supports, anchors, and guides which serve as a traveler for a controlled manufacturing system.

C Failure (RDT)

The inability of an item to perform within specified limits.

Field Quality Control Division (S&W)

A division of the Quality Assurance Department responsible for, or the assurance of, the implementation of the S&W Quality Assurance Program at the sites.

Hold Point (S&W)

A pre-established point in the production process, which requires inspection, approval, and release by the Quality Assurance Department, Construction Department, Engineering Department, and/or the Authorized Nuclear Inspector prior to further processing. Noncompliance by sellers, construction, or contractors in failing to stop at a hold point will be cause for rejection and may further result in a stop work order; also, termed Inspection Hold Point, when describing a QA Department established Hold Point.

Inspection (ANSI)

A phase of quality control which by means of examination, observation, or measurement determines the conformance of materials, supplies, components, parts, appurtenances, systems, processes, or structures to predetermined quality requirements.

Inspection Notification Point (S&W)

A preplanned point, reached during the manufacturing and/or testing phase at which time the Stone & Webster Quality Assurance Department requires notification according to the terms of the contract, purchase order, or specification. C

Inspector (S&W)

A qualified inspector, employed by Stone & Webster Engineering Corporation, whose duties include the verification of quality related activities or installations or both.

Item (S&W)

Any level of unit assembly, including structure, system, subsystem, subassembly, component, part, or material including Code items.

Joint Identification Number (S&W)

A unique number assigned to a specific welded or bolted joint.

Licensing Division (S&W) C

A Division of the Engineering Department which is responsible for coordinating all licensing activity for power plants, including establishment of licensing policy, and guidance and assistance of all licensing and safety matters.

Manufacturer (S&W)

One who constructs a component, part, or appurtenance to meet prescribed design requirements.

Material (ANSI)

A substance or combination of substances forming components, parts, pieces, and equipment items. (Intended to include such as machinery, castings, liquids, formed steel shapes, aggregates, and cement.)

C Material (ASME)

Material is manufactured to SA, SFA, SB, SFB specifications, or any other material specification permitted by ASME Section III.

Materials Certification (S&W)

Certification by the materials manufacturer or others by test and inspection that all specified requirements have been complied with (also see Certificate of Compliance).

Measuring and Test Equipment (M&TE) (S&W)

Tools, gages, instruments, and other measuring and testing devices used for acceptance inspection and/or testing.

Modification (S&W)

A planned and documented change in plant design or operation and accomplished in accordance with the requirements and limitation of applicable codes, standards, specifications, licenses, and predetermined safety restrictions.

Monitor (S&W)

To watch, keep track of, observe, regulate, or control any activity.

Nonconformance (S&W)

Any item condition or materials which deviate from drawings, specification, or engineering requirements and cannot be corrected within the scope of such requirements.

Nonconformance and Disposition (N&D) (S&W)

A report requesting an Engineering Department disposition of a nonconforming condition.

Nondestructive Test Division (NDTD) (S&W)

A division of the Quality Assurance Department responsible for defining and implementing a system, which provides technical and administrative direction for all company activities concerned with using nondestructive testing to verify compliance to engineering requirements.

NSSS (S&W)

Nuclear Steam Supply System

Objective Evidence (ANSI)

Any statement of fact, information, or record either quantitative or qualitative, pertaining to the quality of an item or service based on observations, measurements, or tests which can be verified.

Owner (ANSI)

The person, group, company, or corporation who will have or has title to the facility or installation under construction.

Part (ASME) C

A part has work performed on it requiring the presence of or verification by an Authorized Nuclear Inspector and is furnished to a component manufacturer by other manufacturers or by the same manufacturer under a separate Certificate of Authorization. A part is attached to or becomes a part of a component or component support before completion and stamping of the component or component support.

Permanent Plant File (S&W) C

A file established for or by the client, for the receipt and storage of QA records, received from all S&W offices that are required to be retained for the client or which the client wishes to retain.

Piping System (S&W)

A configuration of materials and components which, when installed, provides a flow path for a fluid or gas.

Plant (ANSI)

The equipment, piping, structures, buildings, and property that comprise an installation or facility.

Post Audit Conference (S&W) C

Communications held between the auditing and audited organizations to review the audit observations and clarify any misunderstandings.

Power/Process Piping System (S&W)

Piping systems which are necessary or are required for the generation of electric power and which require formal control, inspection, testing, and documentation.

Pre-Audit Conference (S&W)

C Communications held between the auditing and audited organizations prior to the conduct of the audit to outline the scope of the Audit, personnel to be contacted, and establish the lines of communication during the audit.

Precision (EOQC)

The degree of resolution and repeatability of measurements made under prescribed like conditions.

Pressure Boundary (S&W)

Any surface which is subjected to differential fluid or gaseous pressure.

Preventive Action (S&W)

Action taken and documented to preclude recurrence of deficiencies or nonconformances.

Procedure (ANSI)

A document that specifies or describes how an activity is to be performed. It may include methods to be employed, equipment or materials to be used, and sequence of operations.

Procedure Qualification (S&W)

Testing a process as outlined in a procedure to assure that the prescribed results will be accomplished.

Procurement Documents (S&W)

C Contractual documents that identify and define the requirements which items or services must meet in order to be considered acceptable by the purchaser. Procurement documents include contracts, letters of award, and purchase orders which authorize the seller or Contractor to perform services or supply equipment, material, or facilities on behalf of the purchaser.

Procurement Quality Assurance Division (PQAD) (S&W)

A division of the Quality Assurance Department responsible for seller control activities for procured items as required by the specification.

Program (S&W)

A plan or procedure instituted to provide materials or services in accordance with specified procurement, design, and regulatory requirements.

Project (S&W)

A planned series of design, engineering and construction activities necessary to provide, utilize, and maintain a facility or portion thereof.

Project Engineering (S&W)

The group consisting of the Project Engineer, Assistant Project Engineer(s), Lead Engineers, and support engineers responsible for engineering and design activities on the Project. Technical guidance is drawn from the various Engineering Department Divisions represented on the Project.

Project General Instructions (S&W)

Administrative and Technical instructions for personnel assigned to a specific Project, prepared by S&W Engineering Department personnel.

Project Management Department (S&W)

The Project Management Department has the authority for the overall planning, organizing, staffing, directing, and controlling those activities required to achieve project objectives within approved schedules, budgets, and product specifications.

Specifically assigned to the Project Management Department as functional operations are:

1. Development and implementation of Project Management Systems.

2. Development and implementation of records oriented business management systems.

Project Quality Assurance Program Administrator (S&W)

An individual who reports to the Assistant Manager, Quality Assurance Department and has direct responsibilities for coordinating quality related activities between Quality Assurance, Engineering, Construction, and Client personnel.

Purchaser (S&W)

One who assumes the obligation of payment pursuant to a Purchase Order or Contract and accepts title to equipment and/or material.

Purchase Order (S&W)

A form of agreement used to procure material, equipment, and ancillary services or for the procurement of professional and technical services.

Qualification (Personnel)(S&W)

The characteristic or abilities gained through training, experience, or both that enable an individual to perform a required function. This capability, when required, shall be indicated by comparison to an established or defined standard of performance.

Qualified Party (ANSI)

A person or organization competent and recognized as knowledgeable to perform certain functions.

Qualified Procedure (ANSI)

A procedure which incorporates all applicable codes and standard, manufacturer's parameters, and engineering specifications and has been proven adequate for its intended purpose.

Quality (ASQC)

The totality of features and characteristics of a product or service that bear on its ability to satisfy a given need.

C Quality Assurance Directive (QAD) (S&W)

A procedure applicable only to the Quality Assurance Department describing actions necessary to implement its quality related activities.

Quality Assurance (10CFR50)

All those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. Quality Assurance includes Quality Control.

Quality Assurance Department (S&W)

Within the Stone & Webster Engineering Corporation, the department responsible for effective implementation of quality assurance functions.

Quality Assurance Records (ANSI)

Those records which furnish documentary evidence of the quality of items and of activities affecting quality.

Quality Assurance Site File (S&W)

C A file maintained by FQC containing all working documents required to implement the QC Program and to properly document the performance of QC activities.

C QA Cost and Auditing Division (QACAD) (S&W)

A Division of the Quality Assurance Department responsible for developing QA cost estimates, maintenance of the QA Department correspondence files and technical library, and implementing a quality audit program.

Quality Control (10CFR50)

Those quality assurance actions related to the physical characteristics of a material, structure, component, or a system which provide a means to control the quality of the material, structure, component, or system to predetermined requirements.

Quality Control Instructions (QCI) (S&W)

A procedure, applicable only to the Quality Assurance Department, which provides specific guidance for local implementation of higher level procedures.

Quality Department Management (QDM) (S&W) C

All QA Department Chief Engineers and Managers responsible for a specific Division. This includes the QA Department Assistant Manager.

Quality Systems Division (QSD) (S&W)

A division of the Quality Assurance Department responsible for the establishment and control of standardized quality systems.

Quality Standard (QS) (S&W) C

A corporate standard procedure which defines the responsibilities and interfacing activities of the departments involved in a specific quality related activity.

Quality Verification Inspection (S&W)

Quality verification inspection is a Quality Control action by which the work performed, inspected, and accepted by others such as contractors, is subject to verification as defined herein on a sampling, surveillance, or hold point basis, as appropriate.

Random (S&W)

The selection, on an unbiased basis, giving each item in a collection of units of similar items an equal chance of being selected.

Receiving (ANSI)

Taking delivery of an item at a designated location.

Regulatory (S&W)

Any of the several controlling organizations --- Federal, industry, state, or local which impose specific requirements on the design or construction of a nuclear power plant.

Regulatory Guide (NRC)

C Regulatory Guides are issued to describe and make available to the public, methods acceptable to the NRC Staff of implementing specific parts of the Nuclear Regulatory Commission's Regulations, to delineate techniques used by Staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations and compliance with them is not required. Methods and solutions different from those set out in the Guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission. Compliance to Regulatory Guides is mandatory when a committment to comply is made by S&W in this program or other authoritative document.

Reliability (general definition) (ASQC)

Ability of an item to perform a required function under stated conditions for a stated period of time.

C Reject (S&W)

An item, system, structure, material, or service found to be unsatisfactory or nonconforming.

Repair (ANSI)

The process of restoring a nonconforming characteristic to an approved acceptable condition, even though that item still may not conform to the original requirement. (A class of nonconformance disposition.)

Rework (ANSI)

The process by which an unsatisfactory or nonconforming item is made to conform to a prior specified requirement by completion, remachining, reassembly conditions, or other corrective means.

C Sampling Inspection (S&W)

An inspection technique in which random samples are selected in accordance with an approved sampling plan to determine the acceptability of the lot.

Scrap (S&W)

A disposition imposed on a nonconforming item when it is established that the discrepancy renders the item unfit for its intended use and it is uneconomical to correct.

C Seller (S&W)

The business entity providing materials, equipment, or services pursuant to a contractural agreement. When a seller furnishes construction labor he may be referred to as a Contractor.

Source Inspection (S&W)

An inspection activity performed at the manufacturing location on material or components.

Source Surveillance (S&W)

A review, observation, or inspection for the purpose of verifying that an action has been accomplished, as specified, at the location of material procurement or manufacture.

Special Process (S&W)

An operation performed under controlled conditions in accordance with specified requirements utilizing qualified procedures, equipment, and personnel. Special processes may include, but are not limited to: welding, brazing, soldering, cleaning, heat treating, and NDT.

Specification (S&W)

Engineering document specifying essential and technical requirements for materials, items, or services and indicating, when appropriate, the procedure by which it will be determined that the requirements have been met.

Standard (Reference Document) (S&W)

A recognized reference document which establishes a set of rules, goals, or objectives published by a recognized Technical Society or Trade Association such as ANSI, ASTM, ASME, ASQC, and IEEE.

Standard (Calibration) (S&W)

Calibrated measuring or test equipment whose calibration is traceable to the National Bureau of Standards, where such standards exist, physical constants, or recognized industrial standards and used for the calibration of Measuring and Test Equipment.

Storage (S&W)

The act of placing or leaving items in a suitable location for preservation or later use or disposal.

Subassembly (S&W)

A selection of an assembly consisting of materials or components and which may be fabricated in a shop or the field.

C Subcontractor (S&W)

The business entity deriving its authority to perform work under the Contract from the Contractor after approval by the Purchaser. It includes Contractors who furnish materials worked to a special design according to the plans and specifications, but does not include Contractors who merely furnish materials not so worked.

Subsystem (ANSI)

A group of assemblies or components or both combined to perform a single function.

Supports (S&W)

Includes all hangers, restraints, guides, and anchors used to support or restrain a component or piping system.

Surveillance (S&W)

C The system of continuing analysis and evaluation of records, methods, and procedures to assure conformance with technical requirements. Also, a random inspection of records and physical check that a Seller's in-process inspections and tests are being performed in accordance with his approved Quality Control Program.

Survey (S&W)

A review of the capability of a bidder or potential bidder, contractor, or subcontractor which is conducted at his facility to establish his qualification and appraise his Quality Control Program.

System (ANSI)

A group of subsystems united by some interaction or interdependence, performing many duties but functioning as a single unit.

Test (ANSI)

The determination or verification of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions.

C Unsat (S&W)

A deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate. Examples of unsats include: physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processing, inspection, or test procedures.

Unusual Occurence (RDT)

An unusual or unplanned event having programmatic significance such that it adversely affects or potentially affects the performance, reliability, security, or safety of a reactor or test facility, or causes injury or potential hazard to personnel, which may require special evaluation, correction, or preventive actions to be taken.

Vendor (S&W)

See "Seller."

Verification (S&W)

An act of conforming, substantiating, and assuring that an activity or condition has been implemented in conformance with the specified requirements. Verifying evidence may be in the form of documentation or confirmed by witnessing or performing a function.

Verify (S&W)

The act of proving that a function or requirement has been met by examining objective evidence. This evidence can be in the form of documentation or confirmed by witnessing or performing a function.

Witness (S&W)

The act of observing and giving an account of inspections and/or tests performed by others.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
	APPENDIX IV
ENGINEERING AND DESIGN CONTROL	REVISION: B
	EFFECTIVE DATE: 12/1/78

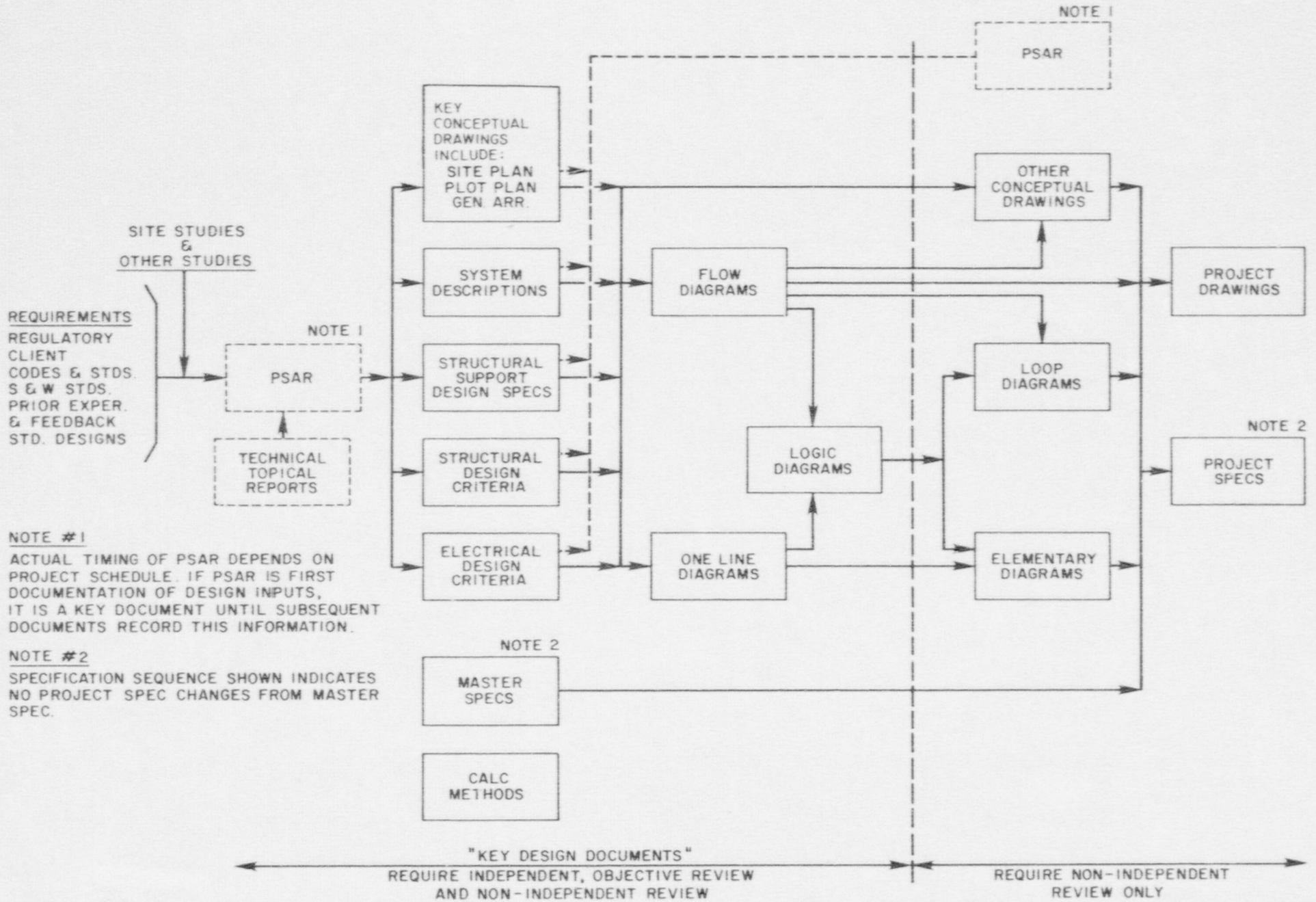
APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

W J Kennedy
V.P. ENGINEERING

Warren Sykes
V.P. CONSTRUCTION

ENGINEERING AND DESIGN CONTROL



NOTE #1

ACTUAL TIMING OF PSAR DEPENDS ON PROJECT SCHEDULE. IF PSAR IS FIRST DOCUMENTATION OF DESIGN INPUTS, IT IS A KEY DOCUMENT UNTIL SUBSEQUENT DOCUMENTS RECORD THIS INFORMATION.

NOTE #2

SPECIFICATION SEQUENCE SHOWN INDICATES NO PROJECT SPEC CHANGES FROM MASTER SPEC.

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
SPECIFICATION AND BIDDERS REVIEW	APPENDIX V
	REVISION: A
	EFFECTIVE DATE: 12/1/78

APPROVALS

W B Cleveland
V.P. QUALITY ASSURANCE

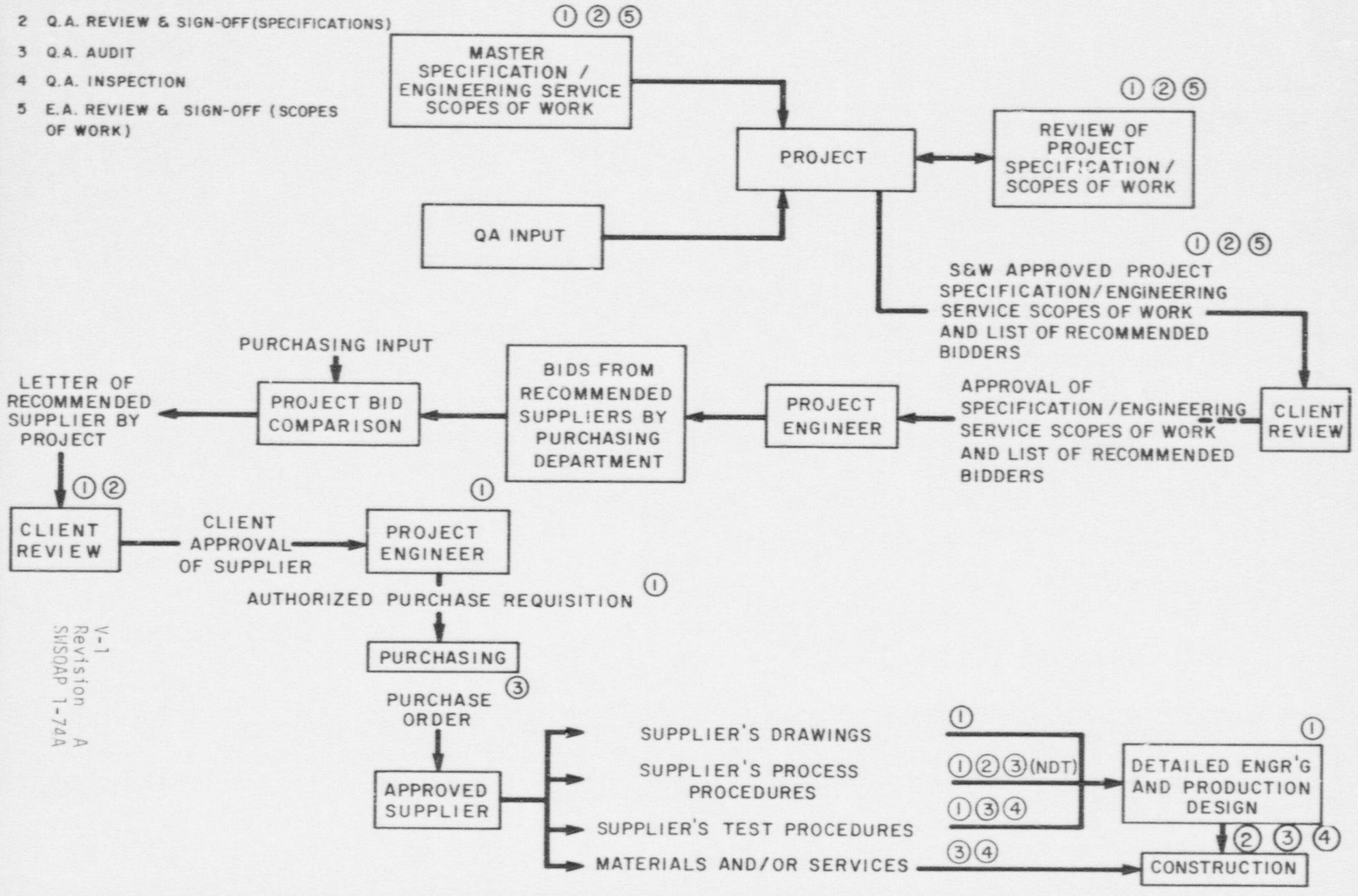
E J Kennedy
V.P. ENGINEERING

Warren Piper
V.P. CONSTRUCTION

SPECIFICATION AND BIDDERS REVIEW

LEGEND

1 ENG'R ASSURANCE AUDIT
2 Q.A. REVIEW & SIGN-OFF (SPECIFICATIONS)
3 Q.A. AUDIT
4 Q.A. INSPECTION
5 E.A. REVIEW & SIGN-OFF (SCOPES OF WORK)



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Revision A
SWSOAP 1-74A

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
APPROVALS AND CONCURRENCES FOR QUALITY ASSURANCE SYSTEM DOCUMENTATION	APPENDIX VI
	REVISION: C
	EFFECTIVE DATE: 12/1/78

APPROVALS

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APPROVALS AND CONCURRENCES FOR QUALITY ASSURANCE SYSTEM DOCUMENTATION

	Program Documents	Approval	Concurrences
1.	Standard S&W Nuclear Quality Assurance Program	President (Sections approved by Vice Presidents of affected Departments)	----------
2.	Project QA Program	Manager, QA Department Ch. Eng., Engrg. Assurance Project Manager	----------
3.	Standard Nuclear Test Program Directives	VP's of Quality Assurance and Engineering Departments and VP's of Construction and Project Management, when affected.	----------
4.	Project Test Program Directives	Senior Construction Representative, if affected, Senior QA Representative, Senior Engineering Test Representative. The above personnel shall be specifically identified in the appropriate Project Test Program Directive.	----------
5.	Company Quality Assurance and Control Manual - ASME Section III		
	Policy	President	----------
	Procedures originals, changes & revisions	Manager, QA Department	VP's of Affected Departments

(Acceptance by the Authorized Nuclear Inspector)

C

Procedural Documents	Approval	Concurrence
1. Quality Standards		
Charter (QS-5.1)	President	----------
Originals, Revisions and Changes	VP's of Affected Departments	
2. Quality Assurance Directives		
C Original, Revision, and Changes	Manager, QA Department	Div. Mgr/Ch. Eng. of affected QA Division
C All NDT QAD's	Chief Engineer, NDTD, in addition to the QA Manager	Chief Engineer, QSD
Cancellation	Manager, QA Department	Div. Mgr/Ch. Eng. of affected QA Division
C 3. Quality Control Instructions	FQC-Supt. of FQC & Manager FQCD OR PQA-District Chief & Manager PQA OR Headquarters and Operation Centers - Quality Department Management	----------
4. Calibration		
Metrology Standards	Manager, QA Department	Div. Mgr./Ch. Eng. of affected QA Div.
C Calibration Procedure	Div. Mgr./Ch. Eng. of preparing Div.	Div. Mgr./Ch. Eng. of affected QA Div.
*5. Engineering Assurance Procedures		
Originals and Revisions	Vice President, Eng. Dept.	----------
Change	Vice President, Eng. Dept. or Chief Engineer, EA	----------
Cancellations	Chief Engineer, EA	

	Procedural Documents	Approval	Concurrence	
6.	Project Manual	Project Manager	----------	C
**7.	Standard Construction Methods Procedures (CMP'S) or Project Construction Methods Procedures	Vice President, Construction Department	----------	
8.	Engineering Management Guidelines	Vice President, Engineering Department	----------	

* Reviewed by the QA Department with comments resolved prior to issue.

** Reviewed by the QA and Engineering Departments with comments resolved prior to issue. C

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STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT

QUALITY

ASSURANCE

PROGRAM

TITLE:	NUMBER:
RESPONSE TO REGULATORY GUIDANCE	APPENDIX VII
	REVISION: B
	EFFECTIVE DATE: 12/1/78

APPROVALS

N B Cleveland
V.P. QUALITY ASSURANCE

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RESPONSE TO REGULATORY GUIDANCE

Details of Stone & Webster responses to NRC Regulatory Guides and quality assurance provisions of Regulatory Guide 1.70 are as listed below. These responses are commitments to maintain compliance with listed guides except as noted in positions stated in this Appendix. B

1. Regulatory Guides

   A. Regulatory Guide 1.28, Rev. 1, dated March, 1978 (ANSI N45.2 1977) - "Quality Assurance Program Requirements" - commit to comply with Guide. B

   B. Regulatory Guide 1.30, Dated August 11, 1972 (ANSI N45.2.4 - 1972) "Quality Assurance Requirements for the Installation, Inspection and Testing of Instrumentation and Electric Equipment" - commit to comply with Guide.

   C. Stone & Webster's QA program requirements commit to comply with the quality assurance provisions of the following guides (RG 1.37, 1.38, and 1.39). S&W's response to the technical (engineering, design, and construction) provisions to the following guides (RG 1.37, 1,38, and 1.39) is given in Appendix 3A of SWESSAR or the comparable section of a utility-applicant's SAR. B

      - Regulatory Guide 1.37, dated March 16, 1973 (ANSI N45.2.1 - 1973) - "Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants."

      - Regulatory Guide 1.38, Rev. 2, dated May, 1977, (ANSI N45.2.2 - 1972) - "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants." B

      - Regulatory Guide 1.39, Rev. 2, dated September, 1977, (ANSI N45.2.3 - 1973) - "Housekeeping Requirements for Water-Cooled Nuclear Power Plants."

   D. Regulatory Guide 1.58, dated August, 1973 (ANSI N45.2.6 - 1973) - "Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel" - commit to comply with Guide.

   E. Regulatory Guide 1.64, Revision 2, dated June, 1976 (ANSI N45.2.11 - 1974) "Quality Assurance Requirements for the Design of Nuclear Power Plants" - commit to comply with Guide.

Stone & Webster's QA program requirements commits to this Regulatory Guide subject to the following alternative:

"If in an exceptional circumstance the engineer's immediate supervisor is the only technically qualified individual available, this review will be conducted by the supervisor, provided that:

B

A. The other provisions of the Regulatory Guide are satisfied and,

B. The justification is individually documented and approved in advance by the supervisor's management and,

C. Quality assurance audits cover frequency and effectiveness of use of supervisors as design verifiers to guard against abuse."

F. Regulatory Guide 1.70, Rev. 2, dated September, 1975 "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants." (Replaces RG 1.70.xx) - commit to comply with section 17 of Guide.

G. Regulatory Guide 1.74, dated February, 1974 (ANSI N45.2.10 - 1973) "Quality Assurance Terms and Definitions."

Appendix III "Glossary" has been submitted as an acceptable alternative.

B

H. Regulatory Guide 1.88, Rev. 2, dated October, 1976 (ANSI N45.2.9 - 1974) "Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records" - commit to comply with Guide.

I. Regulatory Guide 1.94, Rev. 1, dated April, 1976 (ANSI N45.2.5 - 1974) "Quality Assurance Requirements for Installation Inspection and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants."

Stone & Webster's QA program requirements commits to this Regulatory Guide subject to the following alternatives which address:

1. High strength bolting of structural steel.

2. Evaluation of Mechanical (Cadweld) Splice Test Results.

Section 5.4 High Strength Bolting

No mention is made of direct tension indicators for controlling bolt tightening and inspection for adequate tension. However, the referenced document "Specifications for Structural Joints Using ASTM A325 or A490 Bolts" of the AISC as approved by the Research Council on Riveted and Bolted Structural Joints, (RCRBSJ) dated May 8, 1974, includes these devices as a control measure for indicating bolt tension. S&W is presently using these devices (washers) and plans to continue their use.

S&W will provide quality control measures on direct tension indicators based on applicable AISC documents, and as a minimum will perform the following:

- To verify the load indicating qualities of the load indicators, at least three load indicators from each keg shall be verified in a calibration device similar to that required for wrench calibration. If nut face washers are used between the indicators and the nuts, the indicators shall be tested with washers at the rate of three washers from each keg. Each verification test shall show not less than the specified gap when the bolt is tightened to specified tension.

- Load indicator washers shall be installed in accordance with the manufacturer's instructions. When a load indicator is required under the nut a special nut face washer shall be fitted between the indicator and the nut.

- Bolted joints made with load indicators shall be inspected visually to ensure that all bolts have the load indicators properly installed and to the proper gap. At least 20 percent of the bolts in each connection but not less than two bolts shall be checked with a feeler gage to determine the bolts are properly tightened.

- Direct tension indicators used with bolts that have been tightened to the full extent specified in Table 3 of AISC specification S314-5/75, "Structural Joints Using ASTM A325 or A490 Bolts", May 8, 1974 shall not be reused.

Section 5.4, second paragraph, Item 1 of the standard requires that:"Bolts are the correct length as indicated by at least two threads extending beyond the nut." This provision exceeds the requirements contained in present and past issues of the RCRBSJ Specification which requires "full thread engagement." This term is then defined: "Full thread engagement is deemed to have been met when the end of the bolt is flush with the face of the nut." S&W proposes the alternative to the requirement for "at least two threads extending beyond the nut" by use of the industry practice of bolts flush with the face of the nut.

Section 6.2.2 Evaluation of Mechanical (Cadweld) Splice Test Results

Cadweld splices are conducted over long periods of time by single crews when considered on the basis of bar size, position, and crew make up. Since problems discovered are potentially generic, we will examine output on the following basis.

For tests failing the second criteria of 2 in 6, S&W will consider that the failure rate pertains to the total output of all splicers and evaluate the previous 100 splices accordingly. Our specifications will be reworded to reflect this clarification.

B

J. Regulatory Guide 1.116, Rev. O-R, dated June 1976 (ANSI-N45.2.8 - 1975), "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems " - commit to comply with Guide.

K. Regulatory Guide 1.123, Rev. 1, dated July 1977 (ANSI N45.2. 13 - 1976) "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants" - commit to comply with Guide, subject to the following alternative:

Certain standard catalog or non-engineered items may be processed without seller pre-qualification. This alternative method is described in Section 7, Paragraphs 1.4.1, 1.4.2, 1.4.3, and 3.1.2 of this program.

2. Additional Guidance

A. ANSI N45.2.12, Draft 3, Revision 4, February 22, 1974 "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants" - commit to comply with standard. Stone & Webster's QA program requirements commits to this Draft Standard subject to the following alternative which addresses:

1. The requirement to conduct an annual audit of approved sellers as stated in paragraph 3.4.2 of ANSI N45.2.12, Draft 3, Revision 4.

2. Audit Conferences.

Annual Audits

To assure that a seller has established and is maintaining an acceptable quality assurance program, Stone & Webster performs the following actions to evaluate the sellers:

An initial audit of the implementation of the seller's quality assurance program is conducted to determine its acceptability. If the program is accepted, the seller is included in the Stone & Webster Quality Rating List.

A formal evaluation of the seller's quality assurance program is performed annually to determine if reaudit is required for the following year. Included in this evaluation is a review of:

- Prior quality program audits
- Seller surveillance activities
- Nature and frequency of hardware UNSATS and nonconformances
- Results of audits from other sources (i.e., Client, CASE, ASME, NRC, etc.) when available
- Significant changes in the seller's quality assurance program
- Seller's responsiveness and cooperation in resolving questions or problems related to quality assurance

The final evaluation, which is documented and approved by responsible management will determine if the seller's quality assurance program requires reaudit.

A reaudit of the seller will, in all instances, be conducted at three year intervals from the previous quality assurance program audit.

Audit Conferences

Pre and post audit conferences may be fulfilled by a variety of communications such as telephone conversation, see Appendix III.