17.1 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

INTRODUCTION

There are four principal participants in WNP-2 design and construction quality programs. They are the Owner, Washington Public Power Supply System; the Architect Engineer (AE), Burns and Roe, Inc.; the Nuclear Steam Supply System (NSSS) Supplier, General Electric Company; and the Construction Manager (CM), Bechtel Power Corporation.

- The Supply System, as the Owner and licensee, has overall responsibility for assuring that the plant is designed and constructed in accord with approved QA programs. The Supply System WNP-2 Project QA organization provides management overview of the other elements of the site QA programs. Section 17.1.1 describes the Supply System WNP-2 Quality Assurance Program.
- Burns and Roe, Inc. provides Architect Engineer and related services for WNP-2. Section 17.1.2 describes the Burns and Roe Quality Assurance Program.
- The General Electric Company provides NSSS design, fabrication, and erection/construction services for WNP-2. Section 17.1.3 describes the GE Quality Assurance Program.
- The Bechtel Power Corporation provides construction management services for WNP-2. This service consists primarily of direction and coordination of site contractor activities and includes related QA/QC services. Section 17.1.4 describes the Bechtel Quality Assurance Program.

17.1.1 WASHINGTON PUBLIC POWER SUPPLY SYSTEM QUALITY ASSURANCE PROGRAM

INTRODUCTION

The Washington Public Power Supply System (Supply System or WPPSS) has implemented a Quality Assurance Program (QA Program) for the design, procurement, and construction of WPPSS Nuclear Project No. 2 (WNP-2). This QA Program has been implemented in accordance with requirements of Appendix B to 10CFR50. The applicable requirements of Appendix B, 10CFR50 are applied to those items classified as WPPSS Quality Class I due to their relationship to a nuclear safety function.

As the license applicant, the Supply System is responsible for the plant. Therefore, the Supply System WNP-2 QA Program and its implementation has been structured to assure that design, procurement, and construction activities are accomplished in accordance with sound engineering principles and practices. Systems, components, and structures that are safety-related, in the context of 10CFR20, 10CFR50, and 10CFR100, are required to be designed, specified, fabricated, installed, and tested in accordance with applicable regulatory requirements, codes, standards, specifications, and procedures.

The description of the Supply System WNP-2 Design and Construction QA Program which follows is of the program as it currently exists. This program evolved from the original quality program which first appeared in Appendix D.0 of the PSAR. The changes involved in this evolution process include: NRC requested changes; updates in organization responsibilities and authorities; and the incorporation of new requirements.

17.1.1.1 ORGANIZATION

The Supply System Managing Director is responsible to the Board of Directors for the overall management of Supply System activities, including the establishment and implementation of policies. The Managing Director resolves issues involving quality brought to his attention because of failure to reach resolution at lower levels of management. Overall Supply System organization is shown on Figure 17.1.1-1.

The Quality Assurance Director is responsible and accountable to the Managing Director to develop, administer, and assess the implementation of the Supply System Corporate Quality Assurance Program. Included in this responsibility are auditing functions performed on the Supply System WNP-2 quality affecting activities; audits, surveillance or surveys of suppliers of material, equipment, or services for the WNP-2 Project. The Quality Assurance Director has stop work authority. He provides for the review of the status and adequacy of the WNP-2 QA Program on an annual basis.

The Director of Nuclear Safety is responsible and accountable to the Managing Director to develop and administer Licensing, Operational Nuclear Safety, and Design and Nuclear Safety Assessment activities in support of the Project.

The WNP-2 Program Director, as shown on the WNP-2 Project Organizational Chart, Figure 17.1.1-2, has overall responsibility and authority for all WNP-2 Project activities. He resolves WNP-2 issues involving quality brought to his attention because of failure to reach resolution at lower levels of WNP-2 management. He is assisted by the Project Manager, the Plant Manager, and the Project Quality Assurance Manager.

The Supply System Project Manager is responsible for WNP-2 design and construction and provides direction for Construction Manager (Bechtel) and the Architect-Engineer (Burns & Roe) activities, as shown on the Organizational Chart, Figure 17.1.1-3. The Architect-Engineer and Construction Manager Organizations are shown on Figures 17.1.1-4 and 17.1.1-5, respectively.

FIGURE 17.1.1-1

SUPPLY SYSTEM ORGANIZATION CHART

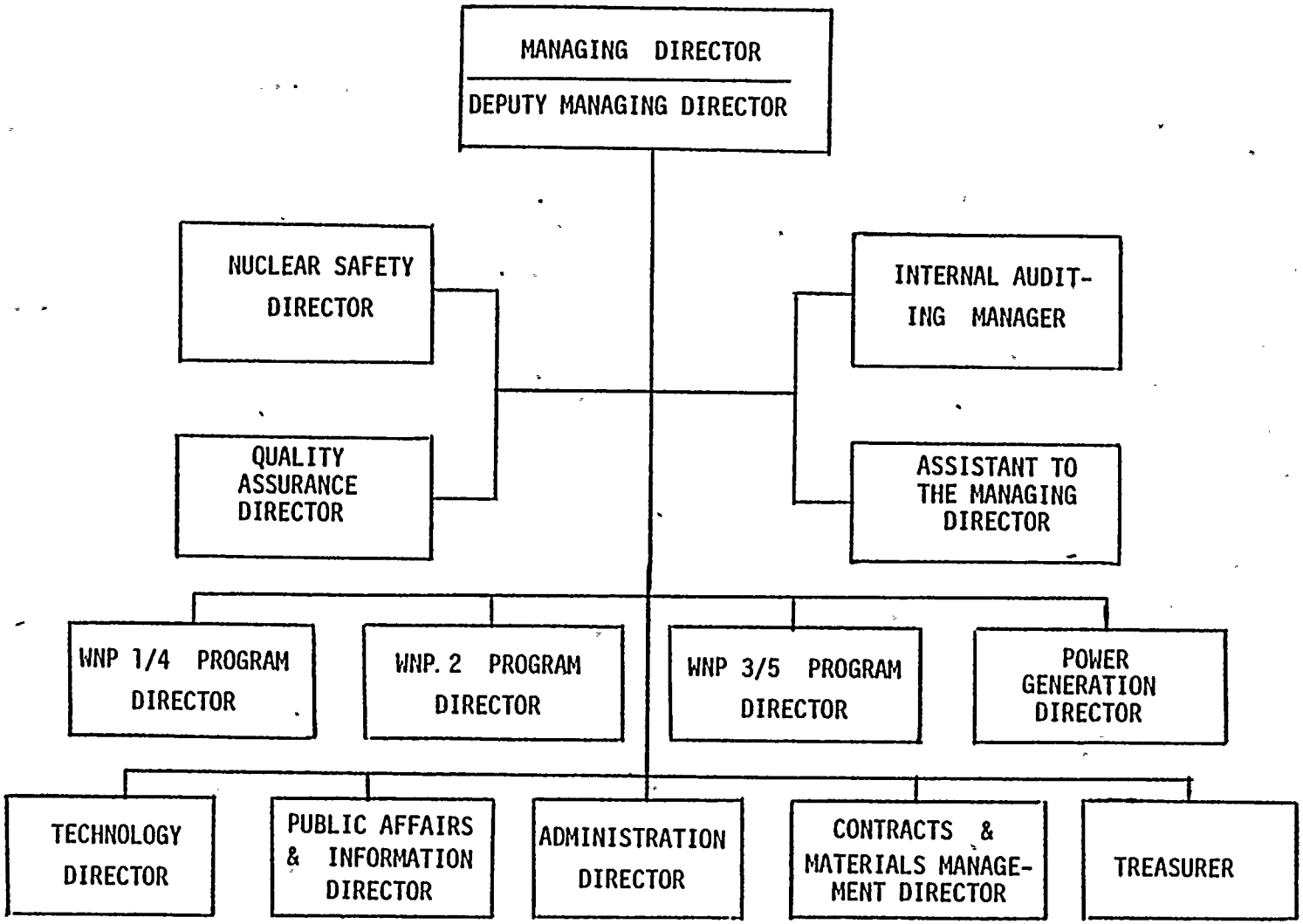
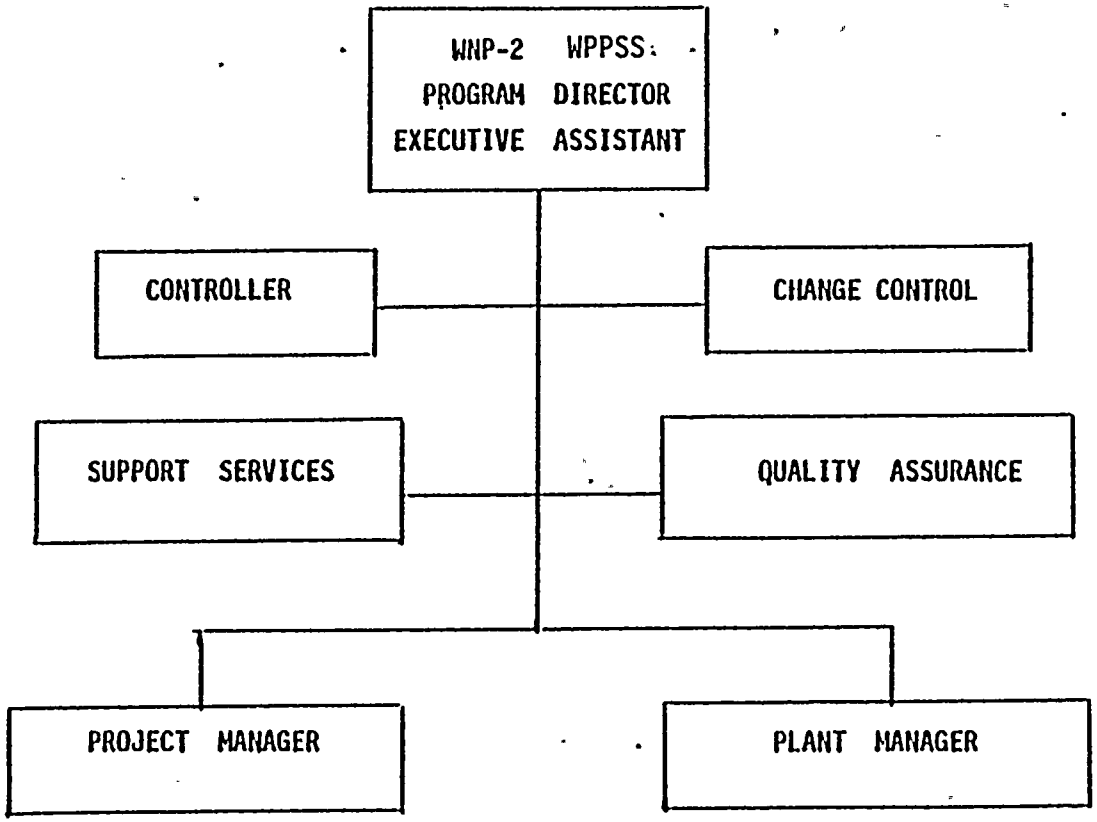
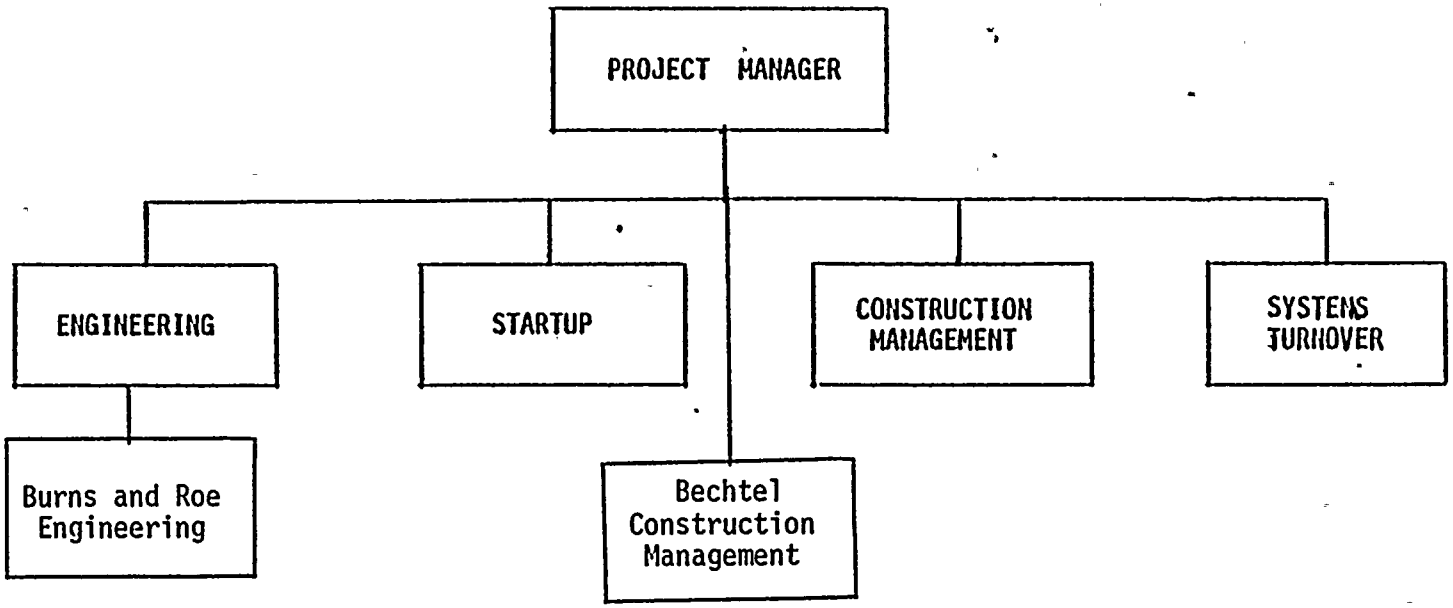


FIGURE 17.1.1-2 SUPPLY SYSTEM WNP-2 ORGANIZATION CHART



SUPPLY SYSTEM

FIGURE 17.1.1-3 WNP-2 PROJECT MANAGEMENT ORGANIZATION CHART



BURNS AND ROE, INC.

WNP-2 ORGANIZATION CHART

FIGURE 17.1.1-4

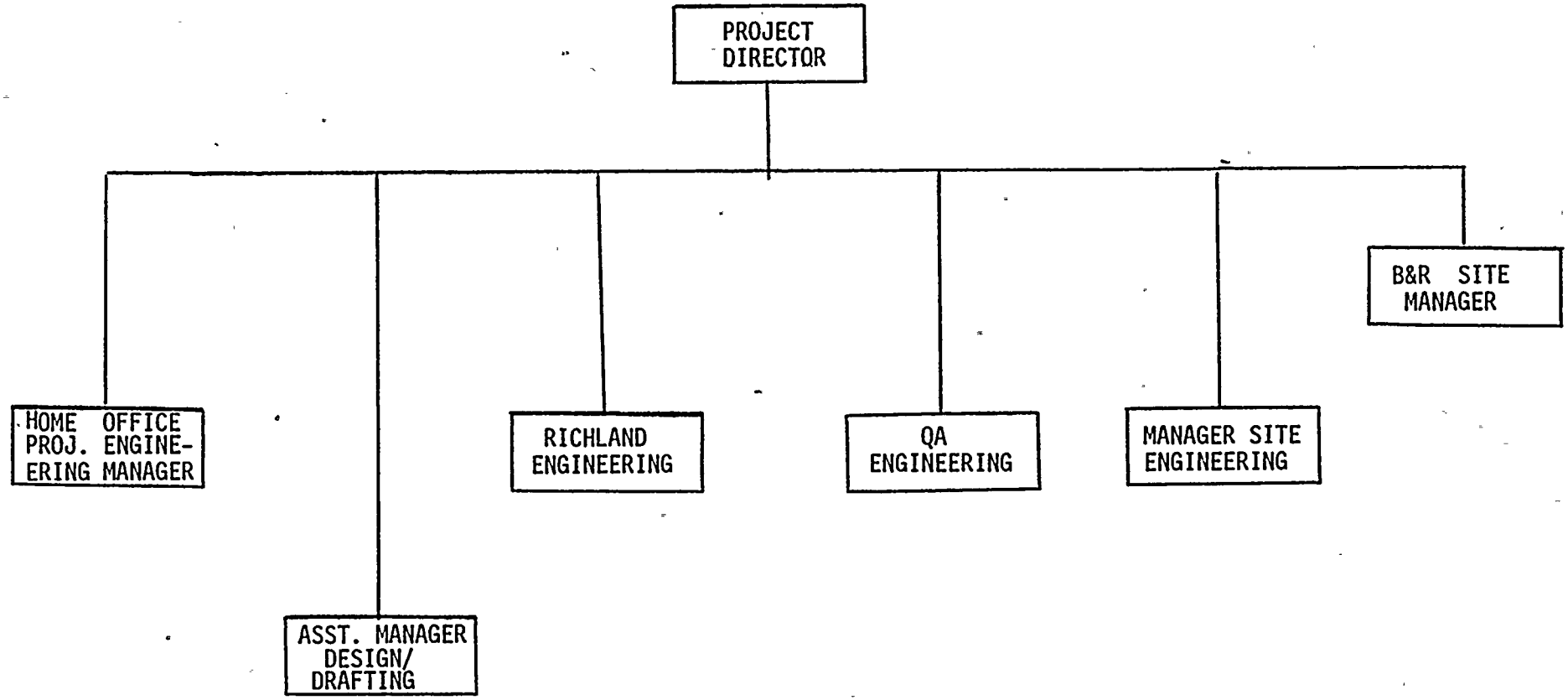
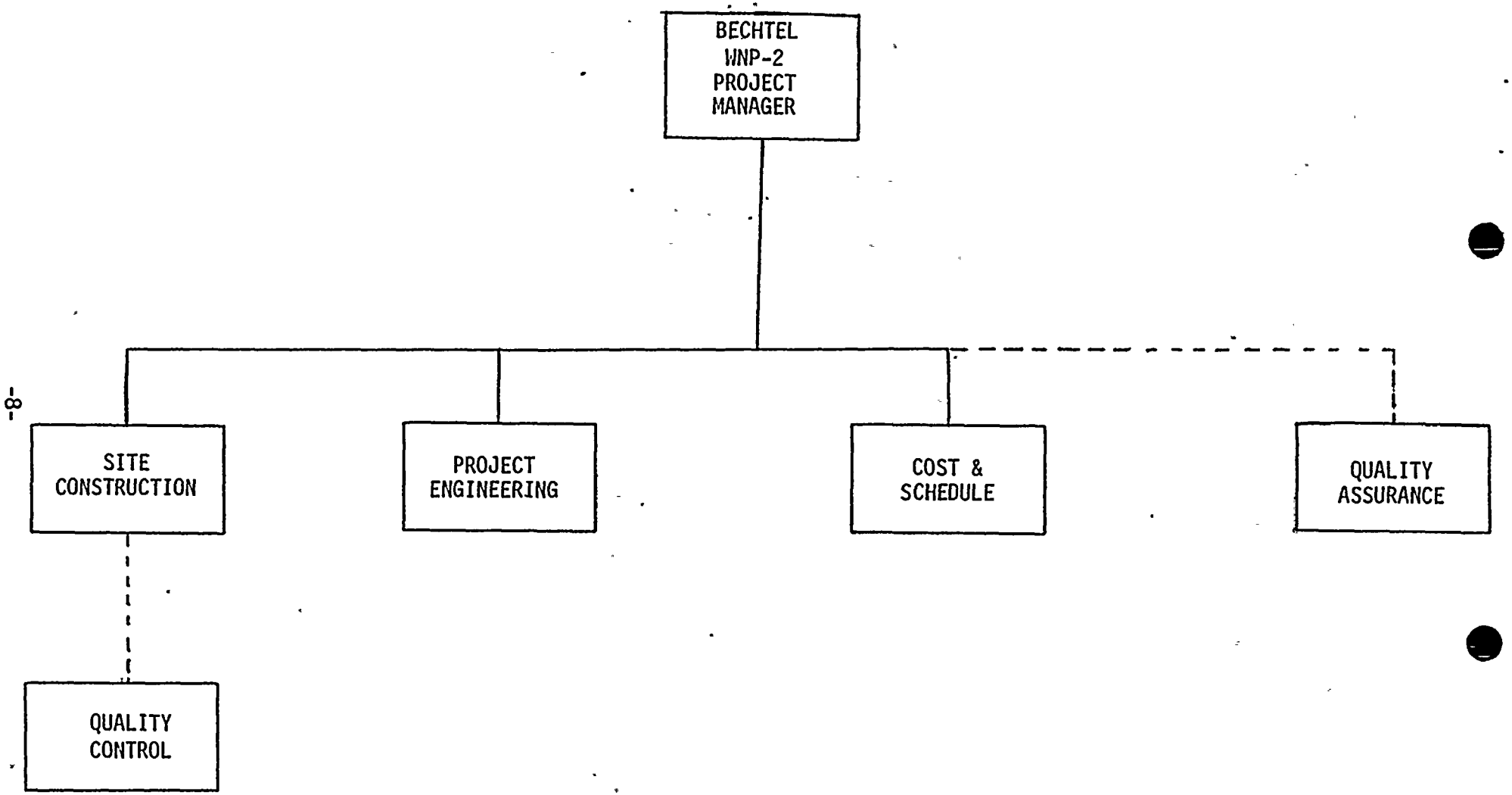


FIGURE 17.1.1-5 BECHTEL WNP-2 ORGANIZATION CHART



Legend:

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The manager of each WNP-2 department or organization, as well as the manager of each Supply System home office support organization, is responsible for:

- Identifying those activities within his organization which are quality related.
- Establishing and clearly defining the duties and responsibilities of personnel within his organization who execute those quality related activities.
- Assuring that quality related activities are accomplished by qualified personnel in accordance with approved procedures, as required.

The principal WNP-2 project organizations are shown on Figures 17.1.1-2 and 17.1.1-3. A listing of the primary quality related functions follows:

Engineering - The Deputy Project Manager for Engineering is accountable to the Project Manager and is responsible for:

- Identifying all engineering requirements required to accomplish project requirements and goals.
- Establishing organizations to acquire and allocate resources for implementation of engineering functions in accordance with an integrated project schedule.
- Coordinating and controlling engineering performance to the project schedule.
- Providing technical support/evaluation services to QA.

- Assuring adequacy and engineering document compliance to technical commitments.
- Supporting project licensing activities.
- Coordinating with Deputy Project Managers for Construction and startup and Project Department Managers as required to meet project goals.

Construction - The Deputy Project Manager-Construction is accountable to the Project Manager and is responsible for the Supply System Construction Management activities. The Supply System Construction Management group will monitor or conduct management surveillance of the Construction Management Contractor and Site Contractors to:

- Evaluate the Construction Management Contractor and Site Contractor performance, and Construction Management Contractor performance reporting systems.
- Ensure that the Construction Management Contractor Quality Program is effectively implemented.
- Ensure that an adequate construction safety program is maintained.
- Expedite delivery of Supply System furnished equipment and material.
- Concur with and monitor the Construction Contractor integrated schedule for compliance to milestones and overall project schedule.
- Direct the activities of the Construction Management Contractor, when required.

Startup - The Deputy Project Manager for Startup is accountable to the Project Manager and is responsible for:

- Managing the activities of test groups during the testing phase of the project.

- The development, monitoring, analysis, and approval of plans, schedules, and procedures for testing plant systems and components.
- Coordinating with Deputy Project Managers, Construction, and Engineering on the identification and solution of startup problems requiring Engineering and/or Construction resolution.
- Serving as a member of the Plant Operations Committee (POC) for all matters related to the Plant Test Program.
- Implementing a safe, efficient, and adequate test program in accordance with the requirements of the Test and Startup Program Manual.
- Preparing and approving Test and Startup instructions.

Startup activities are conducted in accordance with the Operational Quality Assurance Program, topical report WPPSS-QA-004, as referenced in Chapter 17.2.

Systems Turnover - The Deputy Project Manager for Systems Turnover is accountable to the Project Manager and is responsible for:

- Managing special activities to expedite completion of the WNP-2 Project.
- Providing support to expedite resolution of outstanding concerns/problems.
- Performing reverification/review of prior work, as required.
- Performing evaluations to assure the adequacy of management systems used to control continuing work.

Quality Assurance - The WNP-2 Project Quality Assurance Manager is accountable to the Program Director and is responsible for:

- Administration of the Quality Assurance Department to develop and verify site implementation of the WNP-2 Project Quality Assurance Program.
- Interfacing with Engineering to determine whether a nonconforming condition, existing on any safety-related activity, is reportable under the requirements of 10CFR50.55(e) or 10CFR21.
- Representing Quality Assurance during NRC audits, inspections, meetings, and presentations.
- Reviewing Project audit reports, nonconformances, and corrective actions to determine trends that may be detrimental to quality.
- Requiring stop work on those activities that do not conform to the requirements of the Quality Assurance Program.
- Auditing, surveilling, and evaluating the adequacy of the Architect Engineer's, the NSSS Contractor's, and Construction Management Contractor's Quality Assurance Programs, and the adequacy of the implementation of these programs.
- Providing for evaluation of the adequacy of Supply System home office quality related activities which support the WNP-2 Project.
- Performing audits and surveillance of Construction Management Contractor and Burns & Roe Engineering to assure that activities affecting quality are performed in accordance with the requirements specified in the contract documents.
- Assuring identification of nonconformances and that

steps are taken to stop the nonconforming activity, to assure the nonconformance is documented, and that resolution is implemented in a timely and effective manner.

- Administration and implementation of the Operational Quality Assurance Program during the test and start up phase, prior to issuance of operation license.

17.1.1.2 QUALITY ASSURANCE PROGRAM

Washington Public Power Supply System has established and implemented a Quality Assurance Program for the design, procurement, and construction phase of the WNP-2 facility. The QA Program is based on the assignment of quality classifications which impose applicable quality requirements to structures, systems, and components.

The WPPSS Quality Assurance Program and the supporting procedures and instructions comply with the requirements of Appendix B to 10CFR Part 50 "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" and applicable Regulatory Guides as specified in Appendix C.3 of the FSAR.

The Supply System's design and construction activities at WNP-2 are performed in accordance with the policies established by the WPPSS QA Program Manual for Design and Construction.

The WNP-2 Project Management Instructions (PMI) Manual delineates the responsibilities of and interfaces between project organizations. Each project organization is responsible for developing and using implementing procedures/instructions for their assigned functions.

Quality Assurance Instructions, Project Procurement Manuals, and other procedures or instructions pertinent to specific departmental functions describe the measures used to implement the provisions of the programs.

The Supply System Quality Assurance Manager assigned to the WNP-2 Project is responsible for establishing and administering the WNP-2 Quality Assurance policies, goals, and objectives of the Quality Assurance Program and verifying adequate implementation.

The WNP-2 Quality Assurance personnel have the authority and responsibility to perform the necessary actions, including provisions for stop work authority, to accomplish their assignments.

To assure that WNP-2 Project personnel who perform quality related activities are cognizant of the quality requirements, they are provided training and indoctrination as prescribed by the Project Training Program. The initial indoctrination includes discussions as to the purpose of applicable codes and standards and familiarization with Appendix B, 10CFR Parts 50, 50.55(e), and 10CFR Part 21. The training phase includes instructions on the Project QA policies and instructions on specific quality activities directly related to individual job functions. Personnel whose activities require specific qualifications such as nondestructive testing, audit, inspection, and testing are suitably evaluated, trained as appropriate, and certified.

Training sessions are on ongoing activity and are appropriately documented. Nondestructive test, audit, test, and inspection personnel qualification records are maintained.

The WNP-2 Quality Assurance Program is audited on a regular basis by the Home Office Supply System Audit Section.

Contractors who perform safety related work include the Architect-Engineer, NSSS Supplier, and Construction Manager. These contractors are required to establish and implement QA Programs consistent with the applicable requirements of 10CFR Part 50, Appendix B. These programs are reviewed for adequacy by WNP-2 Project personnel. The Architect-Engineer, NSSS Supplier, and Construction Management Contractor quality related functions are controlled in accordance with the programs described in Section 17.1.2, 17.1.3, and 17.1.4, respectively.

17.1.1.3 DESIGN CONTROL

Burns and Roe, as Architect Engineer, is responsible for specifying the overall design of the project, except that General Electric is responsible for design of the NSSS System. Design by other Project Organizations (contractors) is performed in accordance with an approved QA Program. The details of the Burns and Roe and GE WNP-2 QA Programs are described in Sections 17.1.2 and 17.1.3 herein, respectively.

Design control is performed by project organizations in accordance with approved procedures and/or instructions.

Design input, such as design bases, performance requirements, regulatory requirements, appropriate quality standards, and industry codes and standards are properly identified, documented, and translated into design documents, such as drawings and specifications.

Procedures describe the controls established for the review, approval, release, distribution, and revision of design documents involving design interfaces.

Changes in design, including field changes, and the reason for changes, are documented, controlled, and reviewed in accordance with measures commensurate with those applied to the original activity.

17.1.1.4 PROCUREMENT DOCUMENT CONTROL

Procurement of material, equipment, and services for the Project is accomplished through procurement specifications, contracts, or purchase orders which are prepared, reviewed, and approved by cognizant personnel. Procedures require that procurement documents incorporate the applicable quality assurance, regulatory code, and design requirements. The procurement documents require that bidders submit a Quality Assurance Program or plan describing their policies, procedures, and systems to be utilized in the control of quality throughout the applicable phases of production, from design to final shipment, erection, or installation.

Procurement documents provide requirements for suppliers to submit or make available for review applicable documents such as drawings, specifications, procedures, instructions, inspection and test records, and quality assurance records to the Project for review and/or approval.

Procurement documents require suppliers to provide measures for retention, control, and maintenance of their Quality Assurance records. Procurement documents specify the appropriate records to be delivered to the Project prior to or with delivery.

Procurement documents require suppliers to provide right of access to their facilities, procedures, and records for inspection and audit by Project personnel. Procurement documents issued after January 1978 require the supplier to establish measures for reporting 10CFR Part 21 reportable deficiencies and disposition of nonconformances from procurement document

requirements. Procurement documents require that the supplier retain the responsibility for monitoring and evaluating their subtier suppliers' performance to specified requirements. Procurement documents for spare or replacement items are subject to requirements equivalent to those established for the original procurement.

Changes and revisions to procurement documents are subject to the same or equivalent review/approval requirements as the original document.

17.1.1.5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Activities affecting quality are described in procedures, instructions, and drawings and the activities are conducted in accordance with these documents.

Procedures, instructions, and drawings include adequate quantitative and qualitative acceptance criteria to ascertain that the prescribed activities have been satisfactorily accomplished.

Procedures, instructions, and drawings are subject to review to assure that applicable codes, standards, and acceptance/rejection criteria are included.

17.1.1.6 DOCUMENT CONTROL

A document control system is implemented by the Project. The requirements assure that documents, including changes, are reviewed, approved and released in a timely manner to the locations where the activity is being performed. The Project prepares procedures, instructions, and drawings as necessary to assure that activities such as design, procurement, manufacturing, construction and installation, testing, inspection, auditing, calibration, and special processes are adequately prescribed and the necessary quality requirements are stated. Changes to these documents require review and/or approval commensurate to that performed on the original document.

Contractors/subcontractors involved in activities affecting quality are required to establish measures for document control which satisfy project requirements.

Changes to specifications and drawings require approval of the cognizant Engineering personnel. As required by Procurement Documents, changes to supplier and contractor drawings and procedures are reviewed and approved by the Project Organization. Changes to documents such as specifications and drawings are indicated by a revision, change order, or equivalent documented methods.

Project drawings and specifications, supplier and contractor drawings, current revisions, addenda, changes in design and engineering change notices are released in a controlled manner.

To preclude the inadvertent use of obsolete or superseded documents, a Project drawing/specification status report is periodically issued. These reports indicate the current revision to Architect-Engineer drawings and specifications and related changes, addenda, and design and engineering change notices. Site contractors are required to establish measures to assure that obsolete or superseded documents are controlled to prevent their inadvertent use.

17.1.1.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

Prior to award of contract, Quality Assurance, Engineering, and other personnel, as required, perform an evaluation of accepted bids to determine the supplier's capability to meet procurement requirements. The evaluation may consist of a direct survey of the prospective supplier's facility and personnel or, a review and evaluation of the implementation of his quality assurance program, or evaluation of the supplier's history of providing satisfactory products to the project, or evaluation of the supplier's current records supported by objective evidence.

Surveillance of suppliers, as required, during fabrication, inspection, testing, and shipment of materials, equipment, and components is performed to provide assurance that material, equipment, and services conform to procurement document requirements. Surveillances are conducted by qualified personnel in accordance with established plans and to procedures that identify the attributes or processes to be witnessed and/or verified and the acceptance criteria. Those items which are simple and standard in design, manufacture, and test, or where quality characteristics can be verified by standard inspections or tests after delivery, are accepted during receiving inspection with no source surveillance. Receiving inspection is performed in accordance with written procedures or instructions.

Measures are established to provide for delivery of documentation from the supplier to the site, prior to or with delivery. These documents provide objective evidence:

- That the items conform to the procurement quality requirements such as specifications, codes, and standards.
- That the required tests, examinations, and inspections have been performed.
- That nonconformances have been dispositioned as required.

17.1.1.8 IDENTIFICATION AND CONTROL OF MATERIAL, PARTS, AND COMPONENTS

Measures are established to identify and control materials, parts, and components including partially completed subassemblies. Requirements for identification and traceability are determined during initiation of design documents and are specified in procurement specifications and on drawings.

These measures require that items important to the safety of the Project are identified in a manner (i.e., heat/lot number, part number, serial number, etc.) that can be traced to the appropriate documentation, or group of documents, such as drawings, specifications, purchase orders, material certifications, etc. The identification is maintained and verified, as required, throughout fabrication, installation and use of the item.

Implementation of these measures are accomplished by the responsible contractors in accordance with approved procedures.

Verification that items are properly identified is performed during vendor surveillance and receiving inspection activities.

During receipt inspection material, parts, and components are identified as acceptable or unacceptable. Where practicable, unacceptable items are physically segregated from acceptable items. Items identified as unacceptable may be released for installation provided the following conditions are met.

- Traceability and identification is maintained.
- The item can be brought to an acceptable condition without damage to associated equipment or structures.
- Controls are established to assure retrievability and, when applicable, limit the use of the item.

17.1.1.9 CONTROL OF SPECIAL PROCESSES

Measures are established for the procedural control of special processes that require interim in-process controls in addition to final inspection and/or examination to assure achievement of required quality. Examples of these processes are coating/plating, heat treating, welding material cleaning and nondestructive testing (NDT).

Special processes are controlled and are perfomed by qualified personnel using procedures and equipment qualified in accordance with applicable codes, standards, and specifications. Special processes are delineated in the procurement documents which require that the applicable contractors submit procedures for review and approval.

Procurement documents require that qualification of procedures, personnel, and equipment involved with special processes be established, kept current, and maintained on file.

17.1.1.10 INSPECTION

Measures are established to assure that an inspection program is planned and scheduled.

Equipment manufacturers, installers, and constructors are required by procurement documents to perform the inspection necessary to verify that items conform to established criteria. Procurement documents also require that inspection activities are performed in accordance with documented instructions, procedures, and drawings, as applicable.

Measures are implemented to assure that inspections and/or tests are performed on work operations as necessary to verify quality, that personnel performing inspections are independent of the individual or group performing the activity being inspected and are qualified to the requirements of the applicable codes, standards, and company programs. Records of certification of qualification are maintained in a current status. Inspection planning provides measures to identify mandatory inspection hold points for contractor inspection personnel. Where appropriate, procedures, instructions, and checklists used in performing inspections, include as a minimum:

- Identification of characteristics and activities to be inspected.
- Identification of the individuals or groups responsible for inspection.
- Acceptance/rejection criteria.
- Inspection method.
- Inspection reports attesting to the completion of inspection and the identity of the inspector or data recorded.

The inspection program provides that modification, repairs, and replacements are inspected in accordance with the original design and inspection requirements or acceptable alternatives.

Construction inspection, and receiving inspection at the Project Site is performed by Construction Management Contractor Quality Control and/or installing contractor Quality Control personnel for those activities within the scope of their responsibility. Construction Management Contractor Quality Control personnel perform receiving inspection functions on project supplied material, parts and components. Construction Management Quality Assurance personnel perform surveillance/audit functions on these activities to assure compliance with project requirements.

The Supply System Project Quality Assurance performs surveillance/ audit functions on the preceding activities.

17.1.1.11 TEST CONTROL

A test program is established to specify the requirements and to provide for identification of the testing necessary to demonstrate that structures, systems, and components perform satisfactorily in service.

Testing as addressed in this section pertains to tests performed on prepurchased equipment and materials and, tests performed by the contractors on installed equipment, components, structures, and systems.

The necessary testing requirements are specified in written procedures which incorporate or reference the acceptance limits contained in design and procurement documents and provide that:

- Calibrated test instrumentation and equipment is available.
- Tests are performed under suitable environmental conditions with adequate test methods.
- Tests are conducted by appropriately trained and qualified personnel.
- Items which are modified, repaired, and replaced are tested in accordance with the same requirements which were applied to the original items or an approved alternate.
- Test results are documented and evaluated to assure that test requirements have been satisfied.

17.1.1.12 CONTROL OF MEASURING AND TEST EQUIPMENT

Measures are established to assure that tools, guages, instruments, and other measuring and testing devices are identified, controlled, adjusted, and calibrated at intervals necessary to maintain accuracy within specified limits.

Suppliers and site contractors whose activities are quality affecting are required to implement control of measuring and test equipment in accordance with approved procedures. These procedures contain provisions that:

- Devices are adjusted and calibrated at prescribed intervals against certified standards having valid relationships to nationally recognized standards, or, if no national standard exists, the basis for calibration is documented.
- Measuring and test equipment is calibrated at specific intervals based on the required accuracy, purpose, extent of use, stability characteristics, and other conditions affecting measurement control.
- Measuring and test equipment is calibrated against reference standards. Records are maintained and equipment adequately identified to indicate calibration status and usage.

- When measuring and test equipment is found to be out of calibration, written procedures describe provisions for documenting and evaluating the validity of previous inspections and tests and, for repeating the original inspection or test using calibrated equipment where necessary to establish acceptability of suspect items.
- Supplier and contractor procedures are reviewed and approved prior to starting work.

17.1.1.13 HANDLING, STORAGE, AND SHIPPING

Measures are established to control the handling, storage, shipping, cleaning, and preservation of material and equipment to prevent damage or deterioration. Appropriate procedures are prepared in accordance with design specification requirements and manufacturer's instructions to provide for special handling, storage, maintenance, cleaning, and preservation. These activities are accomplished in accordance with approved procedures or instructions.

Where required, procedures address requirements for special protective environments such as inert gas atmosphere, moisure content levels, and temperature levels and require that:

- Procurement documents establish requirements for handling, shipping, storage, preservation, and maintenance.
- Items are stored in accordance with their classifications as delineated in Project instructions.
- Storage areas are monitored to assure that the required storage integrity is maintained.

17.1.1.14 INSPECTION, TEST, AND OPERATING STATUS

Measures are established to indicate that inspections and tests performed on structures, systems, and components are known throughout fabrication, installation, and test. Indicators such as tags, stamps, labels, travelers, or other suitable means are utilized to indicate the status of the item. Where required, structures, systems, and components such as valves, switches, electrical, and rotating equipment are tagged or locked out to prevent inadvertant use.

Project Organizations and contractors involved in inspection, test, and operation of equipment, components, and systems are required to prepare and implement procedures for the control of these items and activities. Procedures include requirements that specified inspections and tests are performed, that application and removal of status indicators are controlled, that bypassing of quality affecting tests and inspections are controlled, and that systems containing inoperative, malfunctioning or nonconforming items, structures, or components are identified and controlled to prevent inadvertant operation.

17.1.1.15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

Measures are established for the control of material, parts, components, or services that do not conform to specified requirements.

To prevent inadvertent use or installation, the Quality Assurance Programs of the Project Organization, site contractors, subcontractors, and suppliers establish control for identification, documentation, segregation, review, disposition, and notification to affected organizations of non-conforming materials, parts, components, or services.

Written procedures contain provisions:

- For the handling, processing, and dispositioning of nonconforming materials, parts, components, or services.
- For the identity of the individuals or groups with the authority and responsibility for the review, disposition and approval of nonconforming items.
- That nonconforming items are identified as such, by the appropriate status indicator and are physically segregated where practical from acceptable items until dispositioned.
- That rework or repair of nonconforming items be subject to the same, or an equal test or inspection as was originally imposed, or an approved alternate, and the inspection, testing, rework and/or repair activities are documented.
- That nonconformance resports are reviewed for potential 10CFR50.55(e) and Part 21 reportability.
- For identification and control of conditional released items.

- That measures are established in procurement documents to require off site vendors and suppliers to include their nonconformance reports, which deviate from procurement documents, as a part of their Quality Assurance records.
- That site contractors and subcontractors document deviations from contract requirements, and nonconformances dispositioned "use-as-is" or "repair" are submitted to the project for review and/or concurrence.

Construction Management Contractor Quality Assurance is responsible for the review of these nonconformance reports to ascertain that they have been dispositioned, approved, and closed out.

Reviews include trend studies, corrective action adequacy, and reporting to appropriate levels of management.

The Architect-Engineer is responsible to provide acceptance of disposition, or when applicable, provides disposition of nonconformances.

17.1.1.16 CORRECTIVE ACTION

Measures are established to provide for the prompt identification, evaluation, and correction of conditions adverse to quality such as nonconformances, failures, malfunctions, deficiencies, deviations, defective material, and equipment.

The Quality Assurance programs for the project organization, off-site vendors and suppliers, on-site contractors and subcontractors are required to establish provisions:

- That corrective action is implemented in accordance with procedures.
- That corrective action for significant conditions adverse to quality identify the cause and include actions to preclude recurrence.
- That follow-up is performed to verify implementation and close out of corrective action.
- That for significant conditions adverse to quality, the cause and the corrective action taken are reported to cognizant management levels.

- That Corrective Action Reports are reviewed for potential 10CFR50.55(e) and Part 21 reportability.

17.1.1.17 QUALITY ASSURANCE RECORDS

Measures are established to assure that suffic
to provide documentary evidence of the quality
affecting quality.

Quality Assurance records include:

- Test logs.
- Results of reviews of inspection, tests,
  analysis.
- Surveillance and audit documents.
- Qualification of personnel, procedures, a
- Drawings, as-built drawings, and specific
- Procurement documents.
- Calibration procedures and reports.
- Nonconformance and corrective action repor

Inspection and test records contain as applicable:

- Type of inspection, test, or examination.
- Identity of inspector or data recorded.
- Date and results of inspection/test.
- Acceptability.
- Action taken relative to deficienies noted.
- Identification with the applicable item or a

Suppliers, vendors, and contractors are required to furnish Quality Assurance records prior to or on delivery of equipment, supplies, structures, or systems, or retain them if required by contractual agreement.

Procedures are established and contain provisions for the identification of individuals or groups responsible for record transmittals, retention, and maintenance, and provisions for assuring that records are identifiable and retrievable.

Record storage facilities are constructed, located, and secured to prevent destruction by fire, flooding, theft, and deterioration by extremes in temperature and humidity.

17.1.1.18 AUDITS

Measures are established to provide a system for conducting audits to verify compliance with all aspects of the Quality Assurance Program and to determine the effectiveness of the program.

The Project Organizations and principal contractors have established and implemented an audit system. The system assures that the necessary audit functions are performed to pre-established written procedures or checklists, in a planned and systematic manner, and are conducted by trained and qualified personnel who do not have direct responsibility in the areas being audited.

The audit system provides for external audits to be performed, as appropriate, by the Home Office, Project Organization, and principal contractors on their suppliers, vendors, and contractors, and internal audits to be performed within each organization.

Audits are planned and scheduled on the basis of the status and safety importance of the activities being performed. They are initiated early enough and performed at regular intervals to assure the quality assurance program is effectively implemented during design, procurement, manufacture, construction, and installation.

Audits are documented and reviewed with the level of management responsible for the area audited and, where required, follow-up action including re-audit of the deficient areas is performed.

Audit data is evaluated and the results are reported to management for review and assessment.

The Supply System WNP-2 quality affecting activities are audited on a scheduled basis by the Supply System home office audit group.

17.1.2 The Burns and Roe, Inc., Quality Assurance Program

17.1.2.1 Introduction

The Burns and Roe, Inc. (B&R) Quality Assurance Program for the Washington Public Power Supply System (WPPSS) Nuclear Project No. 2 (WNP-2) has evolved during the design and construction of WNP-2. The original B&R Quality Assurance Program (QAP) was described in the Atomic Energy Commission accepted Preliminary Safety Analysis Report (PSAR) for WNP-2, Appendix D.O. This QAP was implemented until February, 1978, when WPPSS assumed responsibility for Construction Management, Site Quality Assurance and Vendor Surveillance of selected prepurchased equipment contracts. The B&R Quality Assurance Program implemented during this phase of the WNP-2 PSAR Deviation Request No. 15 WP. In this phase, B&R was responsible for the Architect-Engineer scope of the engineering and design of WNP-2 and provided experienced Quality Assurance personnel to carry out the Supply System's assumed responsibilities. On June 1, 1981 B&R will implement their Quality Assurance Topical Report, B&ROE-COM4-1-NP-2A, approved by the Nuclear Regulatory Commission, with documented exceptions for the B&R Engineering and Design and procurement activities for WNP-2.

17.1.2.2 The B&R Quality Assurance Topical Report

The Quality Assurance Program for WNP-2 to be implemented by B&R on June 1, 1981 will be based on the B&R Quality Assurance Topical Report with documented exceptions, WNP-2 Final Safety Analysis Report (FSAR) commitments, WPPSS direction and the B&R contractural responsibilities for the design and construction of WNP-2. The B&R responsibilities for the WNP-2 Project are Engineering and Design, and procurement activities for assigned prepurchased equipment contracts. The exceptions to the Quality Assurance Topical Report are identified in the following subparagraphs.

17.1.2.3 Exceptions to the B&R Quality Assurance Topical Report

17.1.2.3.1 Chapter I - Organization

Paragraph 4.1.2

The B&R WNP-2 Project Organization chart is shown as Figure 17.1.1-4.

Paragraph 4.3

Construction Management is not within B&R scope of services.

17.1.2.3.2 Chapter II - Quality Assurance Program

Paragraph 2.1

The USNRC Regulatory Guides applicable to WNP-2 are identified in Appendix C.3 of the WNP-2 FSAR.

Paragraph 4.6

Under the B&R WNP-2 Quality Assurance Program, satisfactory accomplishment of the following quality affecting functions shall be verified:

- The design process is accomplished in accordance with established procedures
- Specifications contain appropriate quality requirements
- For those prepurchased equipment contracts for which Burns and Roe performs the vendor surveillance function:
  - Contractors' quality assurance programs and procedures are adequate.
  - Nonconformances are identified and dispositions provided.
  - Material receiving, inspection and storage functions are performed in accordance with established procedures.
- Surveillance of the activities performed by Contractors whose sole function is to provide engineering and design services.
- Audits of the quality affecting activities described above are performed on a scheduled basis.

17.1.2.3.3 Chapter III - Design Control.

Paragraph 2.1

Regulatory Guide 1.64, Revision 0 is the basis for the Burns and Roe design control program.

Paragraph 4.1

The detailed design effort is based only on an approved project criteria document.

Paragraph 5.

B&R design verification procedures were not implemented since the Construction Permit for WNP-2 predates the issue of Regulatory Guide 1.64. Designs issued by B&R were independently reviewed in the design control process against the approved project criteria document, which embodies the essential elements of an ANSI N45.2.11, Revision 1, Draft 3 checklist.

Additional design verifications are now being implemented on a sampling of previously issued safety system designs by the performance of special design reviews following established procedures which use checklists based on ANSI N45.2.11 criteria.

B&R procedures for design control are bieng upgraded to assure that future issued designs are verified in accordance with procedures that contain an ANSI N45.2.11, Revision 1, Draft 3, equivalent checklist.

Both of the above actions are voluntary commitments beyond commitments made in the PSAR for the B&R scope of engineering and design.

17.1.2.3.4 Chapter IV - Procurement Document Control

Paragraph 3.4

Records to be retained, controlled and maintained by a supplier are not identified in the specification.

Paragraph 4.

The appropriate commercial requirements are established by WPPSS and/or B&R and may be incorporated during the initial preparation of the technical specification. WPPSS prepares the potential bidders list.

Paragraph 5.

Award is determined by WPPSS using the bid evaluation prepared by B&R.

Paragraph 6.

Technical specifications are not normally conformed. When technical specifications are conformed, the changes are reviewed and approved in accordance with the same procedure used for the original technical specification.

Paragraph 7.

Later procurement of spare or replacement parts shall be to the original or improved technical requirements with inposition of either the original or the latest Quality Assurance requirements.

17.1.2.3.5 Chapter V - Instructions, Procedures and Drawings

Paragraph 2.2

Burns and Roe review of Quality Assurance plans required by procurement documents is limited to those prepurchased contracts for which Burns and Roe performs the vendor surveillance function.

Paragraph 2.5

Burns and Roe verification of the implementation of instructions, procedures and drawing programs is limited to those prepurchased contracts for which Burns and Roe performs the vendor surveillance function.

Paragraph 2.1

The B&R WNP-2 Quality Assurance Program in regard to document control does not govern the following:

- Procurement documents, except for prepurchased equipment contracts for which B&R performs the vendor surveillance function.
- Quality Assurance plans, except for the B&R Quality Assurance Plan and the quality assurance plans prepared by prepurchased equipment contracts for which B&R performs the vendor surveillance function.
- Contractor manufacturing, inspection and testing procedures, except for those prepared by prepurchased equipment contracts for which B&R performs the vendor surveillance function.
- Construction and operational test procedures.
- Nonconformance reports, except for those prepared by prepurchased equipment contracts for which B&R performs the vendor surveillance function.

Paragraph 2.3

Changes to documents listed in paragraph 2.1 may be made and implemented prior to the official revision of the document provided an advance change system exists and is controlled by approved project instruction and/or procedures.

Paragraph 2.6 and 2.7

Burns and Roe verification of Contractor's document control programs is limited to those prepurchased contracts for which Burns and Roe performs the vendor surveillance function.

17.1.2.3.7 Chapter VII -Control of Purchased Material, Equipment and Services.

Paragraph 3.

Recommended bidder lists are not prepared by B&R.

Paragraph 4.2

Quality Assurance audits are performed after contract award.

Paragraph 4.3

Recommendations for award are made by project management to WPPSS and WPPSS approves and makes the award.

Paragraph 4.4

Records of B&R bid evaluations and recommendation are only maintained by B&R for the supplier selection process.

Paragraph 5. and 6.0

Surveillance plans are approved by the Manager of Vendor Surveillance and are subject to Project Quality Assurance review.

Paragraph 6.3 and 7.

Not applicable to Burns and Roe WNP-2 Quality Assurance Program.

17.1.2.3.8 Chapter VIII - Identification and Control of Material Parts and Components

Paragraph 2.1

Verification of identification of components, assemblies and subassemblies is performed by Burns and Roe only on pre-purchased contracts for which Burns and Roe performs a final inspection prior to shipment.

17.1.2.3.9 Chapter IX - Control of Special Processes

Paragraph 2.5 and 2.6

Only when performing the function of vendor surveillance on prepurchased contracts does Burns and Roe evaluate and verify a Contractor's special process control program.

17.1.2.3.10 Chapter X - Inspection

Paragraph 2.1

The applicability of USNRC Regulatory Guides is as committed in Appendix C.3 of the WNP-2 FSAR. Mandatory hold points for prepurchased contracts are established after contract award and are contained in the Vendor Surveillance Plan for each Contract.

Paragraph 2.4

Verification of contractor inspection program implementation is performed only when B&R is responsible for the vendor surveillance function.

17.1.2.3.11 Chapter XI - Test Control

Paragraph 2.1

The applicability of USNRC Regulatory Guides are as committed in Appendix C.3 of the WNP-2 FSAR.

Paragraph 2.6

Verification of the implementation of a Contractor's test control program is performed by Burns and Roe only for prepurchased contracts when Burns and Roe performs the vendor surveillance function.

17.1.2.3.12 Chapter XII - Control of Measuring and Test Equipment

Paragraph 2.3

Construction contractor programs for the control of measuring and test equipment are subject to engineering review and approval by B&R.

Paragraph 2.4

Verification of the implementation of Contractor programs for the control of measuring and test equipment is performed by Burns and Roe only for prepurchased contracts when Burns and Roe performs the vendor surveillance function.

17.1.2.3.13 Chapter XIII - Handling, Storage and Shipping

Paragraph 2.3

Construction contractor programs for the handling, storage and shipping are subject to engineering review and approval by B&R.

Paragraph 2.4

Not applicable to B&R WNP-2 Quality Assurance Program.

Paragraph 2.5, 2.6 and 2.7

These requirements are applicable to those prepurchased contracts for which B&R perform the vendor surveillance function.

Paragraph 2.8

Verification of the implementation of Contractor programs for handling, storage and shipping is performed by Burns and Roe only for prepurchased contracts when Burns and Roe performs the vendor surveillance function.

17.1.2.3.14 Chapter XIV - Inspection, Test, and Operating Status

Paragraph 2.3

Not applicable to B&R WNP-2 Quality Assurance Program.

Paragraph 2.4

Construction contractor programs for inspection, test, and operating status are subject to engineering review and approval by B&R.

Paragraph 2.5

Verification of the implementation of Contractor inspection and operating status programs is performed by Burns and Roe only for prepurchased contracts when Burns and Roe performs the vendor surveillance function.

17.1.2.3.15 Chapter XV - Nonconforming Materials, Parts, or Components

Paragraph 2.2

Nonconformance reports issued on the WNP-2 Project are analyzed or Quality trends by WPPSS and the results are issued by WPPSS. Nonconformance reports are not included in final data packages forwarded to B&R.

Paragraph 2.3

Construction Contractor programs for control of nonconformance reports are subject to engineering review and approval by B&R.

Paragraph 2.4

All nonconformance reports require engineering review and approval by B&R. Such dispositioned nonconformance reports must be concurred in by the B&R Quality Assurance Manager or designated Quality Assurance Engineers for prepurchased contracts for which B&R performs the vendor surveillance function.

Paragraph 2.5

Not applicable to the B&R WNP-2 Quality Assurance Program.

17.1.2.3.16 Chapter XVI - Corrective Action

No deviations

17.1.2.3.17 Chapter XVII - Quality Assurance Records

No deviations

17.1.2.3.18 Chapter XVIII - Audits

Paragraph 2.10

Not applicable to B&R WNP-2 Quality Assurance Program.

Paragraph 2.11

The audit program on material and equipment suppliers applies only to those prepurchased contracts for which Burns and Roe performs the vendor surveillance funtion.

17.1.3 GENERAL ELECTRIC COMPANY QUALITY ASSURANCE PROGRAM

The applicable Quality Assurance Program (QAP) and detailed procedures for the Hanford-2 nuclear steam supply system (NSSS) and fuel have evolved during the design and construction phases of the Hanford-2 plant. The original General Electric (GE) program for Hanford-2 was implemented in 1968 and is described in the Preliminary Safety Analysis Report (PSAR), Appendix D.0. The program at that time was in accordance with the Nuclear Energy Division (NED) quality objectives for safety and reliable systems and components as set forth in the "Blue Book" issued August 20, 1968. On October 1, 1969, the "Blue Book" was replaced with the "Green Book", Revision 0, which incorporated the intent of the then "Proposed Atomic Energy Commission (AEC) Quality Assurance (QA) Criteria." The "Green Book" has proceeded through several revisions since 1969. The latest revision is NEDO-11209-04A, dated March, 1978. Table 17.1-1 is a matrix showing the entire evolutionary process which the GE program has undergone since August 1968 and identifies related NRC and industry standards that were applied. The actual version in effect at any point in time controlled the QA measures applied to Hanford-2 by GE for work when it was initiated, consistent with any necessary contractual adjustments to update from the 1970 base date of the contract with the Washington Public Power Supply System. For example, any work initiated after March 1978, applies the criteria represented by "Green Book", (NEDO 11209-04A). Note that those portions dealing with the Standard Reactor Island (STRIDE) are not applicable to Hanford-2 in that Hanford-2 is not provided a STRIDE by GE.

In so far as the NSSS is concerned, GE positions and commitments to Regulatory Guides and ANSI Standards as made in the applicable revisions of NEDO-11209 take precedence over the positions and commitments described in the FSAR Chapter 3.

TABLE 17.1-1

GENERAL ELECTRIC QUALITY ASSURANCE EVOLUTIONARY PROCESS

Date of Effectiveness	NED Quality Objectives - Safe & Reliable Systems & Components	Intent of Proposed AEC QA Criteria	Intent of 10CFR50 Appendix B (proposed)	10CFR50 Appendix B	ANSI N45.2	AEC Reg. Guide 1.28	ASME B&P Code	QA Related Reg. Guide & ANSI Stds.
8/20/68	Blue Book							
10/1/69	Green Book Rev. 0	x						
5/1/70	Green Book Rev. 1	x						
9/15/71	Green Book Rev. 2		x					
6/1/72	Green Book Rev. 3			x	x			
3/1/73	Green Book Rev. 4 (NEDO 11209)			x	x			
5/7/74	Green Book Rev. 5 (NEDO 11209-01)			x	x	x	x	x
12/12/75	Green Book (NEDO 11209-02)			x	x	x	x	x
11/76	Green Book (NEDO 11209-03A)			x	x	x	x	x
3/31/78	Green Book (NEDO 11209-04A)			x	x	x	x	x

17.1.4 BECHTEL POWER CORPORATION QUALITY ASSURANCE PROGRAM

17.1.4.1 Quality Assurance Topical Report

The Bechtel Quality Assurance Program Plan for use by the Bechtel Power Corporation during Construction Management and System Completion of Washington Public Power Supply System (Supply System) Project WNP 2 is described in the NRC - approved Bechtel Topical Report BQ-TOP-1, Rev. 3A, Bechtel Quality Assurance Program for Nuclear Power Plants.

17.1.4.2 Scope of Responsibility

This section describes Bechtel responsibilities for providing quality-related services in Construction Management and Systems Completion to the Supply System on the WNP 2 Project. The scope of responsibility differs from that indicated in BQ-TOP-1 in that Bechtel does not provide procurement services, and does not function as the responsible design engineering organization. Therefore, those provisions in BQ-TOP-1 associated with design engineering, and procurement services do not apply.

Bechtel will have an Engineering Management group under the direction of the Project Engineering Manager. This group will provide engineering management staff support capability to the Supply System. Engineering personnel will assist in developing the scope and relative priority of remaining engineering activities and will interface with Supply System licensing personnel. Bechtel may perform engineering design assignments on a task basis. Such design tasks will meet design requirements established by the Architect/Engineer (Burns & Roe) and will be performed to the applicable requirements of BQ-TOP-1.

Bechtel will perform construction in the completion of systems/structures/components as assigned by the Supply System, utilizing materials provided by the Supply System.

Construction Management provisions for quality-related services include:

- Receiving including receipt inspection of Supply System purchased items
- Storage and maintenance of Supply System purchased items
- Contractor/vendor QA documentation review, retention and turnover to the Supply System
- Review and approval of on site contractor quality-related Procedures and Manuals

- QA/QC audit and surveillance inspection over on-site contractor activities
- Administration of the project program for controlling nonconforming items
- Administration of the project program for control of design documents

17.1.4.3 Project Unique Modification to BQ-TOP-1, Rev. 3A

- Introduction Page 2 - Replace Regulatory Guide 1.58 (August 1973) with Regulatory Guide 1.58, Rev. 1 (September 1980).
- Introduction Page 2 - Add Regulatory Guide 1.146 "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (Rev. 0, 1978)".
- Section 1 ORGANIZATION Subsection 1.51. Page 10 - Add Subsection 1.5.1 with Attachment 1.
- Section 1 ORGANIZATION Subsection 1.5.2 Page 10 - Replace Subsection 1.5.2 with Attachment 2.
- Section 1 ORGANIZATION Subsection 1.5.4 Page 11 - Replace Subsection 1.5.4 with Attachment 3.
- Section 2 QUALITY ASSURANCE PROGRAM (Sub Paragraphs 2 and 4), Page 23 - change Regulatory Guide 1.58 (August 1973) to Regulatory Guide 1.58 Rev. 1 (September 1980)
- Section 2 QUALITY ASSURANCE PROGRAM (Sub Paragraph 3) Page 23 - change ANSI N45.2.12 to ANSI N45.2.23
- Change "Project Engineer" to "Project Engineering Manager" throughout.

Table 1	"Bechtel Quality Program Documents" Page 57 and 58 - Add to Table 1 the Project Documents shown on Attachment 4.
Add Fig. 15	Bechtel Projects Management Organization Attachment 5.
Add Fig. 16	Quality Assurance/Quality Control Organization Attachment 6.
Appendix A	Bechtel Position on QA NRC Regulatory Guides and ANSI standards - delete 5th paragraph (A-7) on page A-1; delete pages A-7 thru A-13 entirely.
Appendix B	Division Quality Policies, scope, and relationship to 10 CFR 50, Appendix B - Add Project Nuclear Quality Assurance Manual as shown by Attachment 7.

ATTACHMENT 1

The Manager of Projects (Fig. 15) is the senior Bechtel representative assigned to the WNP 2 Project. The Manager of Projects reports to the Division Manager of Project Operations and Services, and is responsible for providing overall project direction to assure the consistent and coordinated application of Bechtel policies and skills for the benefit of the WNP 2 Project. The Manager of Project's staff includes a Deputy Manager of Projects and other managers to coordinate activities in labor relations, the quality program and administrative services.

ATTACHMENT 2

1.5.2 QUALITY ASSURANCE

The SFPD QA Manager (SFHO) is independent of the other managers within the division and has the authority to carry out the responsibilities listed below in directing the Division Quality Assurance Program. He is assisted by a staff of Quality Assurance Managers (SFHO) assigned to functional areas of Program, Training, Project QA, and Audit (as shown in figure 12). The SFPD QA Manager's (SFHO) functions for the WNP 2 Project include:

- Provide technical guidance and concurrence for the WNP 2 Project Quality Assurance Program for conformance with the requirements of 10CFR50 Appendix B.

- Formulate and approve Division Quality Assurance Department Procedures which define responsibilities, authority and functions of SFPD home office staff Quality Assurance Department personnel. Review and concur with the WNP 2 PQAM and revisions.

- Maintain an awareness of WNP 2 project status, through management audit and day to day contact with the Manager of Quality, and provide assistance to the Manager of Quality to assure timely and effective implementation of the WNP 2 quality assurance program.

- Formulate and conduct management QA audits to assure compliance with the WNP 2 Nuclear Quality Assurance Manual (NQAM) and implementing procedures and to identify quality problems; identify the need for corrective action and initiate, recommend, coordinate or provide solutions; and verify implementation of solutions and corrective actions.

- Provide and maintain a qualified and suitably trained staff of Quality Assurance Engineers to carry out required project and staff functions. Assign Quality Assurance Engineer(s) to the WNP 2 project and provide them with administrative direction through the QA Manager - Projects (SFHO).

- Formulate and implement programs to provide indoctrination and training of Quality Assurance Department Personnel to assure that suitable proficiency is maintained.

- From information supplied by the Manager of Quality, provide quarterly reports to the Division Manager and Manager of Quality Assurance; evaluating the status and adequacy of the WNP-BPC quality assurance program, and advising of any problems requiring program revision or special attention including recommendations for corrective actions. At least annually, a meeting is held with the Division Manager (SFHO) and his staff on the subject of status and adequacy of the Division QA Program. The Manager of Quality participates in this meeting to cover the status and adequacy of the WNP 2 QA program.

MANAGER OF QUALITY

The Manager of Quality receives administrative, technical, and project direction from the Manager of Projects, and is responsible for the project and technical direction of the WNP 2 quality assurance program. The Manager of Quality receives technical guidance for QA and QC from the SFPD QA Manager (SFHO) and Chief Construction Quality Control Engineer (SFHO) respectively. He is assisted by, and provides project and technical direction to the Project Quality Assurance Engineer and Project Construction Quality Control Engineer. (Fig. 16) The Manager of Quality is independent of the other line managers within the Project Management organization and has the authority to carry out the responsibilities listed below in directing the Quality Assurance Program including authority to stop work or control further processing. The Manager of Quality's functions include:

- Provide technical and project direction to Quality Assurance Engineers assigned to the Supply System Projects.

- Formulate and approve, after review and concurrence by the SFPD QA Manager (SFHO) the Supply System Projects SAR and Quality Assurance Programs as defined in the Supply System Projects Nuclear Quality Assurance Manuals (NQAM's). The NQAM's shall be in conformance with the requirements of 10CFR50, Appendix B, the TPO Quality Program Policy Manual, and the appropriate Project SAR.

- Formulate and approve, after review and concurrence by the SFPD QA Manager (SFHO) the revisions to the Supply System Projects SAR's and NQAM's. Coordinate revisions to implementing procedures to improve effectiveness of the quality assurance program and update the program.

- Formulate and approve, after review and concurrence by the SFPD QA Manager (SFHO) the Project Quality Assurance Department Procedures and revisions for Supply System Projects which define responsibilities, authority and functions of Supply System Projects Quality Assurance personnel.

- Review quality related procedures and manuals prepared by centralized support functions outside of the Division (e.g., Procurement, C & S, M & QS) to verify conformance with requirements of the Supply System Projects NQAM's and approve, through the Manager of Quality Assurance BPC, for use as part of the quality assurance program on the Supply System Projects.

- Maintain an awareness of project status, through contact with the Manager of Projects, and assure timely and effective implementation of the quality assurance program.

- Direct the performance of project audits to assure compliance with Supply System Projects NQAM's and implementing procedures, and to identify quality problems; identify the need for corrective action and initiate, recommend, coordinate or provide solutions; and verify implementation of solutions and corrective actions.

- Provide quarterly reports to the SFPD QA Manager (SFHO) evaluating the status and adequacy of the Supply System Projects quality assurance program and advising of any problems requiring program revision or special attention, including recommendations for corrective actions.

- Review Division standard criteria for specifying quality assurance program requirements applicable to contractors and subcontractors, and approve for use on the Supply System Projects.

- Coordinate the Quality Assurance and Quality Control functions for the Supply System Projects with the Division groups having quality functions, and with groups outside the Division having quality functions, e.g., M & QS, C & S, and PSQD.

ATTACHMENT 3

1.5.4 DIVISION CONSTRUCTION

The Manager of Division Construction provides technical and administrative direction of the Construction Department personnel. The Manager of Division Construction (SFHO) is assisted by Construction Managers (SFHO), Chief Construction Engineers (SFHO), where assigned, and the Chief Construction Quality Control Engineer (SFHO); Construction Managers, (SFHO) are responsible for the management and technical direction of assigned projects, and for assuring that construction projects are provided with appropriate personnel and are following prescribed division practices and procedures for conduct of construction activities. Chief Construction Engineers (SFHO) are responsible for providing division standard work procedures to the projects.

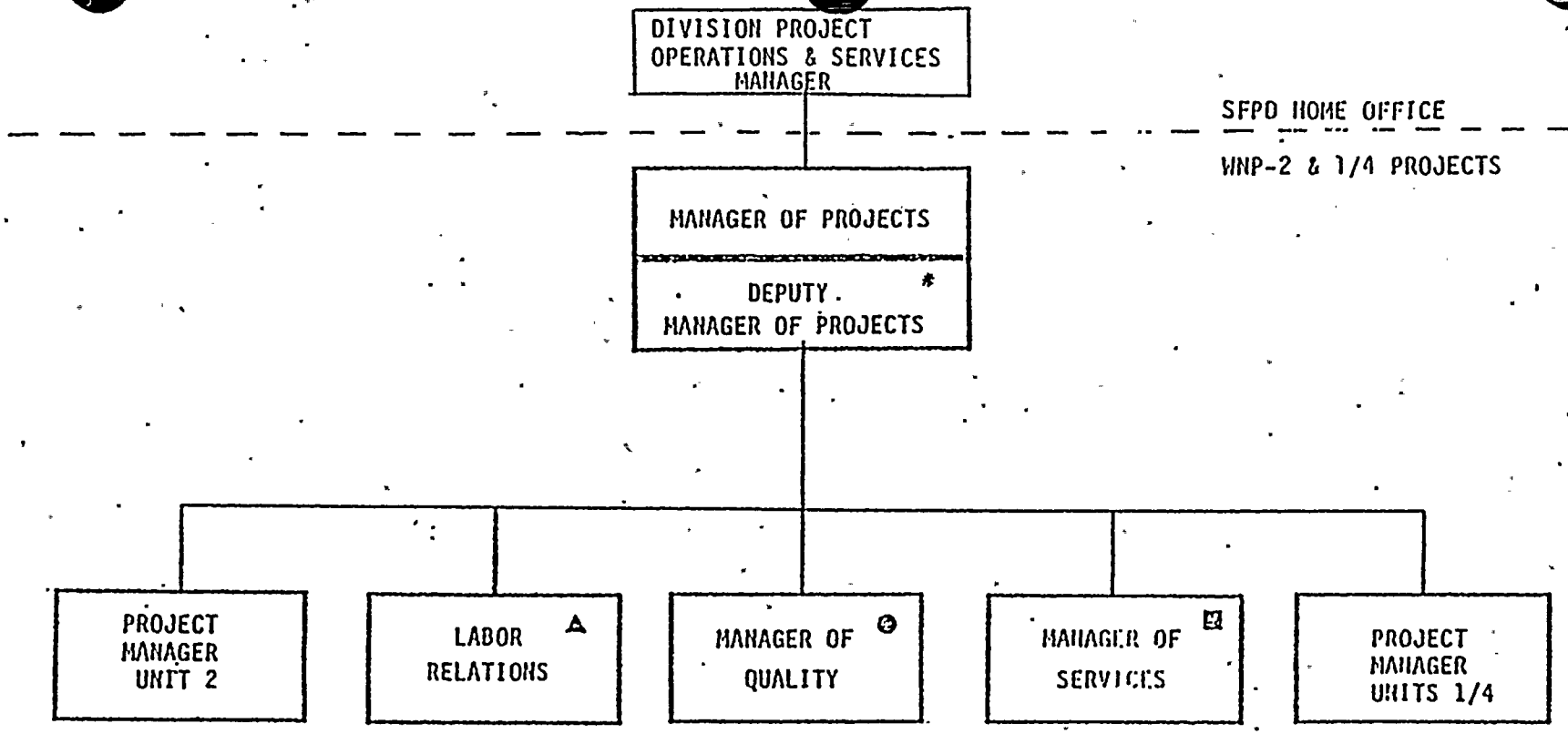
Formal quality verification inspection and on-site contractor surveillance inspection activities performed by Bechtel are the responsibility of Construction Quality Control. The Chief Construction Quality Control Engineer (SFHO) is responsible for providing administrative direction to the Construction Quality Control Engineers assigned to the WNP 2 Project. The Chief Construction Quality Control Engineer's functions include:

- Provides administrative direction to the Project Construction Quality Control Engineer.
- Assigns quality control engineers to the project.
- Assists with the training and qualification of construction quality control engineers.
- Provides technical guidance to the Manager of Quality for the preparation of quality control procedures and instructions.

ATTACHMENT 4

WNP 2 PROJECT QUALITY PROGRAM DOCUMENTS

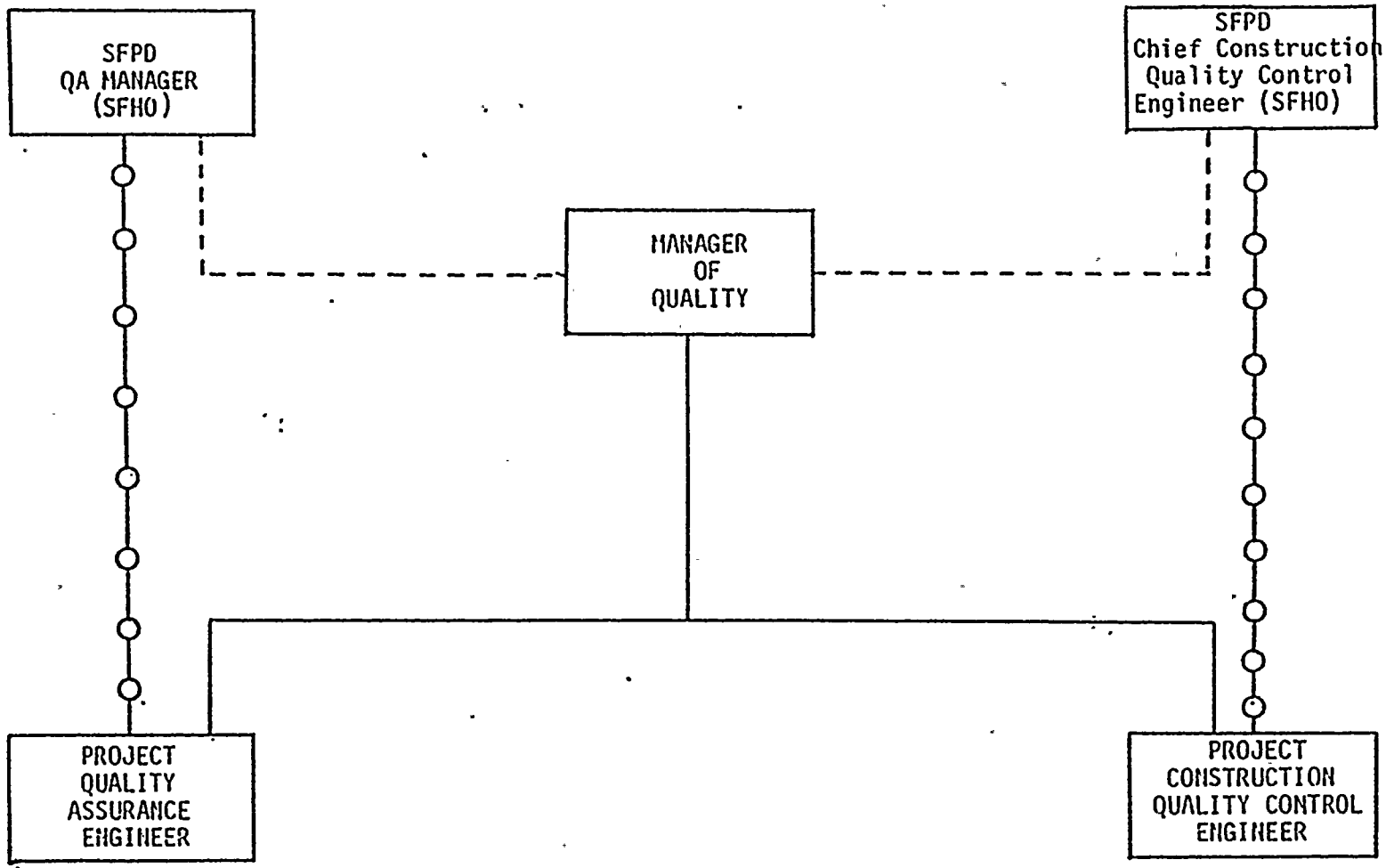
DOCUMENTS	ORIGINATING AUTHORITY	REVIEW FOR QA POLICY AND PROGRAM REQUIREMENTS	AUTHORIZING APPROVAL	CONTENTS
WNP 2 Nuclear Quality Assurance Manual (NQAM)	Project QA Engineer	SFPD QA Manager (SFHO)	Manager of Quality	Quality program policy. Based on Division policy as contained in SFPD Standard NQAM
WNP 2 Project QA Manual (PQAM)	Project QA Engineer	SFPD QA Manager (SFHO)	Manager of Quality	Procedures for conducting Project QA activities
WNP 2 Construction Quality Control Manual (CQCM)	Project Construction	Project QA Engineer	Manager of Quality	Responsibilities and procedures for construction QC activities
WNP 2 Construction Procedures	Project Field Engineer	Project QA Engineer	Chief Construction Engineer (SFHO)	Responsibilities and requirements for construction site activities
WNP 2 Bechtel Quality Assurance Manual ASME Nuclear Components	Manager of Codes and Standards	Manager of Quality, and SFPD - QA Manager (SFHO)	President - BPC & appropriate authorized code inspection agency	Policies and procedures for overall Bechtel Program applicable to ASME work
Engineering Dept. Project Instructions	Project Engineering Manager	Project QA Engineer	SFPD Engineering Manager	Responsibilities and requirements for engineering departments activities



BECHTEL PROJECTS MANAGEMENT ORGANIZATION

Figure 15

QUALITY ASSURANCE/QUALITY CONTROL ORGANIZATION



LEGEND AND NOTE

PROJECT AND TECHNICAL DIRECTION

TECHNICAL GUIDANCE AND COORDINATION

ADMINISTRATIVE DIRECTION

NOTE: The SFPD QA Manager (SFHO) is responsible for performing management QA audits of the WNP-2, Project Quality Assurance/Quality Control Organization

Figure 16

ATTACHMENT
APPENDIX B
DIVISION QUALITY POLICIES, SCOPE, AND RELATIONSHIP
TO 10 CFR 50, APPENDIX B
PG&E-2 NUCLEAR QUALITY
ASSURANCE MANUAL

SAN FRANCISCO
POWER DIVISION

10CFR50 APP. B NO.	SUBJECT	Table of contents 1	QA program applicability 2	QA program definition 3	Definitions 4	Fire protection QA program 5	Radwaste management system QA program 6	Seismic II/I QA program 7	Matrix 8	Organization charts 1	SFPD organization 2	Project QA team 3	Project Management team 4	Project Engineering team 5	Project Construction team 6	Project organization charts 7	Procurement supplier quality department 8	Materials & Quality services department 9	Bechtel Power Corporation 10	Design Control procedures 1	Design process and change control 2	Design verification 3	Design interface 4	Specialty group design control 5	Supplier evaluation ASME III 1	Field material requisitions 2	Construction site quality program 1	MR,storage,handling, maintenance & control 2	Field inspection and test 3	Nonconforming materials 4	Control of measuring and test equipment 5	System T/O for preoperational testing 6	Field contractor control 7	Control of special processes 8	NQAM policies and revisions 1	Quality Assurance procedures 2	Indoctrination, training & qualification 3	Management corrective action 4	Stop work 5	Procedure control 6	Quality Assurance records 7	Quality Action Requests 8	Status and adequacy review 9	Quality audit system 1
		SECTIONS 0								I										II					III		IV								V									VI
I	ORGANIZATION	●	●	●						●	●	●	●	●	●	●	●	●	●																										
II	QUALITY ASSURANCE PROGRAM	●	●							●										●							○	○	○		○		○			●	●					○		
III	DESIGN CONTROL																			○	●	●	●	●																				
IV	PROCUREMENT DOCUMENT CONTROL																								●	●																		
V	INSTRUCTIONS, PROCEDURES, AND DRAWINGS			○																●							○									●				●				
VI	DOCUMENT CONTROL			○																●							○													●				
VII	CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES																								●	●		●	●	●		●												
VIII	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS																										○		●															
IX	CONTROL OF SPECIAL PROCESSES																																○											
X	INSPECTION																								●	○		○	○			●	●											
XI	TEST CONTROL																					●						○	●			●	●											
XII	CONTROL OF MEASURING AND TEST EQUIPMENT																													●													
XIII	HANDLING, STORAGE AND SHIPPING																								●	○	○					●											
XIV	INSPECTION, TEST, OPERATING STATUS																											○				●											
XV	NONCONFORMING MATERIAL, PARTS OR COMPONENTS																								●	●			●														
XVI	CORRECTIVE ACTION																			●					●	●			●							●	●							
XVII	QUALITY ASSURANCE RECORDS																																							●				
XVIII	AUDITS																																			●							●	