

CHAPTER 17

QUALITY ASSURANCE

The Washington Public Power Supply System will implement an overall Quality Assurance Program (QA Program) for the design, procurement, construction and operation of the Supply System's Nuclear Project Nos. 1/4 (WNP-1/4) in accordance with the requirements of Appendix "B" of 10CFR50. As the applicant, the Supply System is responsible for the plants and will take appropriate actions to assure that they are designed, procured, constructed and operated in accordance with sound engineering principles and practices. Systems, components and structures that are safety-related, in the context of 10CFR50 will be designed, specified, fabricated, installed, tested and operated in accordance with applicable regulatory requirements, codes, standards, specifications and procedures. The objective of the Supply System is to implement a QA Program that is responsive to the requirements of NRC Regulations, 10CFR50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants" by assuring that quality related efforts are performed in a controlled manner and are documented to provide objective evidence of compliance.

17.1 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION
Washington Public Power Supply System

17.1.1 Organization

This Section describes the organizational relationships within the Supply System and assigns the authorities and responsibilities for the administration and implementation of the Quality Assurance Program. Assigned authorities and responsibilities demonstrate the organizational freedom of Quality Assurance. This organizational freedom is accomplished through Corporate and Project structures which provide independence from Supply System organizations responsible for "construction".

At the Corporate Level, the Director and staff of Quality Assurance, and at the Project (jobsite) Level the Project QA Manager and staff, are completely free from responsibility of cost and scheduling during "construction". The Director of Quality Assurance and the Project QA Manager have the freedom and authority to identify quality related problems, initiate corrective actions (including stop work) and recommend or provide solutions and to verify the implementation of corrective actions.

Each nuclear power plant Project is administered by a Project Program Director. The Program Director is directly accountable to the Managing Director and is responsible for the safe, successful and timely completion of construction, startup, and initial power generation of the projects. The Program Director accomplishes the Project responsibilities by managing and directing the Engineering Organization (the AE), which is performing design; the Construction Management Organization, which manages the installation

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subcontractors on the project; and Project Supply System personnel. The Engineering Organization (the AE) and the Construction Management Organization may be a different or the same entity.

The organizations of the Supply System and Supply System Quality Assurance are presented in Figures 17.1-1 and 17.1-2 and 17.1-3. The functional responsibilities for the implementation of the Supply System Quality Assurance Program are assigned as follows:

Corporate

The Managing Director of the Supply System has the ultimate responsibility for the Quality Assurance Program. The Managing Director shall assure that the program is implemented and maintained by assigning the appropriate authority and responsibility to the Quality Assurance Director at the Corporate Level and to the Program Director at the Project Level.

The Deputy Managing Director is the chief operating officer and has delegated authority to implement policies of the Managing Director. The Deputy Managing Director is accountable to the Managing Director and is responsible for:

- a) coordinating and integrating the activities of Supply System organizations
- b) acting for the Managing Director as required.

The Director of Nuclear Safety reports to the Managing Director and is responsible for formal contacts between the Supply System and the Nuclear Regulatory Commission (NRC) of nuclear safety issues pertaining to licensing. The Project Licensing Manager reports to the Nuclear Safety Directorate through the Manager, Licensing and is responsible for the following:

- a) coordinating and maintaining a working interface between the Supply System and the NRC
- b) managing, coordinating and participating in the preparation of all required license applications and supporting documentation
- c) maintaining a working knowledge of all pertinent regulations
- d) assuring review of and providing technical inputs to Safety Analysis Reports
- e) assuring reviewing of regulatory guides for applicability to the projects.

The Director of Administration reports to the Managing Director and is responsible to provide Records Management Services and software processing and control services to the Home Office and to the Project.

The Director of Contracts and Material Management reports to the Managing Director and is responsible for the procurement control of materials and services for the Supply System and provides support to the Program Directors in areas of project procurement, procurement contracts, and materials control.

The Technical Director is directly accountable to the Managing Director and has responsibility to assure the provision of technical Engineering support to the Project from a Centralized Engineering organization. The Technical Director has overall responsibility for assuring:

- a) the technical adequacy of the design of Supply System plants
- b) provision of technical direction to selected Design Subcontractors
- c) ensuring the transfer of design experience among projects

The Director, Quality Assurance reports and is accountable to the Managing Director and is responsible for administration of the Quality Assurance Manuals for the Supply System. These responsibilities include:

- (a) interpretation of Code and Quality Assurance Manual requirements
- (b) definition, approval, revision and distribution of the Supply System Quality Assurance Manuals to ensure that the manual adequately describes requirements
- (c) approval of all Corporate quality affecting implementing procedures and instructions
- (d) determining the adequacy and effectiveness of program implementation
- (e) apprising the Managing Director of the effectiveness of the QA Program by periodic reporting of quality activities, trends, and problems, through implementation of corrective action systems
- (f) exercising the authority vested in the Quality Assurance organization to cause the acceptance or rejection of materials and components based on conformance verification to engineering requirements and the requirements of the Code
- (g) assuring that QA policies and programs provide Project QA Managers the freedom to inform the Director, Quality Assurance of significant conditions affecting quality
- (h) exercising authority to stop nonconforming work of any Supply System subcontractor or supplier organization and notification of the ANI, of the work stoppage

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- (i) assuring the adequacy, clarity and appropriateness of the Supply System Quality Assurance oriented communications and commitments directed to Suppliers, and the Authorized Inspection Agency
- (j) assuring that significant conditions affecting quality, which are identified by Project Quality Assurance and which are addressed to the QA Directorate for resolution, are adequately investigated and/or corrected

The Director, Quality Assurance is supported by the following departments:

Manager, Vendor Surveillance and Audits

The Manager, Vendor Surveillance and Audits reports to the Director, QA and is responsible for assuring:

- (a) QA audits of internal Supply System organizations and external organizations, except for Management Audits
- (b) Quality Assurance surveillance of off-site Suppliers and activities
- (c) audits, surveillances and/or surveys of Suppliers of items, materials, or services who do not have ASME Certification
- (d) developing audit and surveillance schedules and selecting qualified personnel to perform the activities in this function
- (e) review and approval of off-site Supply System administrated vendor's/supplier's Quality Assurance programs
- (f) overview of AE administrated off-site contractors
- (g) qualification and certification of Audit personnel
- (h) performance of pre-award surveys/evaluations of vendors/suppliers, maintaining and distributing an updated listing of those approved
- (i) participation in and provide overview of audits of the AE and NSSS vendors
- (j) overview of off-site inspection contract for fuel and spare parts surveillance and acceptance
- (k) exercising Stop Work Authority

Manager, QA Engineering and Systems

The Manager, QA Engineering and Systems reports to the Director, QA and is responsible for:

- (a) distribution and control of the Quality Assurance Manual, the Corporate ASME Manual and revisions thereto

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- (b) assuring that Code requirements are properly interpreted and included in the QA Program requirements
- (c) interfacing with the ANI, Authorized Inspection Agency and the Enforcement Authority
- (d) exercising Stop Work Authority
- (e) identifying, reporting or processing nonconformances
- (f) assuring that a written agreement with an Authorized Inspection Agency is obtained to provide for ANI Services
- (g) assuring that Level III NDE personnel involved in examination activities are certified in accordance with ASNT and/or the Code
- (h) assuring that appropriate Certificates of Authorization are obtained, reviewed, and available at the location of the work
- (i) assuring the appropriate certification of Supply System personnel who perform quality-affecting activities
- (j) performing surveillance of Home Office engineering organization

The Manager, Operational QA and Services, reports to the Director, Quality Assurance, and is responsible for monitoring and performing surveillances of activities performed under the responsibility of Home Office Supply System organizations. Subsequent to the issuance of Operating License, the Manager, Operational QA and Services is also responsible for monitoring and performing surveillances of activities performed under the responsibility of Plant Managers and Startup Managers. Some of the specific responsibilities of the Manager, Operational QA and Services, include:

- (a) development, maintenance and distribution of the Operations QA Program
- (b) establishment of an independent QA surveillance program over Home Office activities performed by Supply System organizations (other than Engineering Division) and vendors
- (c) providing Operational Quality Assurance input to the training and indoctrination program for personnel performing activities that affect safety-related functions of plant items
- (d) interfacing between the plants and other Supply System organizations to establish coordinated Quality Assurance support
- (e) reporting plant-related quality problems to appropriate management levels to expedite corrective action
- (f) providing assistance to other Supply System organizations in QA matters

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- (g) periodic review of reports of surveillances, audits, and plant-related non-conformances to identify any quality trends which may constitute a need for corrective action in order to preclude repetition of nonconformances, and for notifying the responsible Supply System organizations the significant results of such reviews for accomplishment of corrective action
- (h) reviewing Home Office procurement documents, procedures, and instructions for assuring inclusion of appropriate quality requirements
- (i) exercising Stop Work Authority

Projects

- a. The Program Director is responsible and accountable to the Managing Director for the safe, successful completion, startup and initial power generation of WNP-1/4 within approved schedules and budgets. The WNP-1/4 Program Director directs overall engineering, program management, construction, operations and quality assurance. Specific quality related activities are:

- b. Engineering

- 1) Review and approve prepurchased equipment and construction specifications (hereinafter also called equipment and construction specifications or procurement documents)* and significant changes thereto, to assure that Supply System regulatory, code, and standard requirements are included and met, and that they are technically adequate. This review and approval shall be at the system or structure levels which deal with basic concepts of overall plant design and at the component level for critical components. Field initiated changes will be reviewed and approved if the changes represent a change in design. Field changes which implement constructability but do not affect the basic design will generally not be reviewed and approved by the Supply System. Included in the responsibility is the completion of a Comment/Resolution Form for initial release of a specification and a documented approval sheet for subsequent changes.

* Prepurchased equipment specifications and construction specifications are differentiated as follows:

Prepurchased equipment: Specification wherein the Supply System purchases equipment or material directly from a manufacturer or supplier and includes all activities through delivery to the site.

Construction: Specification wherein the Supply System purchases site construction activities through a contractor. The specification may include a requirement for the contractor to purchase plant equipment or materials for its installation, or may only require installation of prepurchased equipment, or both.

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Significant changes are defined as those changes which affect the basic design. Non-significant changes are those which implement or enhance constructability but do not change the basic design.

- 2) Reviews applicable drawings for information to assure that they are technically adequate and that appropriate quality control provisions have been included.
- 3) Approves and/or determines the disposition of nonconforming items or material found during site activities as members of the Nonconformance Review Board (see Subsection 17.4);
- 4) Provides personnel to Supply System Quality Assurance to assist in vendor surveillance activities and to perform surveillance and audits of site contractors' and AE's home office activities, as requested.

c. Program Management

- 1) Review and approve equipment and construction specifications, and changes thereto, to assure that the contractual requirements delineated in the bidding documents and the general and special conditions sections provide Supply System with the requirements necessary to administer the contract effectively;
- 2) Administers the contracts to assure that activities affecting quality are performed in accordance with the requirements specified in the procurement documents, and that when nonconformances are identified, approved corrective action is implemented in a timely and effective manner.
- 3) Responsible for quality of the work, implementation of schedules and cost control techniques as well as implementation of the policies and overall objectives of the Supply System.

d. Licensing

- 1) Review and approve equipment and construction specifications, and significant changes thereto, to assure that PSAR/FSAR commitments and regulatory requirements are included and met.

e. Plant Operations

- 1) Responsible for the review and approval of specifications, and significant changes thereto, for the operability and maintainability of the equipment, systems and structures;

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- 2) Provides personnel to Supply System Quality Assurance to assist in vendor surveillance activities and to perform other surveillance and audit functions, as requested.

f. Construction Management

- 1) Responsible for construction contract administration to assure that activities affecting quality are performed in accordance with the requirements specified in the contract documents, and that when nonconformances are identified, steps are taken to stop the nonconforming activity and to assure that resolution is implemented in a timely and effective manner.
- 2) Assists in verifying acceptability of contract change orders.

g. Quality Assurance

- 1) The Manager, Quality Assurance & Safety reports to the Program Director and is responsible for enforcing implementation of the Supply System's Corporate Health & Safety Programs under the OSHA/WISHA act of 1970 and the Supply System's Quality Assurance Programs for design, engineering, procurement, fabrication, installation, construction, testing, operation and maintenance of the WNP-1/4 Project. The Manager of Quality Assurance & Safety provides assistance to the Program Director to integrate the Quality Assurance and Safety mission with other Project organizations' activities and assures that Project Quality and Safety activities are in accordance with state and federal requirements. He has access to the Quality Assurance Director for significant conditions adverse to quality.

The qualification requirements for the position of Manager, Quality Assurance and Safety are as follows:

BS degree in engineering or science and ten years experience in the nuclear industry or equivalent education and experience. Knowledge and ability in the areas of planning, organization, measurement, decision making; must be capable of broad overall performance under multiple project conditions.

The Project Quality Assurance Manager reports to the Program Director at the Project through the Manager, Quality Assurance & Safety and is provided independence from the Supply System organizations responsible for engineering, procurement and construction, and is free from the responsibility of cost and scheduling during procurement, design and construction and startup.

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The Project Quality Assurance Manager has the freedom and authority to identify quality problems, initiate, recommend or provide corrective actions, verify the implementation of the corrective action and control further processing, delivery or installation of a nonconforming item, or a deficiency or unsatisfactory condition until proper disposition has been made, including stopping work for quality reasons.

The Project Quality Assurance Manager shall be responsible for:

- a) verification of the implementation of the Quality Assurance Program Description and QA Manuals
- b) Stop Work Authority
- c) identification and reporting of nonconformances
- d) verification by audits and surveillances that the contractor's and other project organizations are implementing applicable quality requirements
- e) assuring that adequate staffing is obtained to implement QA actions at the project
- f) the assignment of adequately trained and qualified/certified personnel to perform quality verification activities
- g) overview of the CM approval of contractor's procedures and instructions
- h) reporting to the Program Director significant conditions adverse to quality
- i) reporting all QA problems and trends to the Director of Quality Assurance for use in developing standards for QA Management Systems to preclude repetition of QA problems

Major organizations to whom Quality Assurance functions have been delegated are:

- a) United Engineers and Constructors, Inc. (UE&C)
Architect - Engineering
Construction Management Services as Constructor, ASME III Div 2
Quality Assurance Services, ASME III Div 2
- b) Bechtel Power Corporation
Construction Management and QA Services
- c) Babcock & Wilcox (B&W)
Nuclear Steam Supplier

UE&C has been contracted to provide overall Architect-Engineering for WNP-1/4. In addition, UE&C has been contracted to provide Construction Management responsibilities as Constructor, including Quality Assurance for ASME III Div 2 related activities. As AE, UE&C is responsible for generation of specifications for procurement of prepurchased equipment and construction activities. These contract specifications are sent to the Supply System for review and approval prior to award of contracts. The administration of

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specifications is performed jointly by the Supply System and UE&C for prepurchased contracts. The QA responsibility includes Home Office QA, vendor surveillance and site QA and Construction (ASME III Div 2). (See Sections 17.2 and 17.4)

Bechtel has been contracted to provide overall Construction Management and QA for WNP-1/4. The Supply System and Bechtel will jointly perform the administration of construction specifications associated with WNP-1/4. (See Section 17.4)

B&W has been contracted to provide the Nuclear Steam Supply System which includes the responsibility for the QA and Quality Control activities associated with their scope of supply. (See Section 17.3)

17.1.2 Quality Assurance Program

The Supply System QA Program described in Section 17.1 is currently in effect for ongoing quality functions. Section 17.1 delineates in detail the intent and substance of the Supply System QA Program. The Supply System Program is based upon the Quality Classification as assigned to the structures, components, and systems in Tables 3.2-1 and 3.2-2. Structures, components, and systems are classified as Quality Class I, II and G in accordance with their design basis or functional requirements. The applicable requirements of Appendix B to 10CFR50 are applied to those items classified as Supply System Quality Class I due to their relationship to a nuclear safety function. Those items classified as Supply System Quality Class II or G are not safety related and are not subject to the requirements of Appendix B to 10CFR50. Supply System Quality Class II or G are required to meet applicable commercial standards. The Supply System quality assurance classifications are as follows:

Quality Class I - Any nuclear structure, system, subassembly, component or design characteristic that prevents or mitigates the consequences of a postulated accident that could cause undue risk to the health and safety of the public. All safety-related items fall within this category.

The Supply System QA Program defines non safety-related items as follows:

Quality Class II Augmented - The liquid radioactive waste system and those portions of the solid radioactive waste systems which contain liquid waste.

Quality Class G Augmented - Those portions of the fire protection system protecting safety related equipment or protecting areas which contain potential fire hazards to safety related equipment.

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

Quality Class G - Any non-nuclear portion of the plant to which QA requirements are assigned in accordance with the consequence of failure and operating costs. If necessary, Quality Class G can be upgraded to Quality Class II.

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The Supply System Quality Assurance Program Manual contains the written policies and procedures structured from the requirements of ANSI N45.2-1971 and 10CFR50, Appendix B by which the Supply System performs its related quality assurance activities. A matrix of the Supply System QA Program procedures and the corresponding criteria of 10CFR50, Appendix B appears in the table below followed by description of the scope covered by these procedures.

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

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a) Organization, QAR-1

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

b) Program, QAR-2

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

c) Design Control, QAR-3

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

d) Procurement Document Control QAR-4

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

e) Instructions, Procedures and Drawings, QAR-5

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

f) Document Control, QAR-6

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

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

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

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

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

i) Control of Special Processes, QAR-9

Establishes a system for the control of special processes.

j) Inspection, QAR-10

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

k) Test Control, QAR-11

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

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

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

m) Handling, Storage and Shipping, QAR-13

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

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

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

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

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

p) Corrective Action, QAR-16

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

q) Quality Assurance Records, QAR-17

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

r) Audits, QAR-18

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

The Supply System Quality Assurance Program was in effect during the preparation of the PSAR.

Supply System Quality Assurance is responsible for establishing Quality Assurance policy, goals, and objectives through the development and administration of the Supply System QA Program. This program is defined in the Supply System QA Program Manual developed by the Manager, Quality Engineering, and reviewed and approved by the Director, Quality Assurance and endorsed by the Managing Director.

Supply System QA personnel have the authority and responsibility to perform any actions necessary, including Stop Work Authority, to accomplish their mandate as delineated in the Quality Assurance Manual. This responsibility and authority is stated in a Management Statement signed by the Supply System Managing Director. The Management Statement appears in each Quality Assurance Manual, and is included as Figure 17.1-4. In matters of conflict regarding Quality Assurance policies or the Quality Assurance organizations authority to enforce them at the working level, the Director of Quality Assurance has direct access to all levels of upper management including the Managing Director for satisfactory resolution.

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

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

In addition to the training delineated above, Quality Assurance personnel will receive training to provide them with an understanding and appreciation of the management of an effective Quality Assurance program. QA personnel will receive orientation and indoctrination to position responsibilities, and to applicable codes and standards. This training may be augmented by both inhouse training and attendance at appropriate industry sponsored training sessions, the extent of which will be determined by an evaluation of the prior QA experience and knowledge of the employee, and the comparative requirements of the current QA position. After this training has been completed, such individuals will be assigned initial work under the direction and guidance of qualified, experienced personnel (e.g., Lead Auditors) and will receive on-the-job training to establish and maintain proficiency.

The Supply System position on NRC Regulatory Guide requirements is stated in Section 3.12. These requirements are verified as being included in the design specification during the design review process described in Subsection 17.1.3.

The Supply System QA Program will comply with the requirements contained in 10CFR50, Appendix B, and will comply with the guidance contained in the Supply System position for NRC Regulatory Guides, the NRC's Gray Book, "Guidance on Quality Assurance Requirements During Design and Procurement Phase of Nuclear Power Plants-Revision 1", and the NRC's Green Book, "Guidance on Quality Assurance Requirements During the Construction Phase of Nuclear Power Plants".

The Supply System QA Program's scope, implementation, and effectiveness is audited by the Corporate Office audit organization. Copies of all audit reports and correspondence are routinely routed to Supply System Project Management, and Project Quality Assurance so that management can regularly assess the effectiveness of the Quality Assurance Program.

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

The Supply System requires its Quality Class I contractors, including UE&C, Bechtel, and B&W to establish and implement Quality Assurance Programs consistent with the applicable Criteria of 10CFR50, Appendix B. The Quality Assurance programs of UE&C, Bechtel, and B&W are reviewed for compliance with Appendix B by the Supply System. Quality Class I contractor's Quality Assurance programs are reviewed for compliance with Appendix B by UE&C and Bechtel, as appropriate.

The details of the UE&C, Bechtel and B&W QA Program are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.3 Design Control

The Supply System has organized, and is following, a system of design review and approval by QA, Engineering, Licensing, Operations, and Project Management of Supply System and UE&C generated procurement documents for Supply System Quality Class I systems, structures, subassemblies, components and design characteristics. UE&C Engineering has been assigned the responsibility to review the remaining design contractor's procurement documents.

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

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Supply System Project Engineering has the primary responsibility for the technical review and approval of Supply System and UE&C generated prepurchased equipment and construction specifications. Each discipline, mechanical, electrical, nuclear, and civil reviews the specifications to assure they are technically adequate. The depth of this review is outlined in an engineering design review check list utilized by the reviewing engineer for each Supply System Quality Class I specification. The design review check list outlines a review of: 1) design requirements, including the appropriate section of the PSAR and referenced Regulatory requirements; 2) codes and standards requirements; 3) classification of characteristics; 4) materials selection adequacy; 5) testing requirements; 6) welding requirements; 7) identification and serialization; and, 8) preservation, packaging, and handling.

Supply System Licensing reviews and approves the specifications to assure conformance to PSAR/FSAR and other regulatory requirements.

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

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

Supply System QA reviews and approves the specifications to assure that adequate requirements are included in the specifications. The QA review assures that: 1) the specifications contain the necessary QA requirements; 2) the test and special processes are properly identified and contain appropriate acceptance/rejection criteria; 3) codes and standards are current and correct; 4) Quality Classifications are identified; and, 5) the applicable generic sections of welding, cleaning, and packaging are included.

Supply System QA signs the Design Review Route Sheet to indicate review of Comment Issues, and signs the Comment Issue Approval Sheets after assuring the QA requirements are included and that the specifications have been through the required Supply System design review. (See Subsection 17.1.3.1)

Design changes, including field changes, are subject to design control measures commensurate with those applied to the original design and are approved by the organization that performed the original design unless the Supply System has designated another responsible organization.

Documentation pertaining to design control of Supply System Quality Class I procurement documents will become part of the objective evidence of the quality of the applicable items, and will be filed and maintained in a traceable, retrievable, systematic manner.

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The details of the design control measures implemented by UE&C and B&W are described in Section 17.2 and 17.4, and 17.3 respectively.

The Supply System QA Program requires that Supply System and UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of a Quality Assurance Program for Supply System Quality Class I items and activities which specifically comply with 10CFR50, Appendix B criteria. In addition, the contractors and vendors of Supply System Quality Class I items and activities are required to have Quality Assurance Programs which comply with ANSI N.45.2-1971 and additional requirements as delineated in the procurement documents.

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

- a. The translation of regulatory requirements and design bases correctly into the design documents;
- b. The incorporation of appropriate quality standards with deviations and changes being controlled;
- c. The application of design control measures to such items as: reactor physics, stress, thermal, hydraulic, radiation, and accident analysis; compatibility of materials; accessibility for inservice inspection, maintenance, repair; and specifying criteria for inspection and test;
- d. That proper selection and accomplishment of design verification or checking methods such as design reviews, alternate calculations, or qualification testing is performed. Where a test program is used to verify the adequacy of a design, a qualification test of a prototype unit under the most adverse design conditions will be used;
- e. That individuals or groups responsible for design verification or checking are other than those who performed the original design;
- f. Design and specification changes, including field changes, are subject to the same design controls that were applicable to the original design;
- g. Design documents and revisions thereto are distributed to responsible individuals in a timely manner and controlled to prevent inadvertent use of superseded material;
- h. Errors and deficiencies which adversely affect safety related structures, systems and components in the design process are documented and that appropriate corrective action has been taken;

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- i. Design documents, design reviews, records, and changes thereto are collected, stored, and maintained in a systematic and controlled manner;
- j. Standard "off the shelf" commercial or previously approved materials, parts, and equipment (that are essential to the safety related functions of the structures, systems, and components) are selected and reviewed for suitability of application.

17.1.3.1 Supply System or UE&C Generated Specifications and Drawings

Supply System or UE&C Engineering prepares Client Comment, Revised Client Comment and Bid Issues of specifications for WNP-1/4 in accordance with all applicable Codes and Standards and QA Procedures utilizing engineering data generated from Technical Memorandums, Project Criteria Documents, PSAR commitments and/or Supply System requirements. Calculations and specification data are independently reviewed and checked by engineers experienced in the appropriate engineering discipline.

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

Client Comment Issues are received by the Supply System and are assigned to a Reviewing Engineer. Copies of the Client Comment Issues are also assigned to Supply System QA, Licensing, Operations, and Project Management. Each discipline reviews the specification in accordance with the Supply System design review procedures and checklists. The Reviewing Engineer is responsible for the overall review, obtaining signoffs from the reviewers, preparation of the Comment/Resolution form for resolution of comments. For UE&C prepared specifications the form is transmitted to UE&C for resolution; for Supply System prepared specifications the form remains with the Reviewing Engineer for resolution.

Pages and drawings which are affected by the Supply System review are corrected and issued as a Revised Client Comment Issue. This document is reviewed to assure that comments have been resolved and incorporated based on the Comment/Resolution form. The original Supply System reviewers' acceptance is secured on comments which have been rejected. Rejections which are unacceptable to the Supply System will be resolved and so noted on the Comment/Resolution form.

A Bid Issue is then prepared and sent to the Supply System for final approval. The Reviewing Engineer reviews the Bid Issue. The final Supply System approval is indicated by the signature of the Supply System Program Director on the Bid Issue Approval Sheet.

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17.1.3.2 Contractor and Vendor Generated Drawings and Specifications

When a contractor or a vendor initiates a design he is required to perform design review activities in accordance with internal design review procedures. Upon completion of this review his design drawings and specifications are forwarded to UE&C Engineering for interface review.

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

The receipt of vendor drawings, specifications and other documents is acknowledged to the Supply System staff via a transmittal which lists and describes the material received. Supply System personnel review the attachments to these transmittals on a selective basis and transmit any comments to UE&C for inclusion in the document.

17.1.4 Procurement Document Control

All procurement of materials, parts, components, and construction activities for WNP-1/4 is accomplished through prepurchased equipment and construction specifications and contracts prepared by the Supply System, or UE&C for the Supply System. Purchasing is accomplished by award of contracts by the Supply System Board of Directors and The Executive Committee Personnel based on proposals submitted in conformance with the specifications.

Each proposal is evaluated by the Supply System and UE&C. The evaluations include any exceptions taken to the specification requirements.

The Supply System QA Program requires that Supply System and UE&C develop and implement measures which assure that procurement documents are prepared, reviewed, approved and issued under controlled conditions. These control measures have been established and are currently in effect. These measures are described in Subsection 17.1.3. In addition, addenda issued prior to bid opening require a review and approval commensurate to the performed on the original procurement document.

The Supply System QA Program requires that Supply System and UE&C generated procurement documents be reviewed, and approval sheets signed off by Supply System QA personnel. These reviews verify the inclusion of applicable organizational, program, design control, procurement control, document control, identification special process, inspection, testing, calibration, handling, storage, shipping, nonconformance control, corrective action, record retention, record control, record maintenance, audits acceptance/rejection criteria and other quality requirements. The procurement documents require that contractors and vendors of Supply System Quality Class I items have a QA Program which meets the applicable requirements of 10CFR50, Appendix B and ANSI N45.2-1971.

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

The Supply System is responsible for the orientation and training of personnel performing quality affecting activities. The Supply System QA Program requires that Supply System personnel performing quality functions be adequately qualified, thus providing a mechanism to assure that personnel reviewing procurement documents are sufficiently knowledgeable to verify that proper quality related requirements have been incorporated.

The review and approval of Supply System and UE&C generated procurement documents is documented by the Supply System. This documentation consists of approval sheets, comment/resolution sheets and applicable correspondence. This objective evidence is filed and maintained in a controlled, traceable, retrievable systematic manner.

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

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

After bid openings and prior to contract award, bids are reviewed by Supply System QA and Engineering Department personnel with assistance from UE&C Home Office QA and Engineering Department personnel to determine the acceptability of the bidders' QA programs. This evaluation consists of an examination of their QA Plan, evaluation of past quality performance based on previous experience with Supply System, UE&C, and industry experience, and if a reasonable judgment cannot be made or the importance of the activity requires a QA evaluation of the vendor's facilities or contractor's operations, then a QA evaluation will be performed. After completion of the documented bid evaluation, the Program Director is notified as to the acceptability of the bidder's QA program based on his demonstrated ability of commitment to meet the procurement document requirements.

The details of the procurement document control measures implemented by UE&C and B&W are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.5 Instructions, Procedures and Drawings

The Supply System QA Program Manual delineates the methods by which the Supply System complies with the criteria of 10CFR50, Appendix B. Implementation of the Supply System QA Program assures control of the activities affecting quality.

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

Contractors and vendors, including UE&C, Bechtel and B&W, are required to have written instructions, procedures, policies and/or drawings which govern their quality related activities and which include appropriate quantitative and qualitative acceptance/rejection criteria. In addition, contractors and vendors, including UE&C, Bechtel and B&W, are required to impose similar documentation requirements on their subcontractors.

The details of the measures which UE&C, Bechtel and B&W implement to assure the development and issuance of instructions, procedures and drawings are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.6 Document Control

Document control is implemented by the Supply System, UE&C, Bechtel and B&W in accordance with the requirements delineated in their respective QA Manuals.

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

The Supply System QA Program provides for the controlled updating of the Supply System QA Program Manual through a process that specifically requires holders of a controlled copy of the Supply System QA Program Manual to destroy or return superseded documents.

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

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

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

The details of the document control measures implemented by UE&C, Bechtel and B&W are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.7 Control of Purchased Material, Equipment and Services

As described in Section 17.1.4, procurement for WNP-1/4 is accomplished through procurement documents. These documents contain sections which describe the general conditions, special conditions and technical specifications which the contractor is required to meet. The requirements of the general conditions, special conditions and technical sections are to assure that purchased material, equipment and services, whether purchased directly or through contractors, conform to design requirements. Measures to control these activities include a review and approval of procurement documents by Supply System; source evaluation and selection, vendor surveillance, inspections, and audits by Supply System and/or UE&C; and receiving inspection of these items upon receipt at the site.

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

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

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

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

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

The details of the measures which UE&C, Bechtel and B&W implement to assure the control of purchased material, equipment and services are described in Section 17.2 and 17.4, and 17.3 respectively.

17.1.8 Identification and Control of Materials, Parts and Components

The Supply System QA Program requires that Supply System and UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of measures for the identification and control of materials, parts, and components. In addition, these reviews and approvals assure that identification and marking requirements have been adequately delineated and that the location and method of identification and marking do not adversely affect the function or quality of the subject item.

The requirements which are incorporated into the procurement documents provide for a positive system of identification and control of materials, parts, components and partially completed subassemblies while in storage, warehousing and holding areas and during their fabrication, manufacturing, installation and construction.

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

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

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

The details of the measures which UE&C, Bechtel and B&W implement to assure the identification and control of materials, parts, and components are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.9 Control of Special Processes

The Supply System QA Program requires that Supply System & UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of measures for the control of special processes. These requirements specify applicable codes, standards, specifications and any special requirements necessary for the control of the delineated special processes.

In addition, the procurement documents specify that special processes will be performed and controlled in accordance with written procedures and will further delineate which special processes procedures will be submitted to UE&C for information or approval.

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

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

Essential ingredients of these procedures shall assure that:

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

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

The details of the measures which UE&C, Bechtel and B&W implement to assure the control of special processes are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.10 Inspection

The Supply System QA Program requires that Supply System & UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of inspection measures. These requirements specify that inspections will be performed by personnel who are independent from the individual or group responsible for performing the activity being inspected.

In addition, the procurement documents specify that inspection activities will be performed and controlled in accordance with written procedures, instructions and/or checklists. These procedures, instructions and/or checklists are required to provide for:

- a. The identification of quality characteristics to be inspected.
- b. The identification of those individuals or the organization responsible for performing the inspection operation.
- c. Acceptance/rejection criteria.
- d. A description of the method of inspection.
- e. Evidence of completion and certification of inspection operation.
- f. Record of the results of the inspection operation.

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

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

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

UE&C has been delegated the responsibility to perform source inspection activities associated with prepurchased items, and site construction surveillance of ASME III, Division 2 activities. Bechtel has been delegated the responsibility to perform site receiving inspection of prepurchased items, and site construction surveillance activities. Pre-surveillance planning developed by responsible organizations will define surveillance requirements, acceptance criteria, and provide documented results to provide objective evidence that the particular quality characteristic inspected actually conforms to the specification requirement.

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

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

The details of the inspection measures and/or surveillance activities implemented by UE&C Home Office, the applicable Project QA Organization and B&W are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.11 Test Control

The Supply System QA Program requires that Supply System and UE&C generated procurement documents be reviewed and approved to verify that the test requirements which are required to be performed by vendors and contractors are specified. The test requirements include adequate test prerequisites, instructions for testing, proper instrumentation, documentation, and evaluation by qualified, responsible individual or group. The procurement documents require that testing be performed in accordance with written procedures, instructions and/or plans which define the overall inspection and test requirements, the acceptance/rejection criteria and data to be recorded.

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

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

Construction testing will be performed by the contractors to ensure that the installation of equipment is done in accordance with applicable codes and standards. These tests include inspection of the equipment during and following installation, integrity tests to verify proper installations, and tests, and inspections to verify cleanliness.

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The contractors will be required to implement Inspection and Test Plans which define overall inspection and test requirements, criteria for acceptance, and data to be recorded. These plans shall be approved by the Supply System. Integrity tests, i.e. hydrostatic, continuity, resistance, etc. and cleanliness tests will be performed in accordance with Supply System approved procedures. The contractor will be required to provide control of installed equipment in accordance with Supply System equipment tagging procedure. Upon completion of contractor installation and testing of a given system, all associated inspection and test records will be turned over to Bechtel and the Supply System for review and concurrence with results. System inspections will be performed by the Supply System to ensure that equipment is installed in accordance with design requirements and that the system installation is complete. Following resolution of any discrepancies, contractor tags will be removed, Supply System tags installed, and control of the system will then be transferred to the Supply System for functional testing purposes. Contractor test documentation will become a part of the overall permanent plant testing records.

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

The details of the test control measures implemented by UE&C, Bechtel and B&W are described in Section 17.2 and 17.4, and 17.3 respectively.

17.1.12 Control of Measuring and Test Equipment

The Supply System QA Program requires that Supply System & UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of measures to control measuring and test equipment. These requirements specify that:

- a. Contractor's and vendor's procedures will describe the calibration technique, calibration frequency, maintenance and control of all measuring and test instruments, tools, gauges, fixtures, reference standards, transfer standards, and non-destructive examination equipment which are to be used in the measurement, inspection, and monitoring of components, systems, and structures.
- b. Allowable deviations from calibration standards (tolerances) will be specified in the contractor's and vendor's procedures and submitted to the Supply System and/or UE&C for approval.
- c. Inspection, measuring, testing and maintenance devices are calibrated and adjusted at scheduled intervals against certified standards having known valid relationships to national standards, when such standards exists.

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- d. Calibration intervals for each device are based on the type of equipment, required accuracy, intended usage, and other conditions affecting inspection, measurement, testing, and maintenance control.
- e. Calibration standards are maintained, calibrated and used in an environment having temperature and humidity controls that are compatible with required accuracy and operating characteristics of the standards.
- f. Records are maintained that indicate the calibration history and the next scheduled calibration date for each controlled device.
- g. Each inspection, measuring, testing and maintenance device is properly identified with serial numbers, or other suitable identification, and has its last and next scheduled calibration dates clearly indicated.
- h. Devices that have not been properly maintained or calibrated in accordance with specified schedules have been identified and removed for service.
- i. An investigation will be conducted and documented to determine the validity of previous inspections performed when measuring and test equipment are found to be out of calibration.

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

The details of the measures which UE&C, Bechtel and B&W implement to assure the control of measuring and test equipment are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.13 Handling, Storage and Shipping

The Supply System QA Program requires that Supply System and UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of appropriate cleaning, preservation, handling, storage and shipping measures. These requirements specify that procedures will be developed based on the requirements of the procurement documents, with consideration to the need for special tools, equipment and qualified personnel.

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

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Items delivered to the site are stored, handled and preserved in accordance with procurement documents. Also the equipment manufacturer's recommendations are to be considered. These functions are performed in accordance with approved procedures and instructions. Site storage, handling and preservation are monitored by UE&C and Bechtel QA Surveillance Engineers on a scheduled basis and corrective action is taken when required. The UE&C and Bechtel QA Surveillance Engineers also have follow-up responsibility of corrective action.

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

The details of the measures which UE&C, Bechtel and B&W implement to assure control of the cleaning, preservation, handling, storage and shipping of the items are described in Section 17.2 and 17.4, and 17.3 respectively.

17.1.14 Inspection, Test and Operating Status

The Supply System QA Program requires that Supply System and UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of inspection test and operating status measures. These requirements specify that procedures will be developed to assure that specified inspections and tests are performed, and that the acceptability of the items with regard to their inspection, test and operating status are known throughout the manufacturing, installation and startup testing phases.

In addition, the procedures are required to specifically delineate the methods by which the inspection, test and operating status of an item will be identified and the controls which will be implemented to control the use of the identification methods. The implementation of the status identification system will be designed to preclude the inadvertent bypassing of required inspections or tests, unless formally waived, and to prevent the inadvertent operation of the equipment.

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

The details of the measures which UE&C, Bechtel and B&W implement to assure implementation of an inspection, test and operating status system are described in Section 17.2 and 17.4, and 17.3 respectively.

17.1.15 Nonconforming Materials, Parts or Components

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

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

17.1.15.1 Detection and Documentation of Nonconformances

The detection and documentation of nonconformances detected by the Supply System follows:

a. Site Nonconformances

All Supply System Project/QA personnel shall have the authority to either issue a Hold Tag or assure that the appropriate Contractor/Supplier issue its Hold Tag to stop work or control further processing of nonconforming item(s) which may be in direct violation of the following:

- 1) The PSAR/FSAR
- 2) Engineering, construction, or material specifications
- 3) Applicable codes and standards
- 4) Project Quality Assurance Procedures
- 5) Contractor's Quality Assurance Procedures

Upon tagging, the individual shall contact the Supply System Site Quality Assurance Representative who shall assure the timely evaluation and appropriate actions to further control the item or activity. If determined to be a nonconformance it will be documented by the Supply System, either using the UE&C or Bechtel Nonconformance form or brought to the attention of UE&C/Bechtel QA for their documentation, using the UE&C/Bechtel-NCR. In either case, from the point of origination, the nonconformance will be handled in accordance with the UE&C/Bechtel NCR Procedure described in Section 17.4.

b. Vendor Nonconformances

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

c. System Nonconformances

A system has been established to assure quality discrepancies concerning documentation, procedures, instructions or program activities are identified, documented and corrected and that notification of action taken is transmitted to affected parties.

Quality Assurance personnel review AE and Supply System generated procurement documents to assure that requirements establishing a system of corrective action have been included. This review shall be accomplished in accordance with established procedures.

17.1.15.2 Review of Nonconformances

Bechtel QA is responsible for assuring that a copy of nonconformance documents generated by vendors or contractors, UE&C Vendor Surveillance, Bechtel, UE&C or the Supply System which identify significant deviations are transmitted to the Supply System Quality Assurance organization.

The Supply System Quality Assurance organization shall assure review of nonconformance documents to assure that proper corrective actions have been taken to preclude the repetition of similar nonconformances, that all applicable nonconformances have been evaluated by the Nonconformance Review Board (See Section 17.4), and that those nonconformances pertaining to conditions outlined in the requirements of 10CFR50.55(e)/10CFR Part 21 have been properly processed. A monthly report of this review shall be prepared for Program Management.

The details of the measures which UE&C, Bechtel and B&W implement to assure the control of nonconforming materials, parts or components are described in Sections 17.2 and 17., and 17.3 respectively.

17.1.16 Corrective Action

The Supply System QA Program requires that Supply System and UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of measures to assure that conditions adverse to quality are identified, evaluated, corrective action implemented, certified, documented and reported to the appropriate levels of management. In addition, the cause of

significant conditions adverse to quality are required to be identified, evaluated, corrective action implemented to preclude repetition verified, documented and reported to the appropriate levels of management.

The Supply System QA Program requires that Supply System QA assure a review of nonconformance reports and other significant conditions adverse to quality to assure that dispositions have been effected, proper corrective actions have been taken to preclude the repetition of similar nonconformances, and that items pertaining to the conditions outlined in the requirements of 10CFR50.55(e) and 10CFR Part 21 have been properly processed.

The procurement documents require the contractor or vendor to take timely corrective action when requested by Supply System and/or UE&C/Bechtel. This requirement is in addition to their own procedure for implementing corrective action which the procurement documents specify.

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

The details of the corrective action measures implemented by UE&C, Bechtel and B&W are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.17 Quality Assurance Records

The Supply System QA Program requires that Supply System and UE&C generated procurement documents be reviewed and approved to verify that requirements have been included which provide for the development and implementation of measures to assure that documentation necessary to provide objective evidence of the activities affecting quality are generated, reviewed, approved, filed and maintained.

The procurement documents delineate which documentation is required for objective evidence. The objective evidence requirements include such documentation as inspection, test, nonconformance, corrective action and audit reports, as well as procedures, personnel qualifications, drawings and other procurement documents and related QA documentation.

In addition, the procurement documents require that contractors or vendors:

- a. Have written measures to control the filing and retrieval of QA records.
- b. Have QA records which provide sufficient information to permit identification between the records and the item or activity to which they apply.
- c. Have QA records which are legible, complete, and authenticated and dated by authorized personnel.

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- d. Maintain control over the QA records to assure that revisions are performed under controlled conditions in accordance with written procedures by authorized personnel. Revisions will include the date and identification of the person authorized to make the revision.
- e. Maintain their QA records in a retrievable, identifiable manner.
- f. Have their QA records accessible for review by Supply System and/or UE&C/Bechtel.
- g. Have QA record storage facilities which are constructed and located to prevent destruction by fire, flooding, or theft, and to prevent deterioration from temperature or humidity conditions.

Bechtel has been given the overall responsibility to receive, store and maintain the QA records for the Supply System at the site. UE&C has been given the responsibility to receive, store and maintain QA records associated with ASME III Div. 2 activities.

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

Bechtel Quality Assurance has been given the responsibility to review QA records to assure their correctness and completeness. QA records are required to be submitted to Bechtel in accordance with the requirements of the procurement documents. QA records are utilized to verify that activities affecting quality have in fact occurred, and that they have been performed in compliance with the specified requirements. Analyses of conditions adverse to quality are performed as indicated in Subsections 17.1.15 and 17.1.16. These analyses utilize QA records as one means of disclosing discrepancies and nonconforming conditions. Further, QA records provide the basis upon which dispositioning, and verification of resolutions are accomplished. UE&C has similar responsibility for QA records pertaining to ASME III, Div 2 activities.

Safety related equipment will not be installed until it is assured that either the documentation proving that the equipment does in fact meet the specification and code requirements is at the site, or a certification is received stating that this documentation is available and will be furnished, signed by an authorized representative of the manufacturer, and approved by UE&C Engineering with Supply System Engineering concurrence.

The details of the Quality Assurance record measures that are implemented by UE&C, Bechtel and B&W are described in Sections 17.2 and 17.4, and 17.3 respectively.

17.1.18 Audits

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

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

Supply System audit activities are performed in accordance with written procedures by appropriately trained personnel not having direct responsibility for the areas being audited.

Supply System audits determine the adequacy of, and adherence to, the Supply System QA Program, and the effectiveness of its implementation. This is determined by:

- a. The Quality Assurance Director, Manager-Vendor Surveillance/Audits, and the Project QA Manager review reports of audits performed by the Supply System on UE&C Home Office, NSSS Vendor and the Supply System.
- b. The Project QA Manager reviews reports of audits performed by UE&C, Supply System and Bechtel quality assurance on UE&C, Bechtel, site contractor and vendor activities.

Supply System audits are performed based on preplanned schedules and audit plans.

The implementation of each applicable Criteria of 10CFR50, Appendix B, is scheduled to be audited by the Supply System annually. Additional follow-up audits may be scheduled to verify implementation of corrective action to findings identified by audits. The frequency of audits may be increased or decreased based on findings.

WNP - 1/4
PSAR

The scope of Supply System audits include:

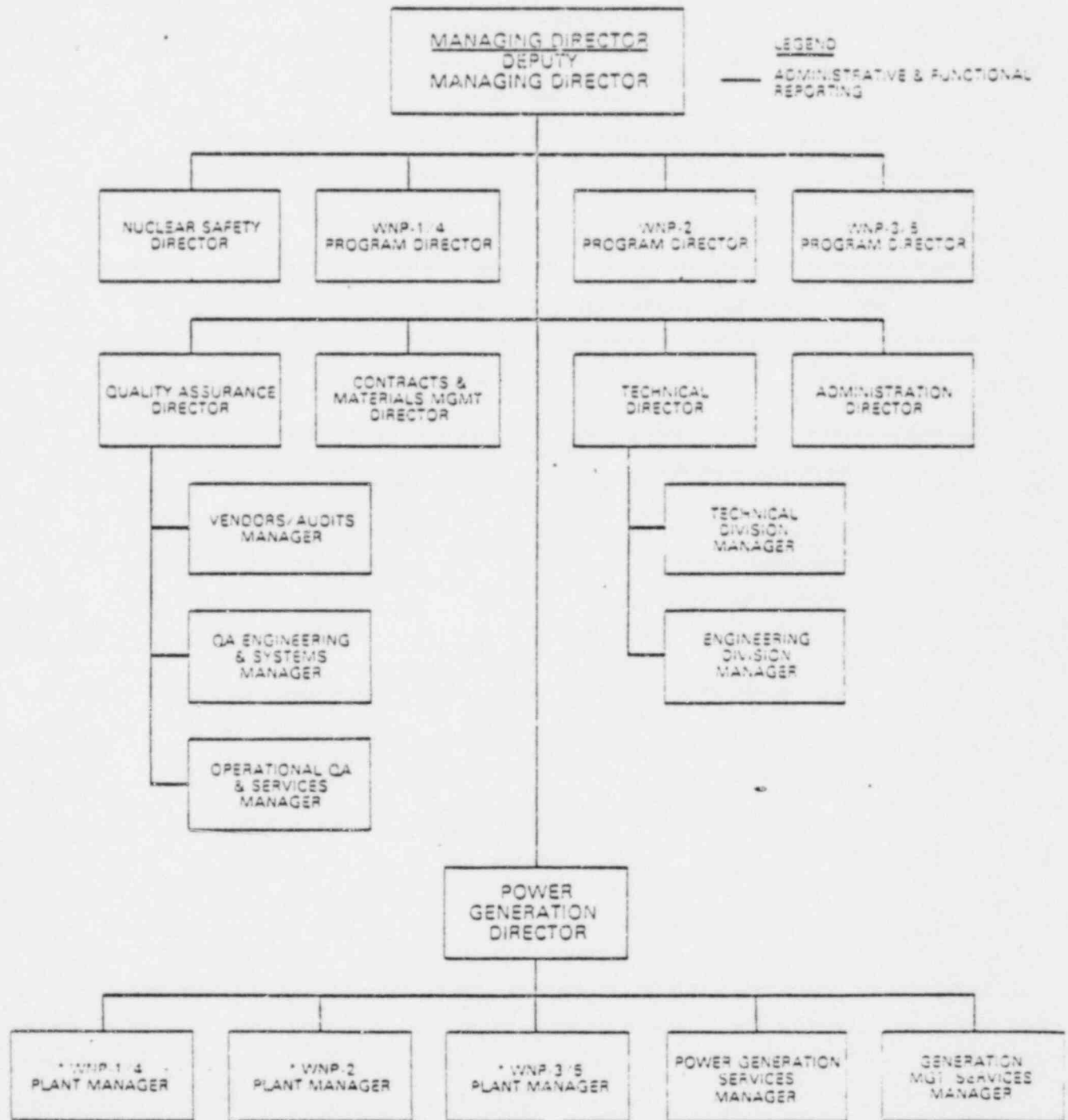
- a. UE&C's home office, site and vendor surveillance activities.
- b. B&W's home office, site (if any) and applicable manufacturing activities.
- c. Bechtel's site activities.
- d. Supply System home office and site activities.

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

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

The details of the audit activities implemented by UE&C, Bechtel and B&W are described in Sections 17.2 and 17.4, and 17.3 respectively.

SUPPLY SYSTEM ORGANIZATION



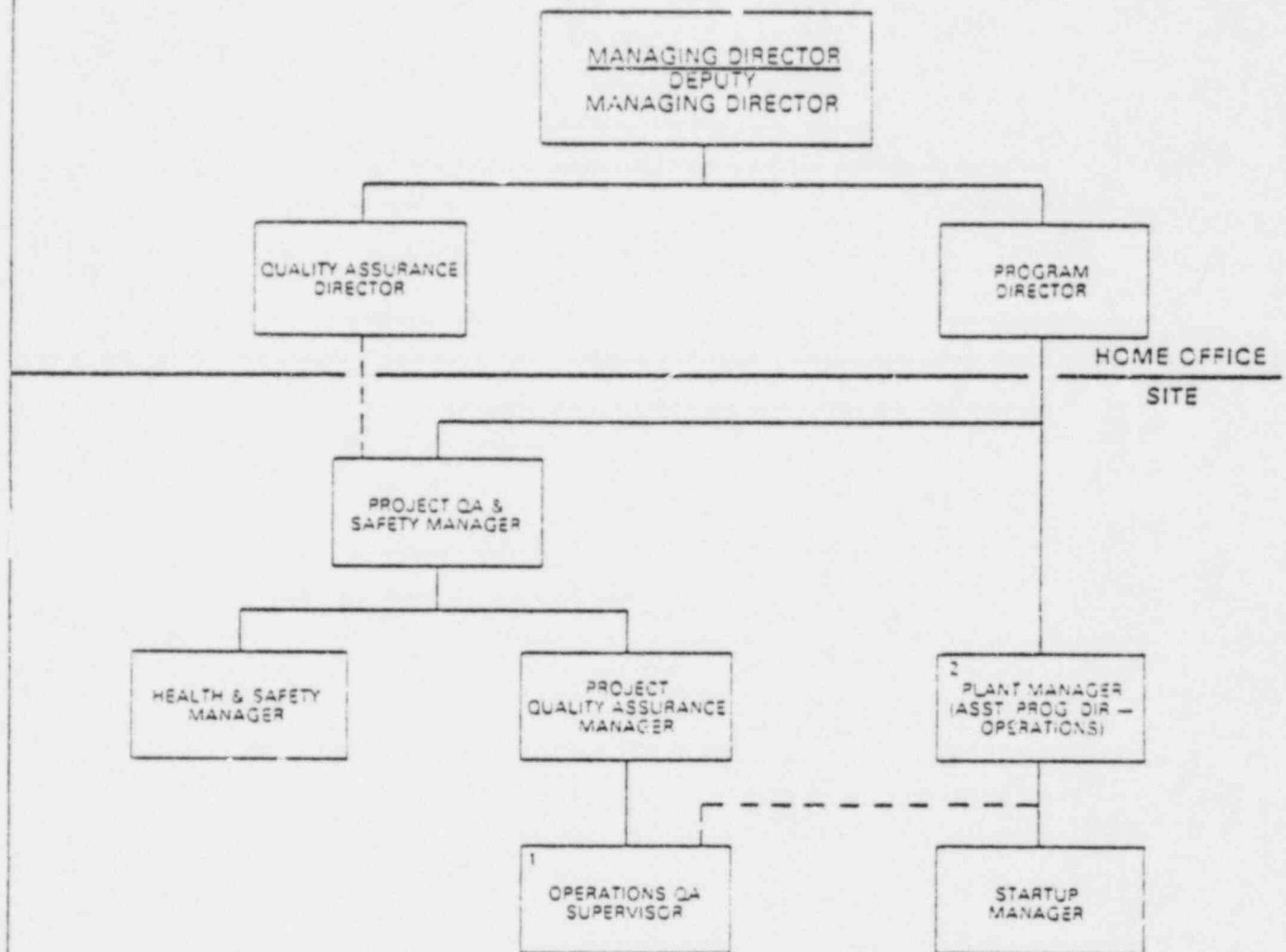
*PRIOR TO COMMERCIAL OPERATION, THESE POSITIONS REPORT TO THE RESPECTIVE PROGRAM DIRECTORS

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
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ORGANIZATION

FIG. 17.1-1

WNP-1/4 ORGANIZATION
(PRIOR TO OPERATING LICENSE)



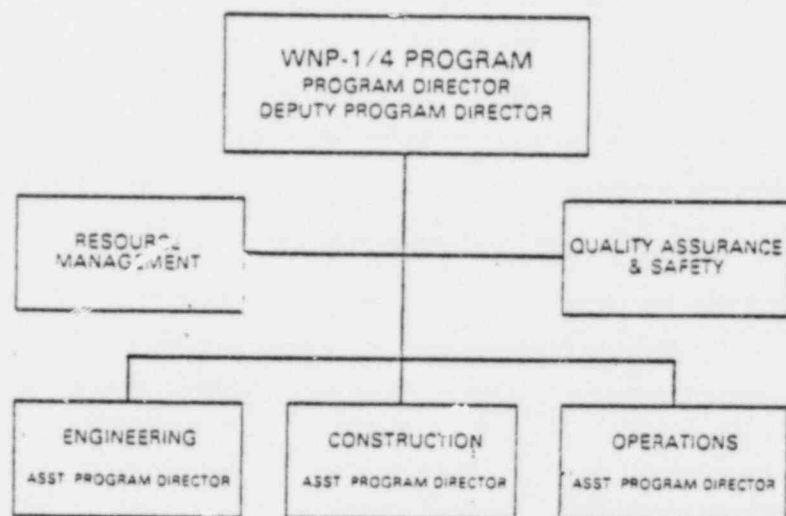
— LEGEND
— ADMINISTRATIVE & FUNCTIONAL
REPORTING
- - - LINES OF COMMUNICATION

1 THIS POSITION REPORTS TO MANAGER, OPERATIONAL QA & SERVICES AT OPERATING LICENSE
2 THIS POSITION REPORTS TO DIRECTOR, POWER GENERATION, AT COMMERCIAL OPERATION

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QUALITY ASSURANCE ORGANIZATION

FIG. 17.1-2



WASHINGTON PUBLIC POWER SUPPLY SYSTEM
WPPSS NUCLEAR PROJECT NO 1/4
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WNP-1/4 SUPPLY SYSTEM
PROJECT ORGANIZATION

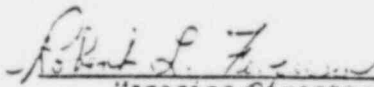
FIG. 1.1-1

CORPORATE POLICY AND PROCEDURE
QUALITY ASSURANCE REQUIREMENTS
MANAGEMENT STATEMENT

This Quality Assurance Manual describes Quality Assurance Requirements for the design and construction of Supply System Nuclear Power Plants.

- The manual meets the applicable requirements in Appendix 3 of 10CFR50 and meets the "Owner" requirements of the ASME code for construction of Class 1, 2, 3, and MC components, including piping systems, which are fabricated and installed at various field sites by contractors.
- This QA Manual is official Supply System policy. Adherence to its requirements, criteria and guidance is mandatory for personnel and organizations performing quality affecting activities during Design and Construction of Nuclear Power Generating Plants. All Supply System personnel performing quality affecting activities described in this manual are responsible for implementing the requirements.
- The Director of Quality Assurance has the authority and organizational freedom to assure that the requirements are met and to; identify quality problems, initiate action to solve quality problems, recommend and/or provide solutions, verify implementation of solutions, control installation of non-conforming items, control further processing of a detected deficiency or the continuation of an unsatisfactory work condition and stop work for quality reasons.

I fully support the requirements described in this manual and acknowledge the responsibility for enforcing them.


Managing Director

3/3/91
Date

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
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SUPPLY SYSTEM MANAGEMENT STATEMENT
(TAKEN FROM QUALITY ASSURANCE MANUAL)

FIG. 11.1-4

17.2 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION
UNITED ENGINEERS & CONSTRUCTORS (ARCHITECT-ENGINEERING OA)

Scope: This section summarizes the Home Office and Vendor Surveillance activities of the United Engineers and Constructors Quality Assurance Program as it pertains to the WNP-1 project. UE&C Reliability and Quality Assurance Department has been assigned the responsibility by WPPSS to provide Quality Assurance program which meets or exceeds 10CFR50, Appendix B and ANSI N45.2-1971 requirements. This section coordinates that portion of the total Quality Assurance program for the project with respect to the design, procurement and fabrication of WNP-1 equipment. The terms "Vendor" and "Contractor" as used throughout this section are interchangeable because of the connotation that UE&C Vendor Surveillance activity will be conducted in the shops of "Vendors" and "Contractors". Except where indicated, the terms "Vendors" and "Contractors" excludes the NSSS supplier whose quality assurance program is described in Section 17.3.

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17.2.1 Organization

17.2.1.1 Engineering Function

The UE&C Power Division, headed by the Vice President - Power Generation, is responsible for the design and engineering of nuclear power plants. The Vice President - Power Generation, assigns a project manager to lead the UE&C effort for the WNP-1 Project and the Power Generation - Engineering Department supplies the engineering manpower required for its design.

The control of quality-related activities affecting the design and engineering, is performed in accordance with the Power Division procedures which are approved by the Vice President - Power Generation and the Manager - R&QA.

Any UE&C Power Division department supplying services to the Power Generation Engineering Department will perform their work in accordance with the procedures of the Power Division. Work performed by the Power Generation Engineering Department is further controlled via compliance with detailed engineering and QA procedures, which is subject to audits performed by R&QA. The Corporate Organization Chart, Figure 17.2-1 shows this organizational structure.

17.2.1.2 Purchasing Function

The Manager - Purchasing reports through the Manager - Project Supporting Services to the Vice President - Administration and is responsible for procurement of equipment to requirements specified by the UE&C Power Division.

The procurement activity on this project provides for the commercial evaluation of all bid packages and includes contract administration and expediting and is performed in accordance with good procurement practices written into the contract specifications. Contract administration and expediting performed by the Purchasing Department is controlled through a system of audits by R&QA.

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It is important to note that the Purchasing Department cannot waive or change any engineering or QA requirement or allow one to be changed without the prior approval of Power Generation Engineering and R&QA.

Further, the expediting group has no inspection responsibility or authority and cannot waive inspection or witness points or release equipment for shipment without R&QA approval.

17.2.1.3 Construction Function

The UE&C Construction Division, headed by the Vice President - Construction, is responsible for providing Construction Management for building nuclear power plants.

The Vice President - Construction, assigns a Construction Manager, in the home office, and a Resident Construction Manager, on the site, to lead the UE&C construction management effort for the WNP-1 Project. Supervision of the work force on the project site is handled through Area and Craft Coordinators.

Work performed by the Construction Department is controlled via a system of surveillance, audit, inspection, test and examination, by R&QA as described in other sections of this PSAR and in the UE&C QA procedures manual for WNP-1.

Typical UE&C field QA/QC organization chart and interfaces with construction management are depicted in Figure 17.2-2 and 17.4-1.

17.2.1.4 Quality Assurance Function

The responsibility for Quality Assurance within UE&C rests with the Vice President - Administration. The Vice President - Administration is on an organizational level with the Vice President - Power Generation and the Vice President - Construction, all reporting to the President as shown on the corporate organization chart, Figure 17.2-1.

The Manager - Reliability & Quality Assurance reports directly to the Vice President - Administration and has been delegated full responsibility for the total quality assurance activity within UE&C which includes the establishment, direction and management of the QA program on the project. The Manager - R&QA is also responsible for the final review and approval of the program and has sufficient authority and organizational freedom to:

- a) Identify quality problems.
- b) Initiate, recommend or provide solutions through designated channels.

- c) Verify implementation of solutions.
- d) Control further processing or delivery of nonconforming articles or deficient conditions until satisfactory dispositions are made.

A management statement by the UE&C company President in the UE&C corporate QA manual, instructs all UE&C organization and personnel to adhere to the UE&C QA policies and procedures. A statement by the Manager R&QA in the project QA procedures manual imposes a similar requirement to the responsible project disciplines and individuals. The Manager, R&QA reports to the Vice President, Administration as shown on the Corporation Organization Chart Figure 17.2-1 and supports the WNP-1 Project Manager by developing, implementing and managing the Quality Assurance Program. In this way, the R&QA Department maintains a direct and separate communication channel to higher management which is not directly responsible for the design effort.

The qualification requirements imposed for the manager R&QA are:

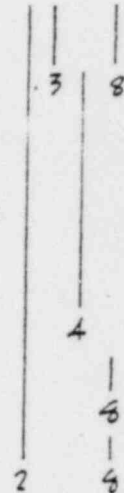
1. Education - A graduate Engineer with a Professional Registration or eligible and capable of being registered.
2. Experience - A minimum of ten (10) years of Quality Assurance experience in the Nuclear, heavy construction or heavy equipment industries. Minimum experience requirements may be reduced by:
 - a. One year for each year of direct experience within the UE&C R&QA department.
 - b. One year for each year of direct experience in Quality Assurance and Control on a nuclear power project.
 - c. One year for each year of direct experience in nuclear power plant design engineering.
 - d. One half year for each year of direct experience in nuclear power plant construction supervision or job engineering.

Extensive previous experience in Reliability has allowed the Manager of Reliability and Quality Assurance to establish UE&C's department with a dual function. One objective of this dual function is to evaluate the state of the art (Reliability) in the Power Industry. The "Reliability" portion of the R&QA charter has been devoted to literature searching and study of reliability-oriented activities elsewhere in industry and in providing communication to the company on these activities. No employee of the function has any significant commitments to support the Reliability function. It is estimated that more than 95% of R&QA's activities are devoted to developing and implementing Quality Assurance Program responsive to 10CFR50, Appendix B and N45.2.

The organizational relationship of Reliability and Quality Assurance with other UE&C functions is shown in Figure 17.2-2.

Table 17.2-2 summarizes the interface between WPPSS and UE&C as related to the various QA program activities. This chart presents those significant interactions between UE&C and WPPSS as related to pertinent design, manufacturing and installation QA activities which are described throughout the revised Chapter 17 of the PSAR.

The R&QA function is composed of personnel who are experienced in the development and implementation of Quality Assurance Programs for Nuclear Power Plants. The functions major divisions, which are applied to the WNP-1, are as follows:



- n) Plan and coordinate surveillance of the NSS Contractor and their equipment suppliers.

17.2.1.4.2 Vendor Surveillance

The Vendor Surveillance Group under the direction of a Supervising Engineer who reports to the Manager R&QA through the Manager Quality Services directs personnel assigned to surveillance functions at Vendor and Contractor off-site shops. This function is conducted primarily as a surveillance action of manufacturers' quality control and inspection programs. In addition, the Vendor Surveillance representatives witness shop tests and inspect equipment to the extent designated on the check plans prepared by Quality Engineering.

The Vendor Surveillance Supervising Engineer works with the QAE in matters relating to liaison and coordination for the projects' purchased equipment. The principal responsibilities of the Vendor Surveillance Group include:

- a) Perform facility surveys at prospective Vendors' and Contractors' plants, if required by the project.
- b) Coordinate scheduling with Vendor, Contractor (for off-site work) and Washington Public Power Supply System representatives, for performance of surveillance check points identified on the surveillance check plan.
- c) Conduct surveillance of Vendors and Contractors (for off-site work), including NSSS, prepare inspection reports on the results of the surveillance actions and distribute reports.

17.2.1.4.3 Welding Engineering

Welding Engineering, under the direction of a Supervising Engineer who reports to the Manager R&QA through the Manager Quality Services, consists of personnel with experience in all forms of welding including the writing and qualification of procedures and qualification of personnel. The principal responsibilities of the Welding Group are the following:

- a) Review and approve Vendor and Contractor submitted welding procedures and their qualification records.
- b) Conduct training sessions, administer tests and qualify UE&C personnel for welding evaluation.
- c) Consult with UE&C Engineering in matters relating to welding requirements in drawings and specifications.
- d) Provide assistance and guidance to Vendors and Contractors matters of welding techniques and procedures.

17.2.1.4.4 Audits

The Audits Group under the direction of a Manager who reports to the Manager R&QA, is composed of personnel with experience in the area of planning and conducting various types of audits. The duties of the Auditing Group are as follows:

- a) Plan, develop and implement UE&C's Quality Auditing procedures.
- b) Schedule audits in coordination with the QAE.
- c) Conduct project internal audits.
- d) Conduct Vendor and Contractor off-site audits and coordinate facility surveys with the Vendor Surveillance Group.
- e) Document and distribute report of findings and observations.
- f) Conduct follow-up audits verifying corrective action.
- g) Coordinate QA requirements of AEC regulations, codes and standards.

17.2.1.4.5 Nondestructive Examination

The Nondestructive Examination (NDE) Group, under the direction of a Supervising Engineer, who reports to the Manager R&QA through the Manager Quality Services, consists of personnel with experience in all forms of NDE including preparation of procedures and qualification of personnel. In addition, the group has NDE examiners who are qualified to Level III in accordance with ASNT-TC-1A. The principal duties of the NDE Group are as follows:

- a) Establish and approve methods and procedures, testing and certifying of UE&C NDE personnel.
- b) Conduct training sessions on NDE.
- c) Assist in selection of Field NDE personnel.
- d) Review Vendor and Contractor procedures, facilities and personnel.
- e) Provide evaluation and disposition of NDE problems.

17.2.1.4.6 Materials Engineering

The Materials Engineering Group, under the direction of a Manager who reports to the Manager R&QA, consists of Engineers with expertise in Metallurgy, corrosion, non-metallics, coatings and welding. This group assists in selecting materials for new applications and assists the QAE

in solving inspections report problems and performing audits of metallurgical procedures and controls. In addition, the Materials Engineering Group has these major duties:

- a) Provide liaison with major material and component suppliers.
- b) Review contract specifications.
- c) Review design modifications material application.
- d) Evaluate new materials and processes.
- e) Review Vendor and Contractor procedures including cleaning and heat treatment procedures.
- f) Investigate component failures and review repair procedures.
- g) Maintain alloy and material application files.

17.2.1.4.7 Field Quality Assurance

Field Superintendent QA reports to the Supervising Engineer - Field QA who is located in the home office. The Field Quality Assurance organization including its responsibilities will be discussed in Paragraph 17.4.1.

The qualification requirements imposed for the Manager R&QA are:

- 1. Education - A graduate Engineer with a Professional Registration or eligible and capable of being registered.
- 2. Experience - A minimum of ten (10) years of Quality Assurance experience in the Nuclear, heavy construction or heavy equipment industries. Minimum experience requirements may be reduced by:
 - a. One year for each year of direct experience within the UE&C R&QA department.
 - b. One year for each year of direct experience in Quality Assurance and Control on a nuclear power project.
 - c. One year for each year of direct experience in nuclear power plant design engineering.
 - d. One half year for each year of direct experience in nuclear power plant construction supervision of job engineering.

17.2.2 Quality Assurance Program

17.2.2.1 Introduction

The Quality Assurance and Quality Control activities performed on WPPSS Nuclear Project No. 1 (WNP- 1) are under the control of or are subject to audit by the Reliability and Quality Assurance Department (R&QA). The department has authority and organizational freedom to identify quality problems; to initiate, recommend or provide solutions; and to verify implementation of solutions independent of individuals or groups directly responsible for performing a specific activity. UE&C's Quality Assurance program complies with the AEC Regulatory Guides positions as described in 3.12, and the applicable requirements of 10CFR50, Appendix B, the AEC Grey Book, and the ANSI Standards contained in 17.1.2. The basic elements of compliance are described under 17.2.2.2. A cross index of UE&C Procedures and the 18 Point Criteria is shown in Table 17.2-1. The structures, systems and components to be covered by the UE&C QA program are those designated as WPPSS Quality Class I in Table 3.2-2.

17.2.2.2 Response to AEC Criteria

a) Organization

The Reliability & Quality Assurance Department is responsible for assuring that the QA program established for this project complies with regulatory and specific project requirements and that the program is properly implemented. The R&QA Department carries out the QA program as defined in Paragraph 17.2.1 which outlines the structure and responsibilities of the R&QA organization and its relationship with other corporate departments. Paragraph 17.2.1 also defines the department's organizational freedom and independence for identifying quality problems, including effecting resolutions and verifying that the solution has been implemented.

b) Quality Assurance Program

The QA program established for WNP- 1 consists of specific Project QA Procedures approved by WPPSS and defined in this Section (17.2.2) of the PSAR.

c) Design Control

Quality Assurance Procedures define the actions of the Engineering Department and R&QA to assure the application of required design basis, Codes and Standards into the specifications. Through a planned system of reviews and audits, and the use of a "Unit Control" form, these actions will provide measures of assurance for compliance. Design changes (Engineering, Vendor or Field), will be subject to the same design control measure as are the original specification requirements.

d) Procurement Document Control

UE&C Engineering Designs are translated into WNP- 1 procurement requirements primarily by means of specifications and drawings. The Engineering Design requirements, regulatory requirements, quality requirements and any other requirements which are necessary to ensure adequate product conformance are specified and referenced in the Contract Specification for materials, equipment and services. The control over input, review and approval of Quality Control and Quality Assurance requirements set forth in procurement specifications and approved design drawings is maintained through procedures contained in the basic UE&C manuals.

e) Instructions, Procedures and Drawings

UE&C's quality-related activities on the WNP- 1 project are performed in accordance with the WNP- 1 project Quality Assurance Procedures Manual as described in 17.2.2. This QA manual defines the technical, administrative and quality-related inputs to documents affecting the quality of WPPSS designated Quality Class I structures, systems and components. Appropriate qualitative and quantitative acceptance criteria for determining that quality-related activities have been satisfactorily accomplished are contained in contract specifications, procedures, drawings and other appropriate documents.

f) Document Control

Written instructions and procedures for implementing document control measures are contained in the UE&C Quality Assurance Procedures Manual, Vendors and Contractors Quality Control Manuals and Pre-purchased and Construction Equipment Specifications. These instructions and procedures control the issuing of documents such as specifications and drawings, including authorized changes, and assure that the documents and revisions are reviewed for adequacy and approved for release by authorized personnel.

g) Control of Purchased Material Equipment and Services

The Quality of purchased material equipment and services is controlled through review of submitted Vendor and Contractor QA programs, data and drawings, progressive surveillance at vendors' shops, audits, witnessing of tests and site receiving inspections (17.4.7). Pre-award evaluation of Prospective Contractors and Post-award evaluation of successful bidders are conducted to assure compliance with Contract requirements. Vendors and Contractors will be required to show evidence of their ability to satisfy all QA requirements of the contract to be awarded. UE&C QA and Engineering department personnel will assist WPPSS in reviewing the bids to determine the acceptability of the bidders QA program.

h) Identification and Control of Materials, Parts & Components

UE&C drawings and specifications include requirements for the identification of materials, parts and components, which directs the supplier of WNP-1 safety related equipment to provide a system to assure that these items incorporated into the plant are properly identified and traceable to all supporting quality assurance documentation. Vendor and Contractor identification procedures will be established, maintained and audited to assure implementation.

i) Control of Special Processes

UE&C will not be required to perform any special processes, but will impose applicable requirements on Vendors and Contractors, of WNP-1 equipment and services. These special processes include welding, cleaning, repairing, heat treating, nondestructive testing and other processes which affect the quality of a nuclear or engineering safeguard structure system or component during fabrication, manufacturing, installation and construction activities. UE&C's procurement documents require Vendors and Contractors to control these special processes in accordance with UE&C processing requirements, appropriate codes and standards. Vendors and Contractors will be required to submit written procedures and records of Process and Personnel qualification for UE&C approval prior to use of the process.

j) Inspection

The Quality Assurance program of UE&C requires participating Vendors and Contractors to provide for a controlled system of inspection of materials, parts, components and equipment associated with the WNP-1 project. Written and UE&C approved procedures provide for this control to assure that the materials purchased are fabricated, tested and delivered in conformance with specification and contract requirements. (Section 17.2.10).

k) Test Control

A program of testing during Vendor and Contractor plant activity will be performed in accordance with a pre-established approved contractor procedure or program based on contract specification requirements, and the results will be fully documented. These activities will be subject to surveillance and audit by R&QA for assurance that the test results meet contract specification prerequisites and the approved test procedure requirements.

1) Control of Measurement and Test Equipment

Vendor and Contractor QA programs will establish and provide for the systematic control over the calibration, use, recall and recalibration of test equipment used in their plant operations. Vendors and Contractors will be required by the procurement documents to provide these calibration control measures within their quality control system with calibrations performed against standards of known accuracy, which will be subject to audit and surveillance by UE&C R&QA personnel.

m) Handling, Storage and Shipping

Vendors and contractors providing equipment will implement an approved program detailing the requirements for handling, storing, cleanliness, preservation and shipping of their equipment. Any special requirements for handling and storage of the equipment after receiving at the site will be contained in UE&C contract specifications. The Vendor will be required to furnish approved instructions for protection of his equipment.

n) Inspection, Test and Operating Status

The UE&C Quality Assurance Program provides for procedures to be developed by vendors and contractors, compatible with UE&C, for indicating the status of tests and inspections performed at their plants upon materials, parts and components. The status of an item is indicated by means of tags and stamps to (a) preclude the inadvertent bypassing of their inspection and test requirements and to (b) prevent their inadvertent operation.

o) Nonconforming Materials, Parts or Components

The UE&C Quality Assurance Program provides that vendors and contractors are suppliers of WNP- 1 equipment, establish and maintain a system for controlling nonconforming material to preclude its use until it has been properly dispositioned. This system will be compatible with the UE&C system of NCR control which will assure that vendor and UE&C processing and activity procedure nonconformances are identified, documented, segregated and dispositioned and that notification of the actions taken are transmitted to the affected parties. Provision is also made for implementation of UE&C program of Nonconformance activity.

p) Corrective Action

UE&C QA program provides for the use of available inspection and auditing procedures and UE&C vendor or contractor nonconformance and disposition reports to identify and obtain corrective action

for conditions adverse to quality. Typical of these conditions are vendor quality program or procedural inadequacies, failures, malfunctions, deficiencies, deviations, defective material and equipment and vendor nonconformance to specified requirements. A program of corrective action control is also implemented for UE&C Home Office Activity corrective action.

q) Quality Assurance Records

The UE&C Quality Assurance program provides for drawings, contract specifications and procurement documents to delineate types of Quality Assurance records that Vendors and Contractors are required to prepare, maintain and submit for review and UE&C approval. These records will be identifiable and retrievable and will provide the documentary evidence of quality. UE&C will maintain the WNP- 1 Quality Assurance files for activities and items under UE&C cognizance. These files will be available for WPPSS review.

r) Audits

The Quality Assurance program for the WNP- 1 project provides for planned and unplanned periodic audits which will verify compliance with the applicable Management, Engineering, Procurement and QA activities. The audit records of UE&C internal practices offer objective evidence of implementation of and compliance with requirements, and consistency in the discharge of responsibilities.

17.2 2.3 Indoctrination and Training

The UE&C Coordinator of Education and Training is responsible for preparing formalized programs for all personnel conducting QA-related activities. These programs cover all QA-related activities between conceptual design and the operational phase of a nuclear power generation plant.

- a) Training of QA Engineering personnel is being implemented by their attendance at monthly one and one-half hour training sessions on QA and related subjects.
- b) Scheduled 2-day training sessions are held for UE&C QA Vendor Representatives in the home office for training in discipline and related matters.
- c) Training sessions in QA procedures, code regulations, the PSAR and QC procedures are in effect for the WPPSS project management and technical team.

17.2.3 Design Control

UE&C has standard company procedures which clearly define the control of design activities associated with safety related items. These procedures define the scope, purpose, responsibilities and step-by-step procedures

utilized in the preparation, review, approval and control of design documents, such as specifications, drawings, procedures and instructions, including changes thereto. These control measures are utilized to ensure that the quality requirements are sufficiently, clearly, and accurately stated in the documents prior to their release, and to ensure that the applicable regulatory requirements and design bases are correctly translated into these documents. Deviations and changes from the appropriate quality requirements are controlled by the review actions outlined in the UE&C procedures.

In order to ensure that suitable design analyses, such as physics, stress, materials, thermal, hydraulic, radiation and accident, are performed where applicable, check lists are provided for document review. These check lists are initialed and dated by the reviewers, indicating incorporation of applicable design analyses.

17.2.3.1 Design Control Procedures

The UE&C procedures contain provisions and responsibilities for monitoring internal disciplines and external organizations to ensure that the design work and procedures described therein are being implemented, and to ensure proper interface between internal disciplines and external organizations.

In order to ensure that proper selection and accomplishment of design verification methods, such as design reviews, alternate calculations and qualification testing, are performed, the UE&C procedures contain provisions for the extent of, and responsibility for, design verification. The depth and degree of review is established by UE&C project engineering management. The individuals or groups responsible for the design verification are other than those who performed the original design, and who are designated as being qualified by UE&C Project Engineering management.

Changes and/or revisions to the design documents are covered by the UE&C procedures. These procedures require the same review and approval for changes and/or revisions as the original document. These reviews and approvals are performed by the same organizations that performed the original tasks, or delegated to another responsible organization by the design originator.

The UE&C procedures contain steps to ensure that approved design documents, and revisions or changes thereto, are distributed to responsible individuals in a timely manner and that obsolete documents are purged from the system. Control of the design documents will be in accordance with Section 17.2.6.

17.2.3.2 Design Control Verification

In order to ensure that measures are provided describing when and how errors and deficiencies in the design process are documented and dispositioned, and how corrective actions are determined and implemented, the UE&C procedures require all safety related items to undergo an independent design review. The result of the design review effort is clearly documented.

Where applicable, the report of the design review is resolved by the responsible Discipline Supervising Engineer to the satisfaction of UE&C Project Engineering management, and the report is amended to record the resolution, and filed in a controlled area for future reference.

A comprehensive system of planned and documented audits is utilized on all phases of the design process by UE&C in accordance with Section 17.2.18. Audits are also conducted by WPPSS QA, a qualified unit independent of the design organization, in accordance with Section 17.1.18.

Design documents, records and changes thereto are collected, stored and maintained in a systematic and controlled manner in accordance with the provisions of the UE&C standard company procedures.

17.2.4 Procurement Document Control

UE&C Engineering Designs are translated into WNP- 1 procurement requirements primarily by means of specifications and drawings. The Engineering Design requirements, regulatory requirements, quality requirements and any other requirements which are necessary to ensure adequate product conformance are specified or referenced in the Contract Specification for materials, equipment and services. The control over input, review and approval of Quality Assurance requirements set forth in procurement specifications and approved design drawings is maintained through procedures contained in the basic UE&C manuals.

17.2.4.1 Procurement Specifications

- a) UE&C company standard procedures, in addition to the WNP- 1 Project Manual of Procedures and The WNP- 1 Quality Assurance Procedures Manual, clearly define the basic control of procurement documents associated with Quality Class I items. These procedures collectively provide compliance with ANSI N45.2.13 (May 1973), "Supplementary QA Requirements for Control of Procurement of Equipment, Material and Services for Nuclear Power Plants" for procurement actions as well as the procurement documents themselves.
- b) WNP- 1 purchased equipment contract specifications, provide the technical, Quality Assurance, processing and administrative requirements as individual sections, each of which are reviewed, approved and controlled in accordance with an established UE&C procedure.
 - 1) The Technical Sections of the Contract Specifications are developed and controlled by UE&C Engineering which then become the central section from which the Contract Specification is developed.
 - 2) The Vendor and Contractor Quality Assurance requirements are developed and controlled by UE&C Reliability and Quality Assurance, and are made part of the Contract Specification by being inserted into the various technical and administrative sections. Accuracy requirements and provisions for review, filing, maintenance, examination and access of QA records for purchased equipment and services are specified in Section 1B of the Procurement Contract Specification and detailed in Technical Section 52A of the Procurement Contract Specification. Provisions for requiring Vendor and Contractors to submit their QA Records Program including applicable procedures for the review and approval of QA records are also specified in the appropriate Technical Section of the Procurement Contract Specification. The basic QA requirements sections are sent to WPPSS for review and concurrence prior to their use in a contract specification.
 - 3) Special processing requirements are developed and controlled by the Quality Assurance "Technical Support" personnel of the R&QA Department. These requirements provide QA technical inputs to the design and fabrication of WNP- 1 equipment, and are reviewed and approved by UE&C and WPPSS in accordance with UE&C procedures.

- c) The Procurement Quality Control and Quality Assurance requirements are made part of the Contract specifications and the process procedures with the review and approval of Quality Class I Equipment and Contract Specifications being performed by QA personnel in the Reliability and Quality Assurance department.

After review and approval, the signature of the UE&C Quality Assurance Engineer for WNP- 1 on an internal Memo and Document Review Form provides the approval release by the R&QA department. Revisions and addenda to these Specifications are reviewed and approved by the R&QA department in the same manner as the original documents.

- d) Figure 17.2-3 is a typical flow chart which depicts the development, flow and approval cycle of WNP- 1 Contract Specifications by UE&C. Subsequent to the final resolution of UE&C and WPPSS comments, the Contract Specification is submitted to WPPSS for final review and approval, after which UE&C distributes and releases the Specification for bids.

17.2.5 Instructions, Procedures and Drawings

UE&C's quality-related activities on the WNP- 1 project are performed in accordance with the WNP- 1 Quality Assurance Procedures Manual as described in Subsection 17.2.2. This manual provides procedures which describe the technical, administrative and quality-related inputs to those documents affecting the quality of WPPSS designated Quality Class I structures, systems and components. Appropriate qualitative and quantitative acceptance criteria for determining that quality-related activities have been satisfactorily accomplished are contained in specifications, procedures, drawings and other appropriate documents.

17.2.5.1 Procedures

- a) "Project Manual of Procedures" is a document of written procedures issued and controlled by UE&C Project Management for the WNP- 1 project which defines the scope of Engineering and Design work, responsible organizations and administrative practices such as correspondence exchange procedure, cost control, planning and scheduling procedure, document identification procedure, etc. The Project Manual of Procedures complement the QA Procedures Manual by detailing those administrative procedures specified in the QA Procedures Manual as being critical in the implementation of quality-related activities on the project. The manual is a controlled document incorporating procedures which are distributed, reviewed, commented on, approved, issued and revised in accordance with an approved UE&C Procedure. Distribution is in accordance with an established distribution list under the control of the UE&C Project Engineering Department.

- b) Quality Assurance Procedures Manual is a document of written Procedures issued and controlled by UE&C Quality Assurance for the WNP- 1 Project which addresses itself to assuring that the WNP- 1 project is engineered, designed, procured, fabricated, manufactured, installed, erected, constructed, and tested in a safe, reliable and efficient manner. The QA procedures have been developed to correspond to the criteria of 10CFR50 - Appendix B and the applicable sections of ANSI N45.2 and detail the UE&C effort to establish and control the quality-related activities of Vendors, Contractors, UE&C Construction Management, UE&C Engineering, UE&C Purchasing, UE&C Project Management and UE&C Quality Assurance. The QA Procedures are developed by UE&C Quality Engineering with support and assistance by specialists within the Reliability & Quality Assurance Department. Past practices, regulatory requirements, safety analysis reports requirements and UE&C Corporate Standards are used in the procedure development. The QA written procedures are distributed, reviewed, comment on, approved, issued and revised in accordance with an approved UE&C procedure. Distribution of these QA procedures is in accordance with an established distribution list under the control of the UE&C Reliability & Quality Assurance Department.

17.2.5.2 Drawings

- a) UE&C issued drawings for WPPSS designated equipment are developed, issued, reviewed, approved and revised in accordance with detailed written procedures outlined in the UE&C WNP- 1 Project Manual of Procedures (17.2.5.1.a). R&QA drawing review and approval of Quality Class I equipment provides additional assurance that the equipment can be manufactured to the specifications and also provides assistance to Engineering in translating the marketing requirements of the applicable equipment into drawings of equipment that can be quality fabricated. Vendor, Contractor and NSSS Supplier drawings submittals are also reviewed, distributed and commented on in accordance with detailed written procedures as outlined in the UE&C Project Manual of Procedures, with UE&C R&QA Department in the sequence of review. The R&QA Department ensures, by their review, that the drawings contain, as a minimum, the necessary conformance limits, the effective methods of identification of the item, reference to appropriate process specifications which detail adequate inspection and test methods and those necessary characteristics determined to influence quality.

17.2.5.3 Safety Analysis Report

- a) The Safety Analysis Report for WNP- 1 is the principal controlled document which provides information needed to understand the basis for constructing and operating the WNP- 1 plant safely and efficiently.

As part of the total quality assurance program, the internal review, submittal and implementation of amendments and changes to the Preliminary and Final Safety Analysis Report for WNP- 1 are in accordance with detailed written procedures contained in the WNP- 1 Project Manual of Procedures. UE&C Licensing and Environmental Section personnel coordinate the documenting, reviewing, processing, distribution and submission of amendments and changes to these Safety Analysis Reports.

17.2.5.4 Safety Related Documents

- a) "Atomic Energy Regulatory Guides" are maintained and distributed throughout UE&C in accordance with an approved UE&C written procedure by UE&C Licensing and Environmental Section personnel. The impact of each regulatory guide, on the WNP- 1 Project, is considered by UE&C technical disciplines as it affects the design, fabrication, construction and testing of the equipment.
- b) "Reactor and Construction Operating Experiences" published by the AEC are maintained and distributed in the same manner as AEC Regulatory Guides per 17.2.5.4.a. The review and consideration of occurrences during operation of other reactors, as they impact the WNP- 1 Project, is considered by UE&C Engineering in accordance with written procedures as defined by the UE&C Licensing and Environmental Section.

17.2.6 Document Control

Written instructions and procedures for implementing document control measures are contained in the following project documents as used on the WNP- 1 program:

UE&C WNP- 1 Quality Assurance Procedures Manual

UE&C Project Manual of Procedures

Vendors and Contractors Quality Control Manual

Pre-purchased Equipment Contract Specifications

Construction Contract Specifications

These instructions and procedures control the issuing of documents such as specifications and drawings, including authorized changes, and assure that the documents and revisions are reviewed for adequacy and approved for release by authorized personnel.

17.2.6.1 Contract Specifications

- a) UE&C standard company and project procedures clearly define the control of WNP- 1 Contract Specifications associated with safety related items.

These control measures assure that the quality requirements are sufficiently, clearly and accurately stated in the specifications prior to their release and that they are distributed in accordance with the approved procedure. Revisions and/or changes to the Specifications are covered by the UE&C procedures and will undergo the same reviews and approvals as the original document, with these being performed by the same organization that performed the original tasks. Obsolete specifications are identified as such, with instructions of "not to use" or "destroy" being issued.

17.2.6.2 Drawings

- a) UE&C drawings, including revisions thereto, are prepared and controlled by UE&C Engineering and are reviewed, and approved in accordance with procedures outlined in the Project Manual of procedures. Similar procedures govern the review of Vendors and Contractors drawings and revisions to assure compliance with specification requirements.
- b) Approved modifications to drawings are documented in schedules and listing which are updated and reviewed monthly to identify current revisions. Design changes incorporated into drawings by the cognizant Design Engineer will be reviewed and approved in the same manner as the original issue.

17.2.6.3 Quality Assurance Procedures

- a) Quality Assurance Procedures are prepared and controlled by the Reliability and Quality Assurance department and are reviewed and approved in accordance with procedures outlined in the UE&C WNP- 1 Quality Assurance Procedures Manual. The procedure defines the review, approval and control cycle of the QA procedures including changes and revisions thereto and ensures that all recipients have the latest applicable revision.
- b) All users of the QA procedures are required to destroy obsolete procedures. Internal compliance with these requirements is measured by the UE&C Quality Assurance Audit section through internal audits conducted in accordance with Sub Section 17.2.18.

17.2.6.4 Vendors and Contractor Submittals

- a) Vendor and Contractor, including NSSS, documentation submittals are received, processed, distributed and coordinated by the UE&C Engineering department. Appropriate documents relevant to QA are distributed to the UE&C WNP- 1 Quality Assurance Engineer and other UE&C Technical Specialists to review for conformance to the QA requirements of applicable contract specifications, codes and standards.

UE&C Engineering collects all generated comments, evaluates and consolidates them and transmits them to the Vendor or Contractor. Problem areas developed by the comments are resolved between Engineering and the commentor prior to transmission to the Vendor.

17.2.6.5 Document Files

- a) The UE&C Project Engineering department maintains the Project document file which includes the copies of the latest revision of UE&C and Vendor originated drawings, specification and procedures. In addition, each Engineering Discipline maintains their own document file which includes the originals of their issued drawings, calculations and specification. A master file index is used to facilitate uniformity and improve retrievability.
- b) The Reliability and Quality Assurance department maintains the Project Quality Assurance document file, copies of which will be transferred to the Site Quality Assurance Files concurrent with the equipment and contract specification requirements so that the document will be available for the onset of construction effort.
- c) Obsolete documents are controlled throughout the project by written acknowledgement certifying that previous issues have been collected and destroyed, or by clearly marking the original document as void. Internal compliance with these requirements is measured by QA Audits.
- d) Project distribution of incoming and outgoing documents is controlled by Project engineering. Distribution is noted by a stamp and copies are distributed to key project personnel. Each category of document, e.g. transmittal letter, correspondence, drawings, foreign prints, procedures, etc. has specified distribution list so that pertinent documents are directed and made available to the cognizant project personnel. The project engineering group provides additional availability of these documents upon request.
- e) The central file index consists of primary categories relating to equipment, documentation, quality assurance and other disciplines, regulatory requirements and project information, etc. This index is supplied to all supervisors, engineers, secretaries and administrators. Use of this index in conjunction with current released lists of specifications, drawings, foreign prints and other documentation, provides the latest status of the project definition.

- f) A General list of documents that are controlled by document control procedures is as follows:

Contract Specification
Project Manual of Procedures
Project Quality Assurance Procedures Manual
Corporate Quality Assurance Manual
Operations Manual - Power Engineering
Design Review Reports
Safety Analysis Reports
Systems Descriptions
Design Calculations
Stress Reports
Standard Technical Sections (for Contract Specs.)
UE&C Drawings
Vendor and Contractor Submittals
QA Procedures
Regulatory Guides
Reactor Operating Experiences
QC Bulletins
Internal Audits

2

17.2.7 Control of Purchased Material, Equipment and Services

The Quality of purchased material equipment and services is controlled through review of submitted Vendor and Contractor QA programs, data and drawings, progressive surveillance at vendors' shops, audits, witnessing of tests and site receiving inspection (17.4.7). After the bid opening and prior to the award of a contract, Vendors and Contractors whose bids appear to be the lowest will be required to show evidence of their ability to satisfy all QA requirements of the contract to be awarded. UE&C QA and Engineering personnel will assist WPPSS in reviewing the bids to determine the acceptability of the bidders QA program.

2

17.2.7.1 Pre Award Evaluation

- a) UE&C Quality Assurance Engineering personnel are responsible for providing a Quality evaluation of prospective contractors based on the review of submittal documentation. After reviewing prospective vendor bin packages, UE&C Engineering and Quality Assurance review the submitted data on a technical and economic basis to determine compliance with contract specification and intended use. UE&C Quality Assurance evaluates the Vendors and Contractors responsiveness and ability to meet the specified Quality requirements.

- b) At the completion of the QA evaluation, an evaluation report is submitted to the UE&C WNP- 1 Project Engineering Manager in which is included QA recommendations, and where appropriate, identification of those Vendors and Contractors who are non-responsive to the bid documents.

17.2.7.2 Post-Award Evaluation

- a) After the award of the contract for WPPSS Quality Class I Equipment the Vendor or Contractor QA program and procedures are submitted for UE&C approval in accordance with the applicable contract specification and ANSI N45.2, both documents assuring Vendor and Contractor compliance with Appendix B of 10CFR50. The successful bidders programs are reviewed by UE&C Quality assurance personnel and the results of this review are transmitted by UE&C Engineering to WPPSS for their assessment prior to further procurement activities.
- b) Subsequent to receipt of the Contract Purchase Order, but prior to beginning of fabrication, the Vendor or Contractor is required to identify their fabrication process steps including inspections and tests. From this and the Contract Specification, UE&C QA will identify the documentation requirements and surveillance actions by utilizing Vendor and Contractor fabrication processes, appropriate specifications, drawings, codes and standards. All surveillance reports are reviewed by UE&C QA and distributed to WPPSS and the WNP- 1 Project Manager.

17.2.7.3 Vendor Surveillance Activities

- a) UE&C Vendor Surveillance activities associated with material procurement control provide a surveillance function at the Vendor and Contractor off-site facilities, including NSSS, as a means of verifying that the requirements of the Contract Specification, purchase documents, approved Vendor procedures, and all specified codes and standards are being adhered to.
- b) For pre purchased and contractor purchased equipment ready for shipment, UE&C Vendor Surveillance personnel may perform a final inspection surveillance with the Vendor and Contractor inspection personnel in accordance with written procedures and check-off lists to verify the identity and conditions of the items and that the requirements of the procurement documents are met.

A "release" tag is applied which provides evidence to the site that the equipment has been released for shipment and that all surveillance activities have been satisfactorily completed. Notification is then made to UE&C Field Quality Assurance of the impending shipment.

- c) Typical UE&C Vendor and Contractor Surveillance and Audit Activity during the fabrication cycle is conducted in accordance with 17.2.17, to assure that the Vendor and Contractor comply with quality requirements as defined in the Contract Procurement Documents.

17.2.7.4 Receiving Inspection

Vendor and Contractor receiving inspection is performed in accordance with 17.4.10.

17.2.8 Identification and Control of Materials, Parts & Components

UE&C drawings and specifications include requirements for the identification of materials, parts and components, which directs the supplier of WNP- 1 safety related equipment to provide a system to assure that these items incorporated into the plant are properly identified and traceable to all supporting quality assurance documentation.

17.2.8.1 Procurement Documents

The UE&C procurement documents specify that equipment suppliers (vendors and contractors) establish procedures which describe the identification and control of materials, parts and components. When implemented, the vendor and contractor program will provide traceability of all parts and materials used in a particular product configuration and will also exercise control over essential procedures, drawings and test documents. UE&C procurement documents also provide the vendor and contractor with procedural documents covering essential aspects involved in the identification and control program. These procedural documents provide an integrated system to all vendor and contractors for implementing a uniform approach to nonconformances, tagging, corrective action, and records to ensure that only specified materials are used throughout production and fabrication. Traceability will be maintained by the Vendor and Contractor by their quality related documentation or by a physical marking system.

17.2.8.2 Procedure

- a) Vendor and Contractor identification procedures will apply to production materials, bulk raw materials and parts and assemblies at all stages of manufacture from receipt of purchased material to shipment of the completed article.
- b) UE&C Vendor Surveillance personnel monitor the Vendor and Contractors implementation of these procedures and verify that the identification system (i.e. tagging, stamps, markings, etc.) is correct.

17.2.9 Control of Special Processes

UE&C is not required to perform any special processes, but imposes applicable requirements on Vendors and Contractors of WNP- 1 equipment and services. These special processes include welding, cleaning, repairing, heat treating, nondestructive testing and other processes which affect the quality of a nuclear or engineering safeguard structure system or component during fabrication, manufacturing, installation and construction activities. UE&C's procurement documents require Vendors and Contractors to control these special processes in accordance with UE&C processing requirements, appropriate codes and standards. Vendors and Contractors are required to submit written procedures and records of qualification for UE&C approval prior to use of the process.

17.2.9.1 Processing Requirements

Special processing requirements documents for the WNP- 1 Project are prepared and controlled by UE&C in accordance with applicable codes and standards and are included in the Contract Specification by UE&C Engineering for fabrication work performed by Vendors and Contractors. These processing documents are maintained by UE&C and are continually reviewed, updated, revised and supplemented to provide sufficient information pertaining to codes, standards and methods of testing so that special quality control functions can be performed properly.

17.2.9.2 Process Audit and Surveillance

- a) UE&C surveillance and audits of Vendor and Contractor processing are conducted by Quality Assurance to assure that their -

Special processes are being conducted in accordance with qualified procedures by qualified personnel as prescribed by applicable codes or standards.

Records are being maintained which document the satisfactory accomplishment of special processes and which indicate the current qualification and certification status of all special process procedures, equipment and personnel.

Special process procedures are being regularly reviewed to assure their conformance with latest revisions of codes and standards imposed by contract specification.

- b) Deviations from approved Vendor or Contractor procedures will be reported to UE&C in writing and implemented only if approved by UE&C.

17.2.9.3 Qualification

Vendors and Contractors personnel responsible for performing special processes will be qualified in accordance with the applicable code or regulation. These qualifications are reviewed and documented by UE&C Vendor Surveillance representatives in Vendors and Contractors off-site shops. Personnel employed by the Vendor or Contractor to witness, perform or inspect special processes for which qualification and certification is mandatory, shall be certified in accordance with the applicable code or regulation. Active files will be maintained by the Vendor or Contractor, of qualification records of Vendor or Contractor personnel performing special processes.

17.2.9.4 Process Documentation and Records

- a) The control of these special processes by the Vendor or Contractor will include documentation and records sufficient to ensure that the requirements of these special process procedures, in accordance with specification requirements, have been met. These records will be controlled and retained in accordance with Subsection 17.2.17.
- b) UE&C Home Office Quality Assurance personnel review the contract specification to verify inclusion of any special process or process controls and with UE&C Engineering, review and approve all submitted Vendor and Contractor special process procedures prior to fabrication. UE&C Vendor Surveillance personnel provide the surveillance effort to assure that Vendors and Contractors conform to their procedures.

17.2.10 Inspection

The UE&C procurement documents require participating Vendors and Contractors to provide for a controlled system of inspection of materials, parts, components and equipment associated with the WNP- 1 project. Written Vendor or contractor procedures provide for this control of inspections to assure that the materials purchased are fabricated, tested and delivered in conformance with specification and contract requirements. UE&C surveillance personnel determine the accept or reject status of the work and implement their decision by pursuing a course of action as defined in Subsections 17.2.15.8 and 17.2.16.6.

17.2.10.1 Personnel

- a) UE&C, is not responsible for performing first level inspections. However, UE&C R&QA Vendor Surveillance representatives will conduct surveillance activities within the scope of the UE&C QA program associated with Vendor and Contractor inspections, examinations and other activities at the equipment suppliers plant. UE&C Vendor Surveillance personnel continually verify that the Equipment Vendor and Contractor first level inspection capability is maintained at the high level required for the WNP- 1 project.

Procedures for maintaining this high standard of inspection capability are developed by the appropriate Vendor or Contractor for review and approval by UE&C. UE&C R&QA Vendor Surveillance assures that Vendor and Contractor Quality Control departments continually monitor, through examinations, indoctrination programs and orientation and training, the proficiency and independence of their inspection personnel.

17.2.10.2 Equipment Supplier - In process inspection and surveillance

- a) The surveillance activities associated with the in-process shop inspections, tests and documentation for pre-purchased and Contractor purchased equipment are in accordance with UE&C Quality Assurance Procedures which define in detail UE&C control of purchased items at the Vendor or Contractor Plant.
- b) UE&C inspection requirements are outlined in the Contract specification and summarized as a surveillance check plan. This surveillance Check Plan is prepared by the UE&C WNP- 1 Quality Assurance Engineer developed from the contract specification, and outlines the contract requirements for documentation, testing, inspection points, sampling plans, processing procedures, and receiving requirements for the applicable equipment. The check plan is used by the UE&C Vendor Surveillance representative as a check list guide for UE&C in-process and final surveillance inspection of the purchased equipment prior to delivery to the site. The shop inspections designated are performed by the Vendor or Contractor's personnel charged with the quality responsibility and these inspections are audited by UE&C surveillance representatives.

17.2.10.3 Equipment Supplier - Final Inspection and Release

- a) When pre-purchased material is to be inspected by UE&C prior to shipment, the Vendor notifies the UE&C purchasing department, who in turn notifies appropriate UE&C Vendor Surveillance Quality Assurance personnel and makes arrangements with Vendor Quality Personnel for the final inspection at the Vendor Plant. Signing of Vendors Forms, notification of UE&C Field Quality Assurance Office and tagging, prior to shipping completes the UE&C Surveillance inspection effort. Completed approved documentation is then transmitted to the UE&C Field Quality Assurance Office.
- b) When Contractor purchased material for construction contracts is ready for final inspection and release, the UE&C Vendor Surveillance representative may participate, when specified, through surveillance at the Contractors' final inspection and release activities at the plant, to the extent necessary to assure that the Contractor is conforming to his approved procedure for releasing the equipment for shipment.

- c) If it is not possible or is disadvantageous to final inspect the equipment at the point of fabrication prior to shipment, then the acceptance inspection of the equipment is implemented at the site in accordance with the Receiving Inspection Procedure as defined in 17.4.10.

17.2.11 Test Control

The UE&C Quality Assurance Program establishes a system of control to assure that Vendor and Contractor test activities are performed in their plants in accordance with requirements which are predetermined, approved and delineated in written Test Plans and instructions. This system will also assure that test results are acceptable and fully documented.

17.2.11.1 Test Requirements

- a) Test requirements for Vendor and Contractors are delineated in the Contract Specifications in conformance with engineering practices and Code requirements. Conformance to AEC regulatory guides are also considered when the required tests are specified in the Contract Specification.
- b) Vendor and Contractor written test procedures for review and audit by UE&C Quality Assurance, describe the method of test control, through verification that tests have been performed in accordance with specified plans and procedures, and that test results are within the specified limits. Qualification, and special proof tests when specified in the contract specification require the Vendor or Contractor to prepare test programs adequate for the application and subject to review and approval by UE&C.
- c) Witnessing of shop performance tests, nondestructive tests, material tests, acceptance tests, proof tests, and qualification tests as conducted by the Vendor or Contractor is accomplished by UE&C Engineering and Quality Assurance in accordance with test and inspection requirements outlined in the Contract specification and accompanying Quality Assurance documents.

17.2.11.2 Test Evaluation

Final test reports and documentation supplied by the Vendor or Contractor are reviewed and evaluated by UE&C against acceptance criteria, operating limits and performance standards. Deviations, Discrepancies or questionable test data are reviewed by UE&C Engineering with UE&C Quality Assurance support when required. Appropriate instructions following the nonconformance procedure, as outlined in the Contract Specification, are issued for disposition.

17.2.11.3 Operating Experience

- a) When Contract Specifications allow the use of Vendor or Contractor operating experience data to demonstrate equipment conformance to operating test requirements, UE&C Engineering personnel and, as required, UE&C Quality Assurance personnel assure that the certified data are pertinent to the application and that the operating experience data provides those specifications, features, comparisons, rationale, summaries and sources from which a basis for determining the suitability of the data is obtained.
- b) Suitability and acceptability of the operating experience data is reviewed and evaluated as defined in 17.2.11.2.

17.2.11.4 Test Personnel

- a) Vendors and Contractors shall assure that personnel employed to perform or interpret the results of testing activities are properly qualified in accordance with their approved procedures. Where code or contract specification requirements specify qualification criteria for such personnel, the applicable procedures shall be in accord with such criteria.

17.2.12 Control of Measuring and Test Equipment

- a) UE&C Contract Specifications require that Vendors and Contractors must have control over the calibration and use of tools, gauges, instruments and other measuring and testing devices used in activities affecting product quality on designated equipment and services. The Contract Specifications also require that Contractors' procedures shall describe the calibrations technique, calibration frequency, maintenance and control of all measuring and test instrumentation tools, gages, fixtures, reference standards, transfer standards and nondestructive test equipment which are to be used in the measurement, inspection and monitoring of components, systems and structures.
- b) Allowable deviations from calibration standards shall be specified in the Contractor's procedures and submitted to UE&C for approval. Inspection, testing and measuring equipment items shall be uniquely identified and have traceability to their calibration test data.

17.2.12.1 Procedure

- a) Vendors' and Contractors' calibration policy, schedule and system for the control of measuring and test equipment are detailed in their applicable quality control procedures. These

procedures are reviewed by UE&C Home Office Quality Assurance personnel for adequacy prior to authorization to use. UE&C Vendor Surveillance personnel audit the Vendor or Contractor adherence to these approved procedures.

- b) Vendors and Contractors procedures establish a system for the control, calibration and adjustment of tools, gauges, instruments and other inspection, measuring, testing and maintenance devices. This system is established such that conformance to established requirements is verified as specific periods of time to assure the usage of proper type, range and accuracy of the device.

17.2.12.2 Control Requirements

Vendor and Contractor procedures require that the following detailed control requirements be implemented as part of their measuring and test equipment calibration program -

- a) Maintenance and control of primary and secondary standards
- b) Measuring capability of standards in accordance with Contractor or Vendor defined tolerance ranges

- c) Method of correcting, adjusting, returning for repair and replacement of measurement standards.
- d) Calibration control of new devices and positive identification of calibration status.
- e) Calibration instructions
- f) Calibration schedule, listing and location for usable test equipment
- g) Recalibration review
- h) Environmental control limitations and requirements for calibration

17.2.12.3 Standards of Control

- a) In establishing the degree and type of environmental control where calibration of items are performed, the accuracy requirements of the measurement parameter is taken into consideration by the Vendor and Contractor. The conditions under which "reference standards" by the Vendor and Contractor are calibrated suggest conditions more rigidly controlled than those conditions under which "working standards" for measuring and test equipment are calibrated.
- b) Vendor and Contractor procedures provide for the calibration of "primary reference standards" with certified accuracies traceable to the National Bureau of Standards (NBS) and to be performed, where applicable, subject to surveillance by UE&C Vendor Surveillance personnel under the applicable controlled conditions of -

Temperature

Temperature Rate of Change

Relative Humidity

Dust

- c) Vendor and Contractor calibration frequency charts provide requirements for frequency of calibration and a certified percent of accuracy traceable to the NBS for primary standards (Dimensional, pressure, electrical, thermal, weight), secondary standards and general test instruments.

17.2.12.4 Calibration and Control Records

- a) Identification of calibration records for Testing and Measuring equipment used by Vendor or Contractor during in-process and final inspection are established so that equipment can be readily recalled for recalibration or adjustment. These records also serve as an indication of which devices were used on specific tests and inspections and also provide for traceability if such devices are found to be out of calibration and require corrective action.
- b) The use of uncalibrated equipment constitutes a rejection of the test or inspection with the disposition identified as part of the nonconformance report which is issued.

17.2.13 Handling, Storage and Shipping

UE&C Contract Specifications specify the requirements for cleaning, handling, storage and shipping from which Vendor and Contractor procedures are developed. These procedures are subject to UE&C review and approval and where appropriate, Vendors and Contractors submit recommended cleaning, preservation, handling and storage instructions for use at the Construction Site.

17.2.13.1 Procedure

- a) Vendors and Contractors establish and document procedures to be employed to control cleaning, preservation, handling, storage and shipping of their responsible equipment during the plant fabrication, testing, inspection and subsequent shipping to the site. The procedures to be developed cover cleaning, packaging and preservation of the material and equipment to prevent damage, deterioration and loss at the plant. These Vendor and Contractor procedures also contain provisions for utilization of special covers, special equipment and special protective environments, such as inert gas atmosphere, specific moisture content levels and temperature levels attributable to the special maintenance care and cleanliness required when the equipment is kept at the site.
- b) The Vendor and Contractor procedures for their equipment also contain suitable provisions for verifying the above conditions. UE&C Vendor Surveillance personnel provide the surveillance activity necessary to assure that the Vendor or Contractor has implemented his procedures with qualified personnel. Contract specifications govern the UE&C Q.A. Vendor Surveillance inspection of packaging and preparation for shipment at the Vendor or Contractor off-site Plant.

17.2.13.2 General Requirements

- a) All procedures defining specific packaging, preservation, shipping and storage of materials shall conform to applicable material codes and standards including consideration of the applicable AEC Regulatory guide.

- b) Shipping containers for equipment specified in UE&C Contract specifications, when selected at the option of the Vendor or Contractor, are utilized where appropriate and in accordance with specific approved criteria. Protection of equipment during preservation, handling, shipping and storage requires an assessment of the allowable protection criteria by the Vendor and Contractor.
- c) The Vendor and Contractor procedures will provide instructions for marking and labeling for packaging, shipment and storage. These written procedures contain provisions for the marking of identifying information on the exterior of shipping containers. The marking is adequate to identify, maintain and preserve the shipment, including indication of the presence of special environments or the need for special control.

17.2.13.3 Cleanliness

- a) UE&C Contract specifications specify a cleanliness requirement for equipment which is applied by the Vendor and Contractor during and after fabrications and during storage and shipping. The cleaning and cleanliness control program, as utilized by the Vendor and Contractor, is designed not only to minimize preoperational cleaning of installed components and post-assembly cleaning of components at the plant, but to establish site cleaning of equipment and maintenance of equipment cleanliness at the site.
- b) Vendor and Contractor procedures provide for the facilitation of cleaning and inspection for cleanliness during fabrication of the equipment. UE&C Vendor Surveillance personnel provide the audit and surveillance activity to assure that the Vendor and Contractor has implemented his procedure with properly qualified personnel.
- c) The site Receiving Inspection provides for verification of the Vendor and Contractor cleanliness program during unpackaging.

17.2.14 Inspection, Test and Operating Status

The UE&C Quality Assurance Program provides for procedures to be developed by vendors and contractors, compatible with UE&C, for indicating the status of tests and inspections performed at their plants upon materials, parts and components. The status of an item is indicated by means of tags and stamps to (a) preclude the inadvertent bypassing of their inspection and test requirements and to (b) prevent their inadvertent operation.

17.2.14.1 Item Status

- a) UE&C approved vendor and contractor procedures provides for their own tagging methods to indicate inspection and testing status and acceptance of applicable equipment during plant fabrication.

- b) Vendor and contractor items are indentified by marking, tagging, labelling or other appropriate means either on the items or on documents that are traceable to the items.
- c) Identification of items in the vendor or contractor plant is directed toward categories of ACCEPT status, REJECT status, REPAIR or REWORK status and HOLD status. These item categories differentiate in the applicable procedure between items awaiting inspection, items that have satisfactorily passed inspection and items that are discrepant (see 17.4.14).
- d) UE&C vendor surveillance effort provides the in-process and final inspection surveillance activity to assure that tagging and item identification has been implemented by the vendor and contractor in accordance with the approved procedure.

17.2.14.2 Inspection Stamps

- a) Vendor and contractor approved procedures and their quality system control the use of inspection, welding, NDE, etc., stamps and status indicators, including their authority for application and removal of such application.
- b) The approval procedure provides for the definition, issuance, control and application of these inspection stamps by their own quality responsible personnel. UE&C vendor surveillance personnel provide the audit and surveillance activity to assure that the responsible contractor personnel are implementing their approved procedures.

17.2.14.3 Surveillance Tagging

Upon satisfactory completion of the work at the plant by the vendor or the contractor, the UE&C vendor surveillance personnel issue a "Vendor Surveillance Tag" which serves as a notification to the construction site that the UE&C surveillance actions have been satisfactorily completed.

4 Change in Status

- a) Provisions are made in the UE&C Quality Assurance program for implementing a change in status of Vendor and Contractor items. The inspection status of any item may be changed on the basis of inspection and surveillance, only by instructions from UE&C Quality Assurance, WPPSS Quality Assurance or Vendor or Contractor Quality Assurance.
- b) If items are "released" by the Vendor or Contractor and new non-conformances are discovered, they will be handled in accordance with Subsection 17.2.15.

17.2.15 Nonconforming Materials, Parts or Components

The UE&C Quality Assurance Program provides that vendors, who are suppliers of WNP- 1 equipment, are required to establish and maintain a system for controlling nonconforming material to preclude its use until properly dispositioned. This system will be compatible with the UE&C system of NCR control, which will assure that both vendor and UE&C nonconformances are identified, documented, segregated and dispositioned and that notification of the actions taken are transmitted to the affected parties.

17.2.15.1 Classification

A nonconformance is a deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate. Examples of nonconformance include physical defects, test failure, inaccurate or inadequate documentation or deviating from prescribed processing inspection or test procedures. Nonconformances are classified as follows:

- a. Discrepancies - Nonconformances which do not affect the safety, performance or durability of the material. A discrepancy can be repaired or reworked providing an "approved" repair or rework procedure exists; or it can be "accepted as is" providing the nonconformance does not compromise design or contract criteria.

- b. Deviations

Nonconformances which affect the safety, performance or durability of the material.

Discrepancies which can be repaired or reworked for which an approved procedure is not available.

Nonconformances which cannot be reworked.

- c. Deficiencies - Nonconforming conditions detected within UE&C during "home office" activities involving Design Specifications, program procedures, and Drawing Requirements, related to Home Office Quality Assurance, Construction Management, Engineering, Purchasing and Project Management, but not to site activities. These conditions represent departures from an approved procedure, approved Design or Drawing which could adversely affect the quality of the "home office" activity being implemented on the WNP- 1 project.

17.2.15.2 Procedure

Nonconforming materials, parts, components or program procedure activities are documented by the organization detecting the nonconformance as follows:

a. UE&C initiated:

- 1) Nonconformances detected against in-house UE&C "home office" activities are documented using the UE&C deficiency report. These are handled as nonconformances subject to investigation, disposition, rejection, corrective action reporting to UE&C management and close out in accordance with UE&C approved quality assurance procedure.
- 2) Nonconformances (Discrepancies and Deviations) detected at the vendor's plant against vendor activities are initiated by UE&C Vendor Surveillance using UE&C NCR Forms or brought to the attention of the vendor for his own initiation and documentation of actions in accordance with 17.2.15.2.b.

b. Vendor initiated:

- 1) Nonconformances at the vendor's plant which are classified as "Discrepancies" are documented on the vendor's own non-conformance report form.
- 2) Nonconformances at the vendor's plant which are classified as "Deviations" are documented on the vendor's own nonconformance report form with a UE&C Contract Waiver Request (CWR) also being generated.

17.2.15.3 Controlling NCR Forms (Home Office)

- a. UE&C Deficiency Report forms, for in-house use, contain a description of the nonconforming element activity and the deficiency, a recommended disposition with a technical justification, the disposition (i.e., incorporate drawing or spec comment, rework element procedure, rework files, etc.), verification that the disposition was accomplished and an evaluation of the need for corrective action to prevent a recurrence. Standard distribution of preliminary and completed deficiency Reports is maintained.
- b. UE&C NCR forms, for vendor activity, contain a description of the nonconforming item and activity, a recommended disposition with a technical justification, the disposition (i.e., accept as is, repair, rework or reject), verification by reinspection that the disposition was accomplished and an evaluation of the need for corrective action to prevent a recurrence. Standard distribution of preliminary and completed NCR's is maintained.

- c. Vendor NCR forms, for Vendor activity, contain a description of the nonconforming item, a recommended disposition and justification, verification by reinspection that the disposition was accomplished, a statement of corrective action to prevent a recurrence and identification of contract waiver request action, if required. Standard distribution of completed NCR's is maintained.

17.2.15.4 Maintenance of Nonconformance Records

- a) Copies of vendor nonconformance documents are submitted to UE&C Quality Assurance with the equipment. UE&C provides a copy of all transmitted nonconformance documents generated by vendors or UE&C to WPPSS Quality Assurance Organization for information.
- b) A log is maintained by UE&C Quality Assurance Engineering for UE&C initiated NCR's at the vendor plant. This log also includes a cross index of NCR's with the applicable Contract Waiver Request (CWR) identification, for Deviations.
- c) A log is maintained by the vendor for vendor initiated NCR's listing as a minimum the date, number, item and nonconformance description and disposition. This log also includes a cross index of NCR's and the CWR listing.
- d) A log is maintained by the UE&C Quality Engineering Section for UE&C initiated Deficiency Reports in the Home Office. This log becomes a part of the permanent WNP- 1 project file.
- e) All NCR's remain in the "open" file (whether at the vendor or UE&C) until disposition has been resolved, implemented and reinspected.

17.2.15.5 Contract Waiver Request (CWR)

- a. A CWR is a vendor request for a change in contract specification requirements. Processing of a CWR occurs through implementation of the contract change process in accordance with the requirements as defined in approved UE&C project procedures and 17.2.3 Design Control.
- b. If approved, the disposition results in an "accept as is" disposition. If not approved, the vendor must reject the item or repair or rework it in accordance with an approved vendor procedure in order to satisfy requirements.

17.2.15.6 Disposition

Disposition of all nonconformances, either at the vendor or at UE&C, are noted on the respective NCR forms with the dispositioning action as follows:

- a) Disposition of vendor "Discrepancies" shall be by the person responsible for the QA function of the organization originating the nonconformance document. Dispositions shall be "accept as is" providing the design or contract is not compromised, "repair" or "rework" in accordance with an existing approved vendor procedure, or "reject" for items unsuitable for their intended purpose and/or uneconomically feasible to be reworked or repaired.
- b) Disposition of vendor "Deviations" shall be in accordance with 17.2.15.5 Contract Waiver Request.
- c) Disposition of UE&C "Deficiencies" is determined by the UE&C "Home Office Activity" manager. Dispositions shall be compatible with satisfying the UE&C and WPPSS approved QA and project procedures for that element of in-house effort.

17.2.15.7 Reinspection

- a) After the responsible organization has performed the required actions to clear the nonconformance:
 1. For vendor nonconformances the originating organization's QA (UE&C or Vendor) inspects the item, determines its acceptability and signs off the nonconformance document as approved.
 2. For Home Office Deficiencies, the UE&C Quality Assurance Organization verifies the disposition action, evaluates the resolution and signs off the nonconformance document as approved.

17.2.15.8 Accept-Reject Authority

- a) Discrepancies (Vendors/Contractors Off Site Plant)

Final authority for the acceptance or rejection of Discrepancies is as follows:

Vendor/Contractor Quality Assurance - for nonconformances discovered by their own QC inspection.

UE&C Quality Assurance - for nonconformances discovered by UE&C Vendor Surveillance.

b) Deviations (Vendors/Contractors Off Site Plant)

Final authority for the acceptance or rejection of Deviations is as follows:

UE&C Engineering - in accordance with Project Contract Waiver request procedures.

c) Deficiencies (Home Office)

Final authority for the acceptance or rejection of Home Office Deficiencies is as follows:

UE&C Quality Assurance - in accordance with existing Project Quality Assurance Procedures.

17.2.16 Corrective Action

UE&C uses available inspection and auditing procedures and vendor nonconformance and disposition reports to identify and obtain corrective action for conditions adverse to quality. Typical of these conditions are vendor quality program or procedural inadequacies, failures, malfunctions, deficiencies, deviations, defective material and equipment and vendor nonconformance to specified requirements.

17.2.16.1 Corrective Action During Design Effort

- a) Errors and nonconformances which adversely affect safety related structures, systems and components discovered during the UE&C, vendor and contractor design process are documented on review forms and comment prints and resolved by UE&C prior to approval of the document.

- b) Design nonconformances discovered during vendor or contractor manufacturing, and the subsequent corrective action are documented, approved and the original design document(s) revised in accordance with UE&C approved project procedures.
- c) Effectiveness of corrective action is checked by UE&C audits in accordance with subsection 17.2.13.

17.2.16.2 Corrective Action Requests

- a) The UE&C Quality Assurance program provides that the vendor initiate his own Corrective Action Requests in accordance with an approved procedure and that the vendor responds in a timely manner to Corrective Action Requests written by UE&C Quality Assurance.
- b) The UE&C Quality Assurance Program provides that "Home Office Activity" practices in which repeated violations of the same nature either are occurring or would occur require the initiation of a Corrective Action Request by UE&C Quality Assurance in accordance with an approved procedure.

17.2.16.3 Implementing Corrective Action

- a) For Home Office corrective action the designated responsible Home Office Activity addressee describes the corrective action that he intends to implement and specifies the date by which it will be implemented. If the corrective action specified is not adequate or does not meet the intent of the request, UE&C Quality Assurance resolves the difference in accordance with an approved procedure.
- b) For Vendor corrective action initiated by UE&C Quality Assurance, the designated responsible vendor describes the corrective action that he intends to implement and specifies the date by which it will be implemented. UE&C Vendor Surveillance personnel maintain an audit and surveillance activity to ascertain the adequacy and intent of the corrective action in accordance with the approved vendor practice.

17.2.16.4 Verification and Analysis

- a) When actual corrective action by the Home Office Activity has been satisfactorily implemented, UE&C QAE will describe the actual corrective action on the Corrective Action Request, date and sign the request form to indicate Quality Assurance approval of acceptable action. Standard distribution of this information to affected activities is then implemented.

- b) When actual corrective action by the Vendor has been satisfactorily implemented, UE&C Vendor Surveillance will describe the actual corrective action on the Corrective Action Request, date and transmit the request form to the QAE. The QAE's signature on the "CAR" indicates QA approval of acceptable action. Standard distribution of this information to affected activities is then implemented.
- c) Vendor and Home Office corrective action forms are filed and logged, and the effectiveness of the corrective actions is reviewed by Home Office Quality Assurance Engineering personnel. Such actions may include stopping the vendor effort for poor quality performance or stopping the Home Office Activity effort for disregard of approved QA or project procedures.
- d) Feedback information on nonconformances is transmitted from both Procurement and QA Vendor Surveillance to UE&C Quality Engineering. The data are analyzed and evaluated by UE&C QA and UE&C Engineering personnel, after which corrective action is recommended to assist in controlling and preventing recurrence of nonconformances.
- e) Significant deficiencies in design or construction will be reported promptly to WPPSS. These activities are governed by written procedures.

17.2.16.5 Failure to Respond

- a) Failure to respond either by the vendor or UE&C Home Office Activities to Corrective Action Requests within the allotted time will result in notification of UE&C or Vendor Management with a requirement for immediate response. Lack of response by UE&C Management may result in stoppage of work in the affected area in accordance with approved UE&C quality assurance procedures. Lack of response by Vendor Management may result in stoppage of work in the affected area in accordance with UE&C approved Vendor Procedures or, when necessary, by UE&C.

17.2.16.6 Stop Work Authority

- a) Stop work authority for "Home Office Activity" rests with the UE&C Project Engineering Manager for the project based on direction received via a "Stop Work Order" from the Manager, UE&C Reliability & Quality Assurance.
- b) Stop work authority for Vendor and Contractor Off Site Plant activity rests with the UE&C Project Engineering Manager for the project based on direction received via a "Stop Work Order" from the Manager, UE&C Reliability & Quality Assurance.
- c) Work may be restarted with the approval of the Manager, R&QA only after action has been taken by either the "Home Office Activity" or the Vendor and Contractor to eliminate the nonconformance and the UE&C Project Engineering Manager for the project has satisfactorily replied to the "Stop Work Order".

17.2.17 Quality Assurance Records

The UE&C Quality Assurance program provides for drawings, contract specifications and procurement documents to delineate the Quality Assurance records that Vendors and Contractors are required to prepare, maintain and submit for review and approval to provide documentary evidence of quality. These records must be identifiable and retrievable and include, but are not limited to, drawings, specifications, material test reports, qualification records of personnel, procedures and equipment, calibration procedures and reports, nonconformance and corrective action reports and inspection and test records. UE&C will maintain the WNP- 1 Quality Assurance files for activities and items under UE&C cognizance. These files will be available for WPPSS review.

17.2.17.1 Records Requirements

- a) Specific records requirements for Vendors and Contractors are identified in procurement documents, Contract Specifications, Codes and Standards, and in the UE&C Quality Assurance procedure manuals which govern quality associated activities. These include records of the results of reviews, inspections, tests, audits, material analysis, monitoring of work performance, qualification of personnel, procedures and equipment and other documentation as defined in Subsection 17.2.17.
- b) The record system at UE&C in the initial phases of the Engineering and Procurement program includes those quality assurance records associated with the design, engineering, manufacture, testing and inspection of structures systems and components. This record system is initiated with the early concept of the WNP- 1 project. UE&C quality assurance procedures govern the general and specific requirements, development, transmittal and receipt, audits, storage, retrieval, and disposition of quality control and quality assurance records.
- c) The records that Vendors are required to retain are maintained subsequent to completion of work in accordance with the applicable codes, standards and procurement documents.
- d) Records that are shipped with Vendor or Contractor equipment are transmitted in accordance with the applicable codes, standards and contract procurement documents; and upon receipt at the Construction site (17.4.17) become the responsibility of the appropriate receiving organization (UE&C for pre-purchased equipment and site contractors for Contractor purchased equipment).

17.2.17.2 Records Accuracy and Traceability

- a) UE&C Contract procurement documents establish the provision for the Vendor and Contractor to have a systemized method for verifying and documenting that their documentation is complete and correct. Vendor records will provide sufficient information to permit identification between the records and the item or activity to which they apply. Contract specifications direct the vendor and contractor to provide a positive method of traceability from documentation to the part. Their method will be defined in procedures approved by UE&C.
- b) QA records which are submitted by the Vendor as part of Contract Specification requirements are continuously reviewed by UE&C Quality Assurance. Nonconformances or shortcomings which are identified through these reviews are immediately reported to UE&C Engineering where corrective action with the Vendor is implemented. Continuous UE&C imposition of Quality Assurance requirements on these vendors results in close control of their submittals. Continued analysis of the data by UE&C Quality Assurance and UE&C Engineering indicates the extent of Vendor positive actions.

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8
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17.2.17.3 Records Examination

- a) All UE&C, Vendor and Contractor Quality Assurance records for the WNP- 1 project are the property of WPPSS and are subject to review, audit and inspection by UE&C and WPPSS Quality Assurance. Records are not to be destroyed or otherwise disposed of without written consent of UE&C or WPPSS Quality Assurance. UE&C contract documents allow for UE&C or WPPSS to acquire possession of any Quality Assurance Records generated.
- b) Vendor or Contractor Quality Assurance records will not be altered, changed, modified or corrected without proper justifications and in accordance with a Vendor or Contractor procedure which provides for appropriate review or approval. Any change or correction includes the date and identification of the person authorized to make the change or correction.
- c) UE&C Quality Assurance records are under the same requirements as that specified in 17.2.17.3.b.
- d) Analysis by UE&C of the Vendor drawing control system is also effected to ensure their use of correct revisions of drawings and procedures. An evaluation of the Vendors in-process inspections is performed to assure early detection on nonconforming conditions in the manufacturing cycle. Verification that contract NDE and inspection and test requirements are properly incorporated into manufacturing operation instructions is also accomplished.

17.2.17.4 Record File and Storage

- ~~a)~~ UE&C's records of design activities are maintained at the Home Office and are identified and retrievable. These records include drawings, Contract Specifications, calculations, stress reports and evidence of design verification. UE&C maintains these records in accordance with applicable codes and standards by maintaining a duplicate set of records in separate locations (ie Master Project File and Engineering discipline files) so that both sets could not be simultaneously lost or destroyed thru fire, flooding, theft, and deterioration by temperature or humidity conditions. These records are available for WPPSS or Regulatory Agency review and audit. Upon completion of the work, a complete set of records will be transmitted in accordance with applicable codes and standards to WPPSS for retention.
- b) UE&C's Quality records are maintained, identified and filed at the Home Office. UE&C will provide a surveillance activity at the Vendors and Contractors offsite plants to assure that QA records for WNP- 1 equipment are filed and stored with the safety, accuracy and timeliness required for records control.

17.2.17.5 Records Retention

- a) UE&C Engineering Records and drawings are indexed and microfilmed in accordance with the approved Project procedures and under the responsibility of UE&C Project Engineering. UE&C QA records received or generated at UE&C Home Office, which are required at the site will be duplicated and transmitted to the Site Quality Assurance Master File as required.
- b) Retention period for data will be determined with WPPSS in accordance with guidance afforded by ANSI N45.2-9, Appendix A in which the "lifetime" and "Non-permanent" categories for data are indicated.

17.2.18 Audits

The Quality Assurance program for the WNP- 1 project provides for planned and unplanned periodic audits which will verify compliance with the applicable Management, Engineering, Procurement and QA activities. The audit records of UE&C internal practices offer objective evidence of implementation of and compliance with requirements, and consistency in the discharge of responsibilities.

17.2.18.1 Types and Categories

- a) Audits are being performed as "internal" audits, where audits are performed on specific elements of the WNP- 1 Quality Assurance Program; and as "External" audits, where audits are conducted at Vendors or Contractors facilities to ascertain his conformance to contractual requirements, including engineering specifications, codes and standards. Both types of audits are performed in accordance with written check lists by Quality Assurance personnel who, by the nature of their position, are independent from the Engineering & Manufacturing disciplines. "Management" audits will be performed by the UE&C Vice President of Administration on an annual basis to verify compliance with the established corporate QA program.

- b) Internal Audits

The general categories of Engineering, Purchasing (Procurement), Home Office Quality Assurance & Vendor Surveillance are those QA functions of UE&C which are subject to the UE&C internal audit program. The effectiveness of the technical portion of the WNP- 1 program is also subject to the UE&C audit program. Prior to conducting an audit, the auditor (Team Chairman) prepares a written checklist delineating the characteristics to be audited. The audit is then conducted in accordance with this checklist and upon completion of the audit, the results are presented, discussed and summarized in a written audit report.

c) External Audits

The purpose of external audits is to determine if the supplier has provided adequate control over his manufacturing processes connected with the component being manufactured. While UE&C QA Vendor Surveillance has the responsibility to perform a QA Surveillance function for the procurement of purchased items, the UE&C Audit function has the responsibility to verify that the supplier is implementing his approved QA System.

d) Management Audits

The purpose of UE&C Management Audits is to ensure that the adequacy and status of the Corporate Quality Assurance program is being accomplished. Annually the UE&C Vice President Administration arranges for a corporate audit of the activities of the UE&C Reliability and Quality Assurance Department for Conformance to the provisions of the UE&C Nuclear Quality Assurance Manual. A by-product of the audit is the eventual impact of the results on various UE&C Nuclear projects including the WNP- 1 project. The audit is conducted under the responsibility and authority of the UE&C VP Administration and his designated Audit Team, selected from areas of corporate Management and other activities for not having direct responsibilities for UE&C Quality Assurance Actions.

17.2.18.2 Audit Planning

- a) The Manager - Audits prepares a Master Audit Matrix for the WNP -1 project identifying QA and technical program elements or activities, established frequencies per specific project commitments, dates of audits, including verification audits, auditor(s) and tentative dates of subsequent audit. The frequency of scheduled audits is at least once annually or at least once within the life of the activity, whichever is shorter, or as established by the Manager Reliability and Quality Assurance department or his designate. The Manager - Audits is then responsible for the preparation, selection of audit teams, conducting the audit, post audit review/critique, audit report/distribution and completion of the audit
- b) Unscheduled audits are conducted as required on the basis of the following factors:-
1. Areas of work and activities just starting and not scheduled for an audit
 2. Verbal or written complaints of quality Deficiencies, nonconforming trends or Discrepancies.

3. Previous audit of areas or activities which indicated a need for additional auditing
 4. Verification that proposed corrective action has been implemented satisfactorily
 5. Major equipment suppliers, for problem conditions based on previous experiences with the supplier.
- c) The following general audit categories will be covered as deemed appropriate by the Manager of Reliability & Quality Assurance -
- 1) Engineering design controls and technical program assessment
 - 2) Purchasing activities
 - 3) Facility surveys as required
 - 4) Vendor Surveillance activities
 - 5) Home Office Quality Assurance Activities
 - 6) Support of WPPSS NSSS Audits

17.2.18.3 Audit Team

- a) One or more individuals comprise an audit team, although UE&C prefers that a team of at least two "qualified" individuals perform an audit. At least one Quality Assurance Engineer is a member and usually functions as the team leader, with other team members being selected from various UE&C departments or Projects as arranged for by the Audit Function.
- b) The selection of Auditors is based on their qualifications, special abilities or expertise, and personal characteristics, commensurate with the complexity or special nature of the activity to be audited.
- c) Suitable training is conducted for auditors as required and deemed necessary which entails on the job guidance and counseling under direct supervision of an experienced auditor. Special instructions by the team leader to Technical Specialists participating on an audit team and formal orientation sessions with personnel provide general and specialized training in audit techniques.
- d) A proficiency record of auditors is maintained by UE&C Audit Function to reflect qualification based on -
 - Regular, active participation in the audit process

- Working knowledge and understanding of applicable elements of AEC 10CFR50 Appendix B, ANSI N45.2 and Supplemental Standards, related to the quality assurance program.
- Participation in audit related training and orientation program described in 17.2.18.3.C.

17.2.18.4 Internal Audit Procedure

- a) Preparation for the internal audit includes reviewing reference documents applicable to the work, activity or procedure to be audited, preparation of check lists and a brief pre-audit conference with the cognizant activity supervisor to confirm the audit scope, present the audit plan, introduce auditors and establish channels of communication.
- b) The audit is conducted and upon completion of audit actions, the audit team holds a critique to inform the responsible management of the result of the audit.
- c) The Audit report is issued within a designated time period after the audit in which the overall results of the audit are summarized. Each nonconforming condition is listed separately with recommendation for corrective action and tentative completion date. Copies of the Audit report are then sent to various UE&C corporate management levels including

Vice President Administration (as applicable)

Manager Reliability and Quality Assurance

Manager - Audits

Manager - Quality Engineering

Project Manager

Project Engineering Manager

Construction Manager (as applicable)

Quality Assurance Engineer (for the project)

Responsible Supervision of Activity audited

Others as required or identified by the Audit Team leader

- d) A response in writing to the audit report findings is made to the Manager Audits and the Audit Team Leader by the responsible supervision of the activity audited. The R&QA Audit function evaluates and analyzes the reply for responsiveness to corrective actions and conducts a follow-up action to assure implement action as scheduled. Follow-up action may be accomplished by -

- Written communication
- Verification Audit
- Subsequent regularly scheduled (planned) audit of activity.

Failure to respond by the audited activity could result in work stoppage of the "activity" in accordance with an approved UE&C Quality Assurance procedure.

17.2.18.5 External Audit Procedure

- a) Preparation for and Conducting of External Audits proceeds in accordance with 17.2.18.4.a thru 17.2.18.4.d except that the Audit Team Leader coordinates with the appropriate Project Engineering and Purchasing Personnel and the QAE for scheduling arrangements with Vendor or Contractor.
- b) Preparation for and conducting audits of Engineering Consultants proceeds in accordance with 17.2.18.4.a thru 17.2.18.4.d except that the Audit Team Leader coordinates with the appropriate Project Engineering personnel and the QAE for scheduling arrangements with the Engineering Consultant.

17.2.18.6 Management Audit Procedure

Preparation for and conducting of management audits proceeds in accordance with subsection 17.2.18.4.a thru 17.2.18.4.d except that audit reports are distributed to Vice President - Administration and the Manager, R&QA and the audit team leader coordinates with the manager R&QA for scheduling arrangements.

17.2.18.7 Audit File

A complete record file is kept of all audits, which provides UE&C and WPPSS Management with the means to analyze and evaluate the total WNP-1 Project Quality Assurance Program.

17.2.18.8 AUDIT ANALYSIS

- a) The monthly status report of QA audit activities is published by the Manager-Audits with distribution to UE&C Project and Corporate Management. The report identifies QA Audit findings from audits conducted during the reporting period and records the status of items still pending from previous audits.
- b) The Manager-Audits uses these reports as the basis for determining quality trends developing in the various areas of the Project Quality Assurance Program. When unsatisfactory trends are observed, the Manager-Audits publishes a report to UE&C Corporate Management with particular attention to those areas showing the trend.
- c) The Manager R&QA pursues resolution of those areas of concern which indicate a decrease in the effectiveness of the Project QA program.

TABLE 17.2-1
UE&C PROCEDURES - 18 POINT CRITERIA

UE&C Procedure No.	TITLE	10 CFR 50 Appendix B Criteria
QA-1	Organization	I
QA-2	Quality Assurance Program	II
QA-2-1	Indoctrination and Training	II
QA-3	Design Control	III
QA-4	Procurement Document Control	IV
QA-5	Instructions, Procedures and Drawings	IV
QA-6	Document Control	VI
QA-7-1, 7-2	Control of Purchased Material Equipment and Services	VII
QA-8	Identification and Control of Material, Parts and Components	VIII
QA-9	Control of Special Processes	IX
QA-10	Inspection	X
QA-11	Test Control	XI
QA-12	Control of Measuring and Test Equipment	XII
QA-13	Handling, Storage and Shipping	XIII
QA-14	Inspection, Test and Operating Status	XIV
QA-15	Nonconforming Materials, Parts or Components	XV
QA-16, 16-1	Corrective Action	XVI
QA-17, 17-1	Quality Assurance Records	XVII
QA-18, 19	Audits	XVIII

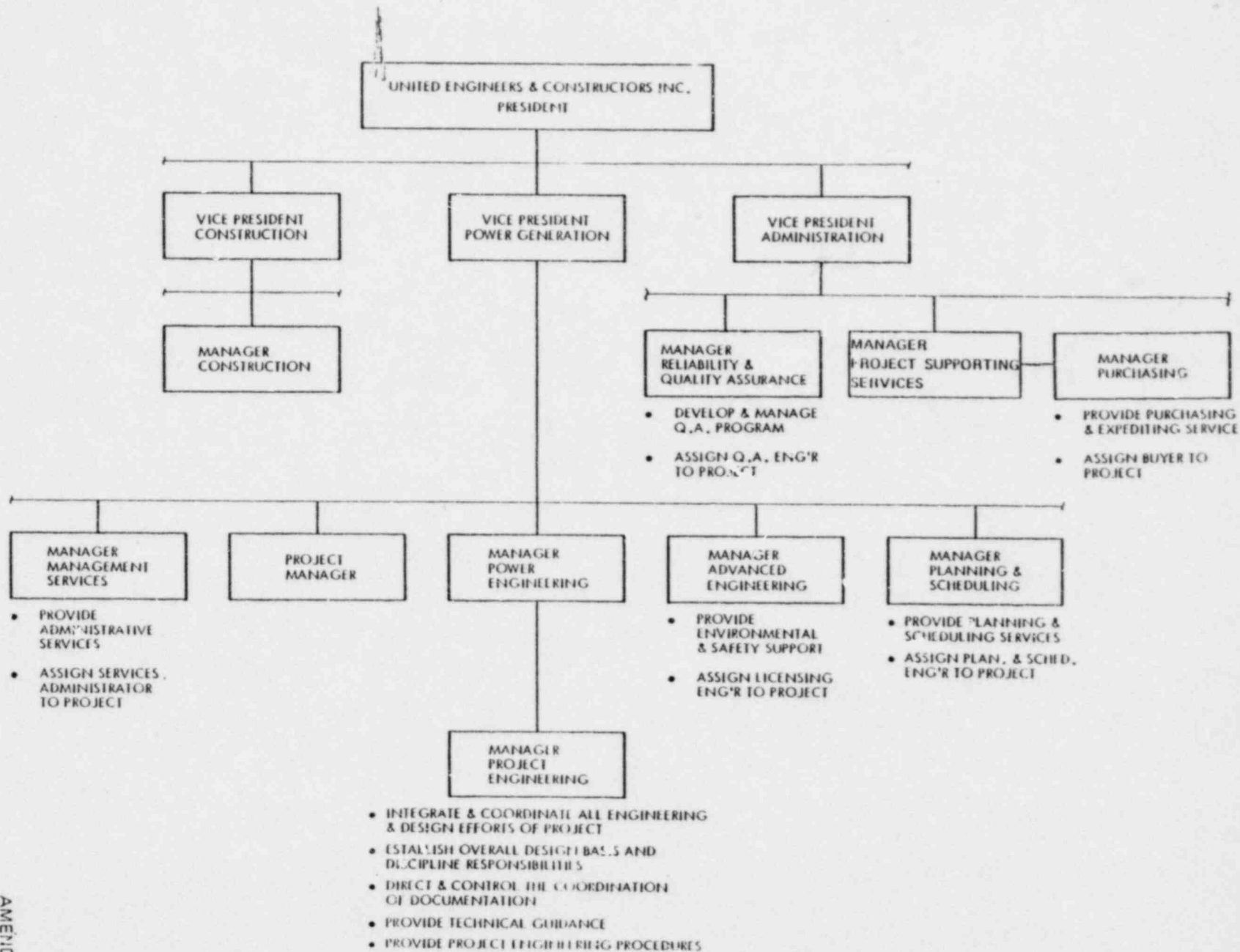
TABLE 17.2-2

MPPSS, UE&C INTERFACE CHART

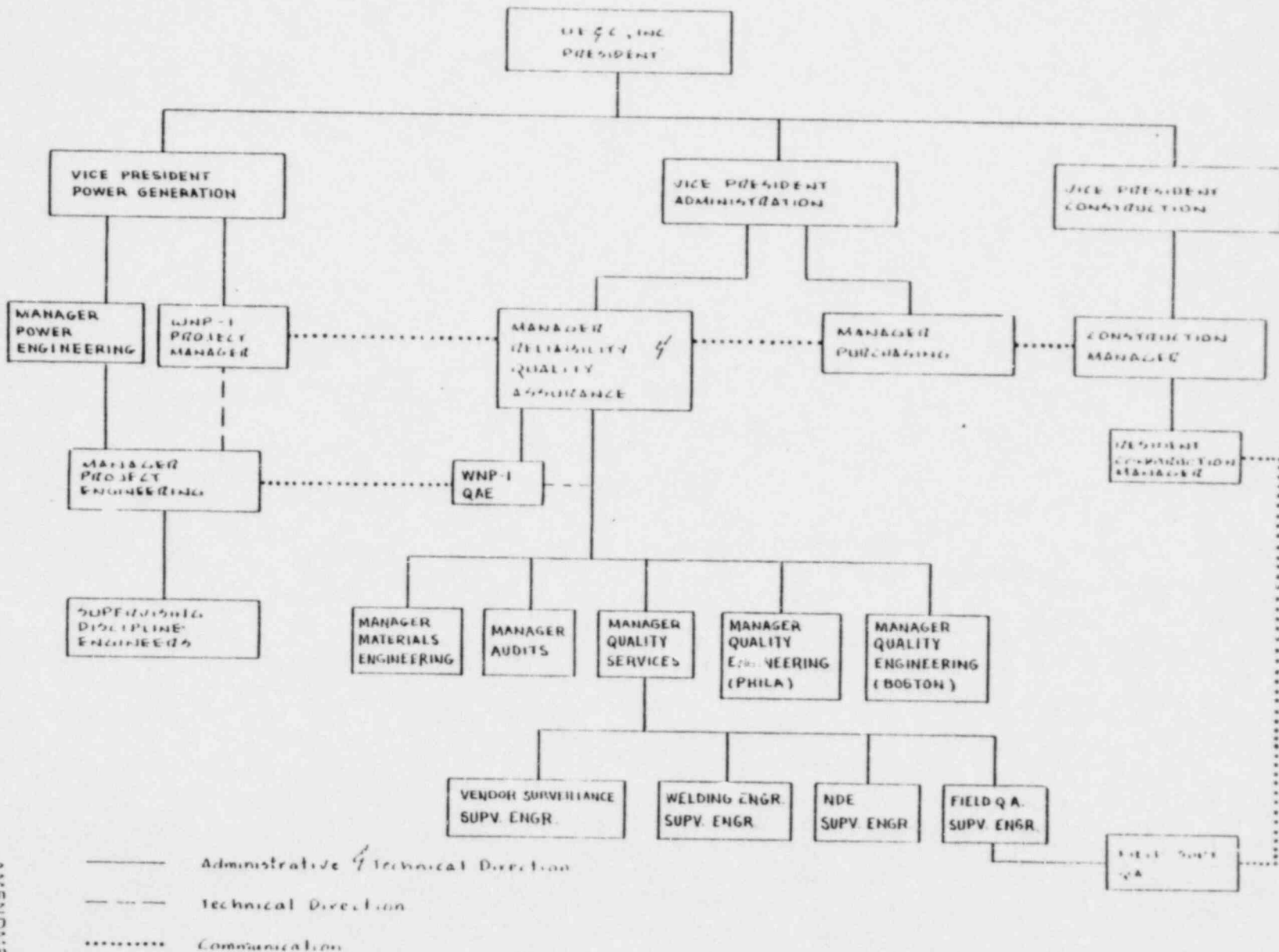
Interface Item	Responsibility	Initiate	Prepare	Review & Comment	Approve	Support	Implement	Issue	Distribute	Control
UE&C QA Organization	U	U	U	U, W	U	-	U	-	-	U
UE&C QA Program	U	U	U	U, W	U, W	-	U	-	-	U
Procurement Contract Specification	U	U	U	U, W	U, W	-	U	U	U	U, W
UE&C QA Procedures	U	U	U	U, W	U, W	-	U	U	U	U
UE&C Drawings (Initiated)	U	U	U	U, W	U	-	U	U	U	U
UE&C Project Procedures	U	U	U	U, W	U, W	-	U	U	U	U
UE&C Construction Procedures	U	U	U	U, W	U	-	U	U	U	U
Vendor Procedures	V	V	V	V, U	V, U	-	V	V	V	V
Contractor Procedure	C	C	C	C, U	C, U	-	C	C	C	C
NSSS Drawings	N	N	N	N, U, W	N	-	N	N	N	N
NSSS Submittals	N	N	N	N, U, W	N	-	N	N	N	N
Vendor Surveillance Planning, Scheduling Implementation	U	U	U	U, W	U	W	U, W	-	-	-
UE&C Special QA Processing Contract Documents	U	U	U	U, W	U, W	-	-	U	U	U
Vendor & Contractor Audits & Documentation	U	U	U	U	U	-	U	U	U	U
UE&C Internal Audits & Documents	U	U	U	U	U	-	U	U	U	U
NSSS Audits	W	W	W	W	W	U	W	W	W	W

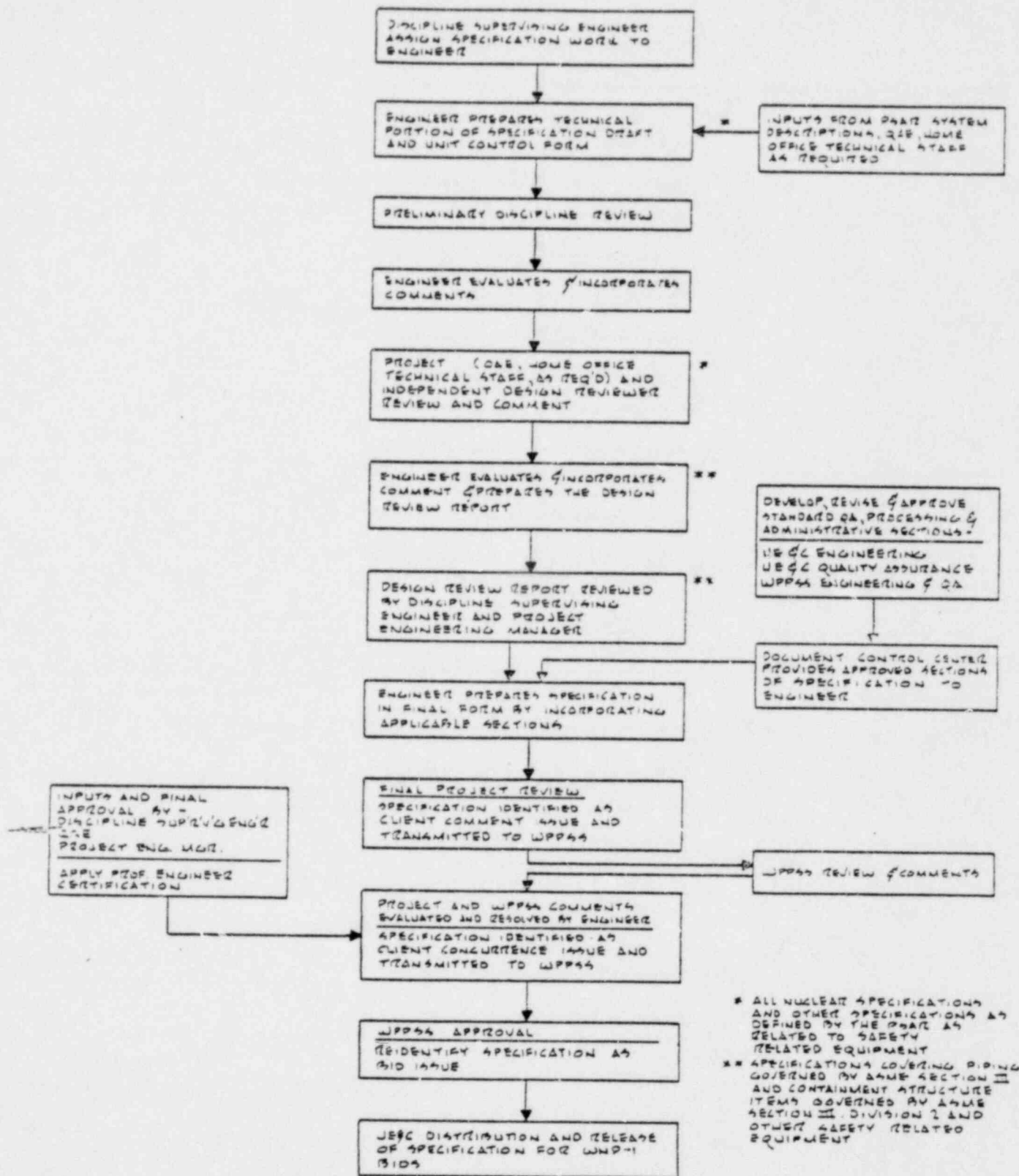
U = UE&C
 W = MPPSS
 V = Vendor
 C = Contractor
 N = NSSS

AMENDMENT 10
 SEPTEMBER 1974



AMENDMENT 8
JULY 1974





- * ALL NUCLEAR SPECIFICATIONS AND OTHER SPECIFICATIONS AS DEFINED BY THE PPA&C AS RELATED TO SAFETY RELATED EQUIPMENT
- ** APPLICATIONS COVERING PIPING GOVERNED BY SAME SECTION III AND CONTAINMENT STRUCTURE ITEMS GOVERNED BY SAME SECTION III, DIVISION 2 AND OTHER SAFETY RELATED EQUIPMENT

AMENDMENT 8
JULY 1974

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
WPPSS NUCLEAR PROJECT NO. 1
Preliminary Safety Analysis Report

UE&C SPECIFICATION FLOW CHART

FIG. 17.2-3

WNP-1/4
PSAR DEVIATION REQUEST

17.4-4 (WP) DEVIATION NO.	Volume 7 PSAR VOLUME NO.	Chapter 17.4 PARAGRAPH NO.	5/13/81 DATE
------------------------------	-----------------------------	-------------------------------	-----------------

1. PSAR COMMITMENT AS OF 02/19/81 (LAST AMENDMENT DATE): (include SAR statement)
Chapter 17.4 currently describes the Field Quality Assurance organization and responsibilities of United Engineers & Constructors, Inc.

2. DESIRED CHANGE: (indicate desired statement)
Revise Chapter 17.4 to incorporate the NRC approved Topical Report BQ-TOP-1, Rev. 3A, Bechtel Quality Assurance Program for Nuclear Power Plants, as amended by the attached, 1) Revised scope of Quality Assurance during design and construction; 2) Bechtel Quality Assurance Program.

3. STATEMENT IDENTIFYING SIGNIFICANCE OF DEVIATION: (i.e., what is being proposed that is different from PSAR commitment)
The changes described in this deviation request are required to implement the Bechtel Power Corporation responsibilities for Construction Management and Quality Assurance services at WNP-1/4. (Except for ASME III, Div. 2 responsibilities which are retained by UE&C)

4. JUSTIFICATION: (i.e., explain why the desired change is justified and is expected to be defensible before the NRC)
This deviation request is required to reflect the revised responsibilities for Construction Management and Quality Assurance services at WNP-1/4. PSAR amendment is not required as changes described in this deviation do not alter in a non-conservative manner Supply System commitments as delineated in the PSAR.

5. WPPSS APPROVALS:

PREPARED BY:	<u>Joseph B. Hattaway</u>	DATE	<u>5-13-81</u>
WNP-1/4 PROGRAM DIRECTOR	<u>[Signature]</u>	DATE	<u>5/22/81</u>
ASSISTANT PROGRAM DIRECTOR, ENGINEERING	<u>[Signature]</u>	DATE	<u>5/22/81</u>
ASSISTANT PROGRAM DIRECTOR, CONSTRUCTION	<u>[Signature]</u>	DATE	<u>5-21-81</u>
MANAGER, QA	<u>[Signature]</u>	DATE	<u>5-14-81</u> <u>5-13-81</u>
LICENSING PROJECT MANAGER	<u>[Signature]</u>	DATE	<u>5-20-81</u>
MANAGER LICENSING	<u>[Signature]</u>	DATE	<u>5-21-81</u>

WNP-1/4

PSAR

17.4 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

Scope: This section summarizes the Field Quality Assurance activities assigned to the Bechtel Power Corporation and United Engineers & Constructors, Inc., as they pertain to WNP-1/4 Project site activities.

The Bechtel Power Corporation has been assigned by the Supply System to provide a Quality Assurance program to implement the responsibility of Construction Management and related Quality Assurance services at WNP-1/4.

United Engineers and Constructors, Inc. has been assigned by the Supply System to provide a Quality Assurance program to implement the responsibility of Architect Engineer for WNP-1/4 and Construction Management and related Quality Assurance services as they pertain to ASME III Div. 2 responsibilities as "Constructor".

The Bechtel Quality Assurance program plan is described in the NRC approved Bechtel Topical Report, BQ-TOP-1, Rev. 3A. The Bechtel scope of responsibility differs from that indicated in BQ-TOP-1, in that Bechtel does not provide design, engineering, construction, or procurement services for WNP-1/4.

Quality Assurance Program

BECHTEL POWER CORPORATION

WNP 1/4

Quality Assurance Topical Report

The Bechtel Quality Assurance Program Plan for use by the Bechtel Power Corporation During Construction Management of Washington Public Power Supply System (Supply System) Project WNP 1/4 is described in the NRC - approved Bechtel Topical Report BQ-TOP-1, Rev. 3A, Bechtel Quality Assurance Program for Nuclear Power Plants.

Scope of Responsibility

This section describes Bechtel responsibilities for providing quality - related services in Construction Management to the Supply System on the WNP-1/4 Project excluding ASME III, Div. II activities. The scope of responsibility differs from that indicated in BQ-TOP-1 in that Bechtel does not provide design engineering, procurement services nor perform construction. Therefore, those provisions in BQ-TOP-1 associated with design engineering, procurement services and performance of construction do not apply.

Bechtel will have an Engineering Liaison group under the direction of the Project Engineering Manager available to support the Construction Management organization. Engineering personnel will assist in coordination resolution of generic QA/QC problems with responsible design engineering groups, interfacing with Supply System licensing personnel, and assisting in engineering/startup interfacing areas

Construction Management provisions for quality-related services include:

- o Receiving including receipt inspection of Supply System purchased items
- o Storage and maintenance of Supply System purchased items
- o Contractor/vendor QA documentation review, retention and turnover to the Supply System
- o Review and approval of on site contractor quality-related Procedures and Manuals
- o QA/QC audit and surveillance inspection over on-site contractor activities
- o Administration of the project program for controlling nonconforming items
- o Administration of the project program for control of design documents

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

- o Introduction Page 2 - Replace Regulatory Guide 1.58 (August 1973) with Regulatory Guide 1.58, Rev. 1 (Sept. - 1980).
- o Introduction Page 2 - Add Regulatory Guide 1.146 "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants (Rev. 0, 1976)".

- o Section 1 ORGANIZATION Subsection 1.5.1 Page 10 - Add Subsection 1.5.1 Attachment 1.
- o Section 1 ORGANIZATION Subsection 1.5.2 Page 10 - Replace Subsection 1.5.2 with Attachment 2.
- o Section 1 ORGANIZATION Subsection 1.5.4 Page 11 - Replace Subsection 1.5.4 with Attachment 3.
- o Section 2 "Quality Assurance Program" Sub Paragraph 2 & 4 Page 23 - change Regulatory Guide 1.58 (August 1973) to Regulatory Guide 1.58 Rev. 1 (Sept. - 1980).
- o Section 2 "Quality Assurance Program" Sub Paragraph 3 Page 23 - change ANSI N45.2.12 to ANSI N45.2.23.

TABLE 1 "Bechtel Quality Program Documents" Page 57 & 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 Pages A-7 thru A-13. Delete in its entirety.

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-1/4 Project. The Manager of Projects reports to the Division Manager of Projects 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-1/4 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 (SFHO) functions for the WNP-1/4 Project include:

- o Provide technical guidance and concurrence for the WNP-1/4 Project Quality Assurance Program for conformance with the requirements of 10CFR50 Appendix B.
- o 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-1/4 PQAM and revisions.
- o Maintain an awareness of WNP-1/4 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-1/4 quality assurance program.
- o Formulate and conduct management QA audits to assure compliance with the WNP-1/4 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.
- o 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-1/4 project and provide them with administrative direction through the QA Manager - Projects (SFHO).
- o Formulate and implement programs to provide indoctrination and training of Quality Assurance Department Personnel to assure that suitable proficiency is maintained.
- o From information supplied by the Manager of Quality, provide quarterly reports to the Manager of Quality Assurance - SPC (SFHO) evaluating the status and adequacy of the WNP-1/4 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-1/4 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-1/4 quality assurance program. The Manager of Quality receives technical guidance for QA and QC from the SFPD QA Manager and Chief Construction Quality Control Engineer (SFHQ) 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:

- o Provide technical and project direction to Quality Assurance Engineers assigned to the Supply System Projects.
- o Formulate and approve, after review and concurrence by the SFPD QA Manager (SFHQ) the Supply System Projects SAR and Quality Assurance Programs as defined in the WNP-1/4 Projects Nuclear Quality Assurance Manuals (NQAM's). The NQAM's shall be in conformance with the requirements of 10CFR50 Appendix B, the BPM Quality Program Policy Manual, and the appropriate Project SAR.
- o Formulate and approve, after review and concurrence by the SFPD QA Manager (SFHQ) 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.
- o Formulate and approve, after review and concurrence by the SFPD QA Manager (SFHQ) 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.
- o Maintain an awareness of project status, through contact with the Manager of Projects WNP-1/4, and assure timely and effective implementation of the quality assurance program.

- o Direct the performance of project audits to assure compliance with Supply System Project 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.
- o Provide quarterly reports to the SFPD QA Manager (SFHQ) 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.
- o Review Division standard criteria for specifying quality assurance program requirements applicable to contractors and subcontractors, and approve for use on the Supply System Projects.
- o 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 (SFHO) provides technical and administrative direction to 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 onsite 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-1/4 Project. The Chief Construction Quality Control Engineer's (SFHO) functions include:

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

TABLE 1

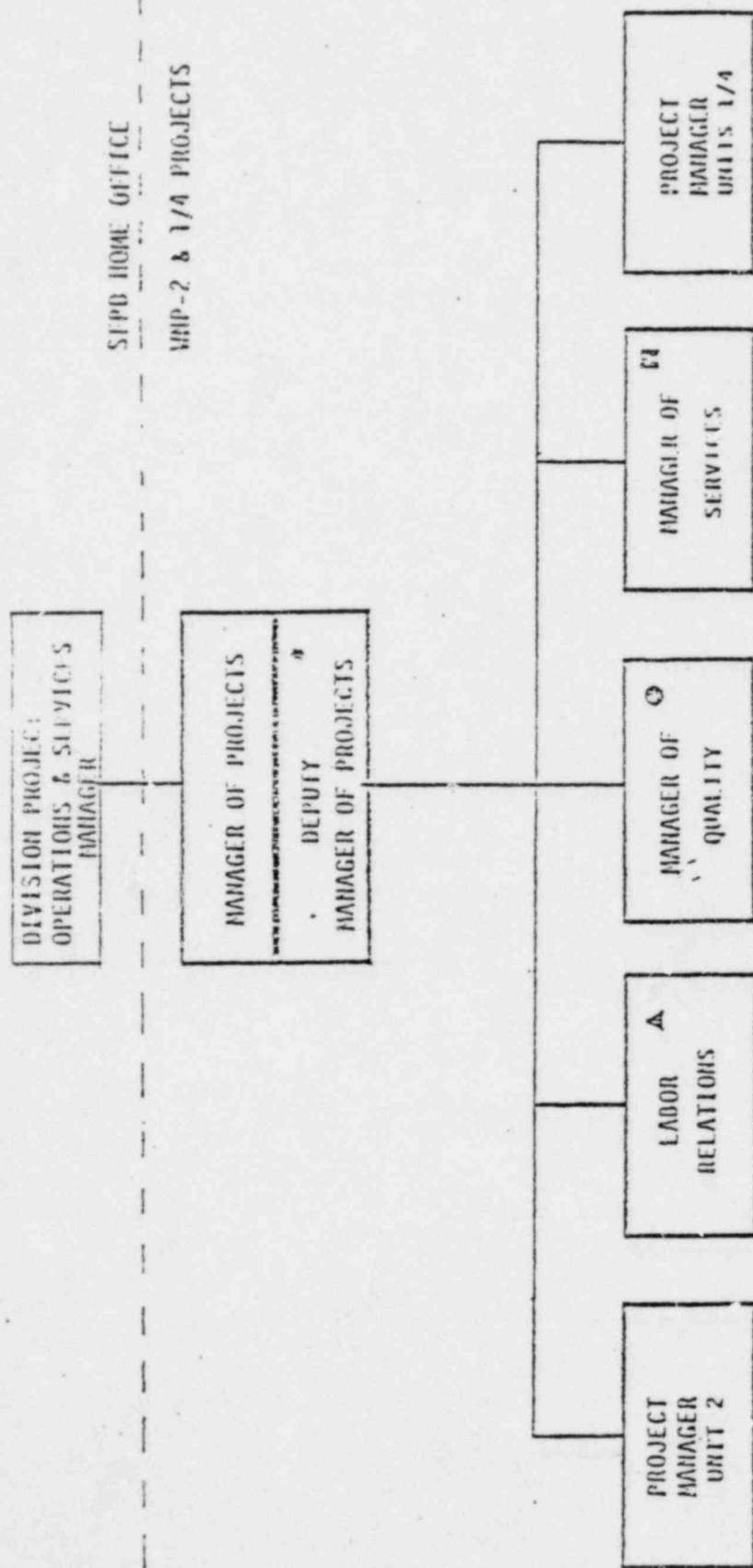
MNP-1/4 PROJECT QUALITY PROGRAM DOCUMENTS

<u>Documents</u>	<u>Originating Authority</u>	<u>Review for QA Policy and Program Requirements</u>	<u>Authorizing Approval</u>	<u>Contents</u>
MNP-1/4 Nuclear Quality Assurance Manual (NQAM)	Project QA Engineer	SFPD-QA Manager (SFHQ)	Manager of Quality	Quality program policy. Based on Division policy as contained in SFPD Standard NQAM

MNP-1/4 Project QA Manual (PQAM)	Project QA Engineer	SFPD-QA Manager (SFHQ)	Manager of Quality	Procedures for conducting QA activities

MNP-1/4 Construction Quality Control Manual (CQC1)	Project Construction Quality Control Engineer	Project QA Engineer	Manager of Quality	Responsibilities and procedure for Construction QC activities

MNP-1/4 Construction Procedures	Field Construction Manager	Project QA Engineer	Chief Construction Engineer, (SFHQ)	Responsibilities and requirements for construction management activities



○ RESPONSIBLE FOR TECHNICAL &

PROJECT DIRECTION

* ▲ ■ RESPONSIBLE FOR TECHNICAL GUIDANCE AND COORDINATION

— PROJECT DIRECTION

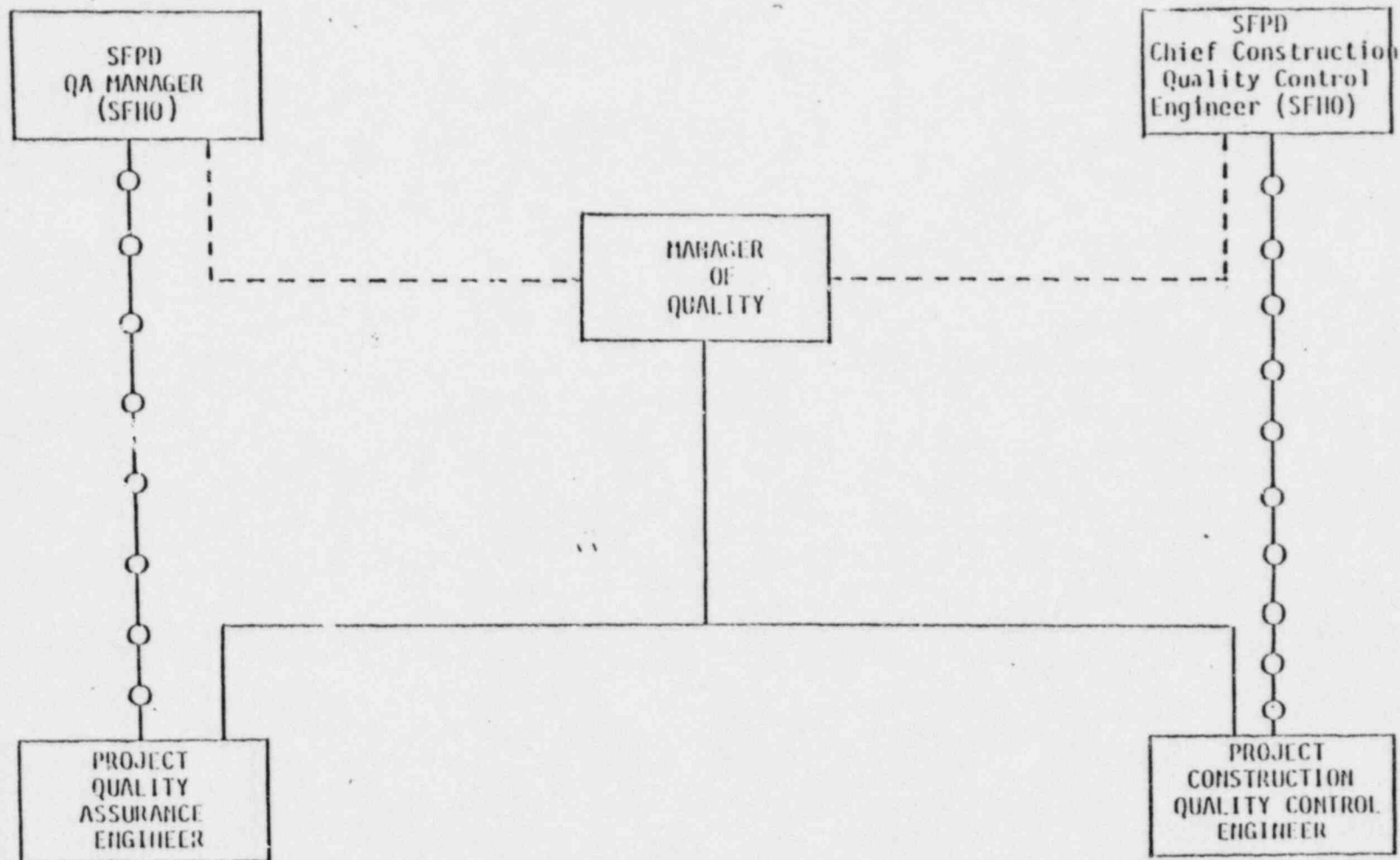
- - - COORDINATION

--○--○-- ADMINISTRATIVE CONTROL

BECHTEL PROJECTS MANAGEMENT

ORGANIZATION

FIGURE 15



LEGEND AND NOTE

- PROJECT AND TECHNICAL DIRECTION
- TECHNICAL GUIDANCE AND COORDINATION
- ADMINISTRATIVE DIRECTION

NOTE: The SFPD QA Manager (SFHQ) is responsible for performing management QA audits of the VNP-1/4 Project Quality Assurance/Quality Control Organization

Figure 16

NUCLEAR QUALITY ASSURANCE MANUAL

ATTACHMENT 7

NRP-1/4 Project		Section VI	
LOC#30	Appen. B	Section V	Section IV
1	ORGANIZATION		
11	QUALITY ASSURANCE PROGRAM		
111	DESIGN CONTROL		
IV	PROCUREMENT DOCUMENT CONTROL		
V	INSTRUCTIONS, PROCEDURES AND DRAWING DOCUMENT CONTROL		
VI	CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES		
VII	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, OR SUBASSEMBLIES		
VIII	CONTROL OF SPECIAL PROCESSES		
IX	INSPECTION		
X	TEST CONTROL		
XI	CONTROL OF DRAWINGS AND TEST EQUIP.		
XIII	HANDLING, STORAGE AND SHIPPING		
XIV	INSPECTION TEST OPERATING STATUS		
XV	CORRECTIVE ACTION		
XVI	QUALITY ASSURANCE RECORDS		
XVIII	AUDITS		

WNP-1/4
PSAR DEVIATION REQUEST

17.4-5 (WP)	7	Section 17.4	6/3/81
DEVIATION NO.	PSAR VOLUME NO.	PARAGRAPH NO.	DATE

1. PSAR COMMITMENT AS OF 2/75 (LAST AMENDMENT DATE): (include SAR statement)

Section 17.4 - United Engineers & Constructors

Quality Assurance During Construction

(In It's Entirety)

2. DESIRED CHANGE: (indicate desired statement)

Revise Section 17.4 to limit the scope of UE&C's Construction Management QA responsibilities to the Quality Class 1, ASME Section III, Div. 2 Project Activities.

3. STATEMENT IDENTIFYING SIGNIFICANCE OF DEVIATION: (i.e., what is being proposed that is different from PSAR commitment)

There is no change in previous PSAR commitments as they pertain to the ASME Section III, Div. 2 Activities.

4. JUSTIFICATION: (i.e., explain why the desired change is justified and is expected to be defensible before the NRC)

This PSAR deviation is required to accurately reflect the transfer of Construction Management QA responsibilities from UE&C to Bechtel.

5. WPPSS APPROVALS:
PREPARED BY:

DATE

6-3-81

WNP-1/4 PROGRAM DIRECTOR

DATE

7/1/81

ASSISTANT PROGRAM DIRECTOR, ENGINEERING

DATE

6/25/81

ASSISTANT PROGRAM DIRECTOR, CONSTRUCTION

DATE

6-30-81

MANAGER, QA

DATE

6-17-81

DIRECTOR OF LICENSING PROJECT MANAGER

DATE

6-16-81

MANAGER LICENSING

DATE

6-23-81

17.4 United Engineers & Constructors Quality Assurance During Construction

Scope: This section summarizes the UESC Site Quality Assurance program as it pertains to the WNP-1 Site ASME Section III, Div. 2 activities. The Project Quality Assurance Program meets or exceeds 10CFR50, Appendix B and ANSI N45.2-1971 requirements. This section describes that portion of the total Quality Assurance program for the project with respect to the receiving inspection and construction QA activities for the WNP-1 ASME Section III, Div. 2 Equipment and Structure at the Construction Site. The UESC design and procurement QA related activities are included in Section 17.2. The term "site contractor" as used throughout this section refers to those contractors having construction site activity responsibility for providing WNP-1 ASME Section III, Div. 2 Equipment and Services.

17.4.1 Organization

The Project will maintain an independent Site Quality Assurance organization. Personnel performing quality functions will not be responsible for performing the work which they are inspecting nor will they be responsible for performing the work over which they are providing surveillance.

The Field Superintendent - Quality Assurance (FSQA) reports to the project Quality Assurance Manager (PQAM) and is responsible for the on-site implementation of the QA program. The PQAM has access to the manager Reliability and Quality Assurance thru the Assistant Manager R & QA. The FSQA is assisted by a staff with experience in the various disciplines involved in the ASME Section III, Div. 2 activities.

The Field Superintendent Quality Assurance qualification requirements are:

1. Education - Technical degree in mechanical, electrical, civil, nuclear or metallurgical engineering, or equivalent, plus special study of quality assurance and control techniques, testing and inspection methods.

WNP-1
PSAR

2. Experience - Ten years of related experience in responsible engineering or Quality Control positions may be considered equivalent to required technical degree. A minimum of five years experience as a Quality Control Supervisor or Engineer or the equivalent in responsibility and scope, is a prerequisite for the position.

17.4.1.1 Site Quality Assurance

The Site QA Organization is supervised by the Field Superintendent Quality Assurance and includes Engineers knowledgeable in all phases of construction, quality assurance and quality control. The Quality Assurance interface with Construction Management is shown in Figure 17.4-1. The Field QA Personnel are responsible for these activities:

- a) Plan, develop and implement audits of site contractors.
- b) Develop receiving inspection check plans for pre-purchased equipment.
- c) Develop surveillance check plans for construction activity.
- d) Provide surveillance over material storage, handling and control activities.
- e) Identify and document nonconforming materials and conditions.
- f) Provide receiving inspection of pre-purchased items.
- g) Perform surveillance and audit of site contractors.
- h) Provide Site QA liaison with Client, Engineering, Construction Management and Site Contractors.
- i) Assure necessary QA documentation has been provided, reviewed and approved by appropriate personnel.
- j) Establish and maintain site master Quality Assurance Files of records generated by Site QA or turned over to Site QA by others.
- k) Provide those inspections requested by Construction Management to verify quality of contractor construction.

17.4.2 Quality Assurance Program

The Quality Assurance program is comprised of those planned and systematic actions responsive to the applicable requirements of ASME Section III, Div. 2 10CFR50, Appendix B and ANSI N45.2-1971 necessary to provide adequate confidence that Safety Related Structures, systems and components will perform satisfactorily in service. The Nuclear QA Manual and changes thereto will be subject to approval by the client.

17.4.2 Quality Assurance Program (Continued)

The nuclear QA manual forms the basis of the Quality Assurance program and response to the NRC criteria for site implementation as follows:

17.4.2.1 Response to NRC Criteria

a) Organization

The Project will maintain an independent Site Quality Assurance organization. The Field Superintendent Quality Assurance (FSQA) reports to the UE&C Project Quality Assurance Manager and is responsible for the on-site implementation of the QA program. The FSQA reports directly to the PQAM in all quality matters. The Project QA Manager has access to the UE&C Manager Reliability and Quality Assurance through the Assistant Manager R & QA for administrative directions. The FSQA will be assisted by a staff of experienced QA Engineers in various technical disciplines. The organizational interface of the Site QA group is shown on Figure 17.4-1. Site Contractor QC organizations will be reviewed and approved by Site QA prior to implementation of the contracts.

b) Quality Assurance Program

The QA Program as described in the Nuclear QA Manual established for WNP-1 consists of specific QA requirements to be carried out within Project QA's predetermined scope of work at the site. UE&C will require site contractors and suppliers providing Quality Class I equipment to implement Quality Assurance programs that are in compliance with the applicable criteria of ASME Section III, Div. 2, 10CFR50, Appendix B and ANSI N45.2-1971.

c) Design Control

Through a planned system of review and approval cycles, design changes and construction revisions will be controlled. Errors and deficiencies in the design change process which adversely affect safety related structures, systems, or components will be documented and the proper corrective action taken. Design and specifications including field changes, will be subject to the same design controls applicable to the original design.

17.4.2.1 Response to NRC Criteria (Continued)d) Procurement Document Control

Site QA will implement a program of control over site contractor procurement documents, processing and construction procedures in order that Contractor Quality Assurance programs, as specified, are consistent with the appropriate provisions of 10CFR50, Appendix B. The details of the contractors program for spare and replacement parts will be reviewed for compliance with the Contract Specifications.

e) Instructions, Procedures, and Drawings

The Project implements a program of control over Site Contractor processes and construction procedures, instructions and drawings to assure that all quality related Contractor activities are controlled. Audit and surveillances of these activities will be performed to verify these activities by Site QA.

f) Document Control

Provision for maintenance, approval, review, distribution, filing, updating, and monitoring of Contractor applicable documentation will be implemented as a result of the Project and Contractor Site QA Programs. Document files will be controlled and maintained to preclude the inadvertent use by the Contractors of obsolete or superseded documents. Document control systems will be established and implemented by the Contractors in accordance with Contract Specification requirements.

g) Control of Purchased Material, Equipment & Services

Inspections of materials and equipment at the construction site will be performed in accordance with pre-determined inspection instructions prior to their use. Project and Site Contractor procedures will also provide for auditing and surveillance activity to assure that quality requirements for accepting and releasing materials and equipment including nonconformance activity is being implemented. Control of records will be in accordance with 17.4.17.

17.4.2.1 Response to NRC Criteria (Continued)

h) Identification and Control of Materials, Parts, and Components

Identification and control systems using tags and stamps will be employed where appropriate at the site for pre-purchased and Contractor purchased materials, parts and components to provide identity and traceability of the status of materials, parts and components thru storage and release for installation. Verification of the correct identification of these items will be accomplished in the program prior to installation.

i) Control of Special Processes

The Project (UE&C) will not perform special processes during construction, but the QA program imposes the applicable controls of processes and personnel on the Site Contractors. Special procedures and requirements for the qualification and certification of the process and for the personnel performing these processes will be imposed. Site QA audit and surveillance of these activities will assure that the contractors are conforming to their approved procedures. Documentation and records will be retained and maintained current and active.

j) Inspection

Site inspection activities of site contractors affecting quality will be verified through surveillance and audits of these inspections of materials, parts and components when received, handled, stored, and installed. Procedures and instructions will be implemented to assure that receiving inspections, construction inspections and final acceptance inspections are conducted by qualified site contractor personnel to verify acceptability.

Initial receiving inspection of pre-purchased ASME Section III, Div. 2 material, parts and components will be conducted by Site Quality Assurance personnel to assure, through planning and implementation, the acceptability of the material/equipment received at the site.

17.4.2.1 Response to NRC Criteria (Continued)k) Test Control

The QA program for Test Control is delineated in the Contract Specification and provides for the performance of tests in conformance with Engineering and Construction practices and code requirements. Storage tests, measuring and test equipment tests, receiving tests, installation tests, and other field tests are typical of those tests performed by qualified personnel. Pre-operational and performance startup tests are in accordance with Chapter 14 of this PSAR.

l) Control of Measuring and Test Equipment

All measuring and testing equipment used at the site to determine the acceptability of material, equipment or installations, will be under control of a site calibration program, with calibrations performed against standards of known accuracy. The system established by the QA program controls, calibrates and adjusts those tools, gauges, instruments and other inspection, measuring, testing and maintenance devices used at the site. The system will also control the usage of the proper type, range and accuracy of the measuring and testing devices including records and documentation pertaining thereto.

m) Handling, Storage, and Shipping

Storage, preservation, handling, and cleaning activities at the site are controlled by a QA program administered by contractors at the WNP-1 Site. Each site contractor responsible for administering the storage of site materials and equipment provide written, approved procedures defining their program in terms of storage inspection, maintenance, handling, surveillance and records activities. Periodic surveillance and inspection of storage records will enable Site QA to verify the adequacy of the control, examination, review and filing procedures.

n) Inspection Test and Operating Status

The QA program provides measures for indicating the status of tests and inspections performed on material, parts and components when received,

17.4.2.1 Response to NRC Criteria (Continued)

- n) tested, inspected, stored and installed at the construction site. The status of the item is established by a Project system of tagging which, when applied and recorded, prevents their inadvertent operation and precludes the inadvertent by-passing of their inspection and test requirements.

O) Nonconforming Materials, Parts, and Components

The QA program provides that Site Contractors identify, document, segregate, review and dispose of nonconforming materials, parts and components at any stage of fabrication, erection or construction to prevent their inadvertent use or installation. Nonconformances detected either by Site QA or Site Contractors are initiated, controlled and documented in accordance with an approved procedure. A Nonconformance Review Board will be authorized to control site deviations and will be represented by key site personnel from WPPSS and UESC. The program also provides for the reinspection of all site affected activities to clear nonconformances.

p) Corrective Action

The QA program provides for the identification, documentation, reporting and dispositioning of those site conditions adverse to quality. These site conditions adverse to quality are determined and corrected to preclude repetition. The contractor implements an approved program and responds in a timely manner to his own corrective action requests or to Site QA's. The program also provides for the implementation, verification, and analysis of corrective actions and assures management action for lack of response.

q) Quality Assurance Records

Site master files of QA records will be maintained and controlled by Site QA. The QA program also provides for the accumulation, organization, custody and retention of QA and QC records by Site Contractors as referenced in Contract Specifications and the Nuclear QA Manual. Records will also be reviewed, filed, stored and retained in accordance with approved procedures.

17.4.2.1 Response to NRC Criteria (Continued)

- q) to provide complete and acceptable "Turnover" documentation packages. Records will be identified and filed to provide accurate retrieval without delay.

r) Audits

The Audit Program at the site provides for regularly scheduled and unscheduled audits of site quality programs to verify compliance with approved QA and QC procedures. Audits of the contractors construction and installation practices will assure contractor implementation and compliance with the requirements. Audits will be performed at the site to verify the activities of Project Construction Management and Site QA are consistent with the approved procedures and documents governing their site activities. Record files of audits will be kept to provide Project Management with a means to analyze and evaluate the contractor effort.

17.4.3 Design Control

The Project, through its detailed procedures for implementing design control on the WNP-1 project, provides the assurance that field design activities of safety related items are carried out in a planned, controlled and orderly manner. The design activity in the field will be essentially implementation and control of design changes initiated in the field. All field design changes will be evaluated, reviewed and approved in accordance with approved Engineering and QA procedures and will be subject to similar design control as the basic design document.

17.4.3.1 Field Design Changes

- a) Design changes initiated in the field will be subject to a controlled procedure of initiation, evaluation, review, sign-off and implementation. All changes and deviations from the original design will be reviewed for impact on quality control, quality assurance and code requirements associated with the impact on the design specification. Site Quality Assurance personnel will review such changes and the resulting QA/QC impact.

17.4.3.1 Field Design Changes (Continued)

- b) Approved revisions to design documents will be distributed to Construction Management, Site QA, and Engineering personnel via standard distribution lists so that approved changes will be timely.
- c) Errors and deficiencies developed as a result of these design changes which are found to adversely affect safety related structures, systems and components will be documented in accordance with 17.4.15 and corrective action taken in accordance with 17.4.16.

17.4.3.2 Change Records

- a) Design documents, field design reviews and design change records initiated at the site will be collected, stored, controlled and maintained in accordance with written procedures.

17.4.4 Procurement Document Control

The Project implements control over Site Contractor procurement documents through detailed QA procedures describing these activities. Site Contractors who perform work on Quality Class I items will submit for approval by site QA their Quality Assurance program which will be consistent with the appropriate provisions of 10CFR50, Appendix B. The survey and review by site QA of Site Contractors qualifications and QA programs are governed by the Nuclear QA Manual.

17.4.4.1 Procurement Specifications

WNP-1 Contract Documents provide those design requirements, Quality Assurance provisions, Supplier bidding requirements, and general conditions for equipment delivery and contractual requirements, which are packaged to provide complete definition of the Contractor/Owner/Engineer responsibility for the purchase of WNP-1 items, materials and services. The vendor and contractor procurement documents selectively apply applicable Quality Assurance requirements on their sub-vendors to reflect basic contract QA requirements.

17.4.4.2 Site Contractor Documentation

- a) The Nuclear QA Manual contains steps to assure that

17.4.4.2 Site Contractor Documentation (Continued)

- a) the Contractor purchased equipment procurement documents for Quality Class I equipment identify those criteria in 10CFR50, Appendix B that must be complied with and described in the Site Contractors QA Program. The details of the Site Contractors QA Program are submitted with bids and reviewed in accordance with subsections 17.1.4 and 17.2.4.
- b) The Quality Assurance subsection in the technical portion of the Construction Contract specifications specifies to the Site Contractor, those processing and construction submittal requirements and the administrative submittal requirements relevant to the Contract QA requirements.

17.4.5 Instructions, Procedures and Drawings

Provisions are made for assuring that all quality related activities on structures, systems and components within the Site Quality Assurance program are performed in accordance with written instructions, approved procedures and issued drawings. Each Site Contractor, in his Quality Control program, will provide similar control in verifying installation of structures, systems and components at the Construction Site.

17.4.5.1 Procedures

- a) The Nuclear QA Manual is distributed and controlled as defined in the manual. All field changes to the manual will be issued through and reviewed by Site QA personnel. In this way, control of the WNP-1 Nuclear QA Manual remains within the Site Quality Assurance Department.
- b) Construction Procedures and Instruction initiated by each Site Contractor at the site provide clearly written documents for performing quality related activities during the WNP-1 project construction effort. These will be reviewed, corrected and updated to reflect changes in construction practice while maintaining compliance with the quality requirements. Instructions and procedures which provide direction in accepting or rejecting quality related work are reviewed by Site Quality Assurance personnel to assure that acceptance criteria have been included and clearly described.

17.4.5.1 Procedures (Continued)

- c) Site Quality Assurance will provide an audit and surveillance function to verify that activities are being performed in accordance with applicable instructions and procedures.

17.4.5.2 Drawings

- a) Written instructions governing the review, approval, release, distribution and revision of design drawings at the site will be developed by Engineering. These procedures will provide for the coordination and approval of changes, thereby maintaining control of the WNP-1 project design interfaces and equipment configuration.
- b) Errors and deficiencies which adversely effect safety related structures, systems, and components discovered during the construction and installation process will be documented and resolved prior to incorporation of the change into the drawing.

17.4.5.3 Safety Related Documents

- a) Construction Experiences published by the Nuclear Regulatory Commission are maintained and distributed in the same manner as NRC Regulatory Guides per 17.2.5.4.a. The review and consideration of these occurrences during construction of nuclear plants, as they impact the WNP-1 project, is in accordance with written procedures as defined by the UES&C Licensing and Environmental Section.

17.4.6 Document Control

The surveillance and audit responsibility of Contractor site document control at the construction site resides with Site Quality Assurance. Each Site Contractor will maintain their own document control center for the receipt and distribution of documents pertinent to the applicable contract. Site QA will audit each Site Contractor's Document Control System.

17.4.6.1 Document Files

- a) Site Contractors will distribute documents to the work location for use at the work location under a carefully controlled system of logs, receipts,

17.4.6.1 Document Files (Continued)

- a) and audits by contractors Quality Control. Site Contractors' document control system will also include as a minimum provisions for maintenance, approval, review, distribution, filing, updating, and monitoring of their applicable documentation.
- b) Site documentation files will be composed essentially of contractual QA documents pertaining to each site contract. Typical documents controlled at the site will include Design Specifications, Manufacturing, Construction and Installation Drawings, QA Program Manual and Operating Procedures, Test Procedures and Manufacturing Inspection and Testing Instructions. The document file will be updated and maintained, as required, thereby providing complete contract historical QA data. Site Quality Assurance will maintain the Master QA Records file as part of the site records responsibility in accordance with Subsection 17.4.17.
- c) Document Control of Contractor site files will be verified by Project Quality Assurance audits to measure and evaluate Site Contractor, Construction Management and Site QA compliance with this criteria.

Site Quality Assurance will audit and survey revised drawings and Engineering and Design change reports against actual field work performed for accuracy.

17.4.7 Control of Purchased Material, Equipment and Services

Receiving inspection of materials and equipment upon delivery at the construction site is performed and controlled by Site QA for pre-purchased equipment and by the Site Contractor for Contractor purchased equipment in accordance with subsection 17.4.10. Both Site QA and the Site Contractors will assure that as a minimum, material and equipment will be inspected for identification, freedom from shipping damage, availability of purchasers release and availability of proper quality documentation. Any discrepancies, including the lack of proper documentation will be handled in accordance with the nonconformance procedure as defined in subsection 17.4.15. Upon completion of receiving inspection, the material will be identified as specified in subsection 17.4.14.

17.4.7.1 Surveillance Activities

- a) Audits and surveillance by the Site Quality Assurance Organization will assure that the Site Contractors are complying with the Quality Requirements. This surveillance will verify that procurement requirements for equipment and services are followed and that the Contractors are in accord with Applicable Contract Specifications, Drawings, Manufacturers Instructions, Field Procedures and Codes.
- b) Contractor procedures for control of their purchased material and equipment will be audited by Site QA and assessed for their adequacy in specifying characteristics and processes to be witnessed, inspected and verified, and the responsibility for their implementation.
- c) Site QA will perform audit and surveillance to assure that Site Contractors are accepting and releasing items in accordance with approved procedures and that nonconforming items are controlled in accordance with their approved procedures.

17.4.8 Identification and Control of Materials, Parts and Components

The Contract Specification provides for the identification and control of material parts, components and equipment for site contractor purchased material and for pre-purchased material. For site contractor purchased material, the contractor implements his own approved procedures. For pre-purchased material Site QA will provide and implement the Nuclear QA Manual for assuring only properly released equipment is used or installed.

17.4.8.1 Control System

- a) Site contractor identification and control procedures will be provided and implemented by the site Contractor using his own tags or Project supplied tags per subsection 17.4.14. The site contractor procedures will include provisions to preclude the use of incorrect or defective material, to verify identification of material prior to release for installation or construction and to assure that the location and method of identification does not affect the function or quality of the item being identified.

17.4.8.1 Control System (Continued)

- b) The Project identification and control system employed at the site for pre-purchased equipment is defined in the Nuclear QA Manual. This system precludes the use of incorrect or defective items which, based on the use of tags or tags and stamps, provides identity and traceability of the status of materials, parts, components and work operations throughout the construction activities.
- c) Pre-purchased material received at the site from a Vendor will be packaged, crated, banded, stenciled and marked in accordance with the applicable contract specification and the approved shipping procedures. Receiving inspection tags will be applied as required (subsection 17.4.14).

17.4.8.2 Identification of Stored Items

- a) Stored materials on the site will be inspected by Site QA and site contractors in accordance with their approved procedure (subsection 17.4.13). Nonconformances detected by the contractor or Site QA at this time will be reported and dispositioned in accordance with an approved procedure (subsection 17.4.15) and tagged and identified accordingly. If nonconformances are detected on material in storage, additional tagging and identification procedures will be implemented to control the status. Tags, stamps and storage inspection reports will provide suitable identification control to preclude their inadvertent use in construction.

17.4.9 Control of Special Processes

The Project (UESC) will not be required to perform any special processes during the construction of WNP-1 Project, but will impose applicable requirements on the Site Contractors responsible for construction, installation and testing of the equipment. Procurement documents for construction contracts require site contractors to control their special construction processes in accordance with appropriate codes and standards. Site Contractors, when indicated in the specification, are required to submit written procedures for review and approval.

17.4.9.1 Process Requirements

- a) Special process requirements unique to the construction activity will be included in the contract specification with the requirement that when required by the specification, operating process procedures be submitted for review and approval. Review and concurrence of Project Quality Assurance will also be required prior to use.

17.4.9.2 Qualification

- a) Process procedures prepared by Site Contractors requiring qualification, are qualified in accordance with applicable codes and standards for erection and construction work performed by the Site Contractor Field personnel. Site Quality Assurance review and concur with these procedures prior to their issue and use at the construction site. Site Quality Assurance is also responsible for certifying by audit and surveillance that the applicable procedure qualification has in fact, been performed as stated.
- b) Process personnel employed at the construction site will be qualified by applicable code requirements to perform the required process. At the construction site, each Site Contractor controls the qualification examination, requalification examination and retest of their operators as required. Personnel certifications are issued by the appropriate Site Contractor and copies are maintained in the applicable permanent record file at the site.
- c) Active files will be maintained by the Site Contractor of qualification records of their personnel performing these special processes.

17.4.9.3 Process Documentation and Records

- a) The control and retention of applicable Site Contractor quality control records pertaining to special processes used at the construction site will be in accordance with subsection 17.4.17 and will include sufficient documentation and records to ensure that the requirements of these special process procedures and specification requirements are current and are being implemented.

17.4.9.3 Process Documentation and Records (Continued)

- b) Project Quality Assurance personnel review the construction contract specifications to verify inclusion of any special process or process control and with Engineering, review and approve all submitted Site Contractor special process procedures prior to construction or installation. Site Quality Assurance personnel provide the site surveillance effort to assure that Site Contractors conform to their procedures.

17.4.10 Inspection

- a) First level inspections at the site are performed by Site Contractors personnel charged with the Quality Control responsibility in accordance with approved Site Contractor inspection procedures. Site inspection activities affecting quality will be verified by Site Contractors through a system of inspections of materials, parts and components at the site to assure that Site Contractor purchased materials are received, handled, stored, installed and tested in conformance with specification and contract requirements. Site Contractor Quality Control personnel are charged with the primary responsibility to determine the accept or reject status of the Site Contractors work and to implement their decision by pursuing a course of action in accordance with their approved site procedures.
- b) For pre-purchased materials, parts and components received at the site, Site QA will perform those receiving inspections necessary to verify the quality of this incoming material. Site QA personnel provide a secondary verification of the acceptance status of the work, identifying and reporting of nonconformances detected by surveillance and when required, pursuing a course of action as defined in subsection 17.4.16.5 (Stop Work Authority).
- c) Contractor's procedures shall contain the identification of those individuals or the organization responsible for performing each inspection operation with the qualification requirements for the inspection personnel, and provisions for assuring that each inspector's qualification is kept current. Site QA approval of the Contractor Quality Assurance organization and the continued audit and surveillance of their QA program will reemphasize the independence of their inspection organization.

17.4.10.1 Receiving, Planning and Inspection

a) Pre-purchased Materials

1. Receiving inspection check plan sheets are required for the performance of receiving inspection by Site QA personnel in addition to criteria of acceptance shown on approved drawings, contract specifications and manufacturer's special instructions. These give additional detailed instructions for the pre-purchased material to be inspected upon receipt at the Construction Site. They are prepared by Site Quality Assurance personnel, in advance of the anticipated equipment delivery to the site, if at all possible.
2. Pre-purchased equipment to be installed will be inspected by Site QA personnel at the Site in accordance with the Nuclear QA Manual. This Manual provides for detailed planning by Site Quality Assurance personnel, visual inspection for shipping damage and identification, disposition and tagging of acceptable, nonconforming, and rejected material and removal or isolation of rejectable and nonconforming material from receiving areas.

Site Quality Assurance personnel also provide the necessary surveillance and audit activity of the Receiving Inspection activities to assure that pre-purchased material is controlled during receiving inspection.

b) Contractor Purchased Materials

1. Each Contractor develops and implements (after approval) his own procedure for receiving inspection of Contractor purchased materials with the procedure assuring that unacceptable material is not inadvertently released for installation or use. Contractors' procedures also provide for the identification and control of material by tagging in the various stages of receiving process, to prevent uninspected or unacceptable material from being used or installed.

17.4.10.1 Receiving, Planning and Inspection (Continued)b) Contractor Purchased Materials (Continued)

2. The Contractor procedures also provide for the use of his own tags or Project supplied tags (Section 17.4.14) throughout his receiving inspection process.
3. Site Quality Assurance will participate, through audit and surveillance of the Contractor's receiving inspection activities, to the extent necessary to assure that the Contractor is conforming with his approved procedure for receiving inspection and that the Contractor received material in controlled as required.

17.4.10.2 Construction Planning and Inspection

- a) Each Site Contractor develops and implements (after approval) his own procedure for storage, installation, testing, inspection, maintenance, and handling of materials and equipment.
- b) Approved site contractor quality control procedures are provided for the following contractor activities: first level inspections performed to assure compliance with the applicable drawings and specification requirements; periodic review of files to assure that contractor files accurately reflect the work accomplished; monitoring equipment tests and checks to assure compliance to procedures; and reporting of non-conformances.
- c) Site Quality Assurance personnel will provide those additional inspections requested by Construction Management to verify the quality of contractor construction.
- d) Master surveillance check plans are prepared by Site QA for surveillance activities to assure the performance of Contractor inspections at the construction site. These check plans are sufficiently detailed to determine that the Contractors are complying with their approved QC inspection procedures and project requirements.
- e) The following typical surveillance points will be included during construction:

17.4.10.2 Construction Planning and Inspection (Continued)

1. In-process review of Contractor's documentation and data records to assure that required process operations and inspections have been completed before the work is rendered inaccessible by construction progress and to avoid delay in final release to test and start-up.
 2. Test Control (i.e., NDE, pressure, electrical, concrete, etc.).
 3. Calibration and type of test equipment used.
 4. Verification of dimensional inspections.
 5. Verify drawing status (i.e., configuration, revision, etc.).
 6. Verify that welding and NDE processes are in accordance with approved procedures and codes.
 7. Verify personnel certification and qualification.
 8. Painting considerations (i.e., coverage, runs, thickness, certification of compliance, etc.).
 9. Shelf life considerations (i.e., gaskets, lubrication, etc.).
 10. Other inspection parameters as required.
- f) Each Site Contractor develops and implements (after approval) his own procedure for storage, installation, testing, inspection, maintenance and handling of Site Contractor purchased materials and equipment. Site Quality Assurance audit and surveillance activities assure that the Site Contractor is conforming with his approved procedures for this effort.

17.4.10.3 Final Acceptance Inspection

- a) The inspection activity associated with verifying and establishing the acceptance of completed items which have been installed and erected on the Construction site are in accordance with approved site Contractor procedures. These procedures provide for, as a minimum, the following requirements:

Specific steps to be followed for verifying workmanship, lack of damage and acceptability of material and equipment.

Method and steps for supporting data review associated with the installation effort.

Method of recording changes, reinspecting previously accepted material and establishing acceptance status of modified material.

Definition of that portion of work required to be completed in a Construction operation before inaccessability would limit the acceptance inspection (Removal, replacement and modifications inspection).

- b) UE&C Field Quality Assurance personnel, through audit and surveillance of the Site Contractors final acceptance inspection activities, assure that the Site Contractor is conforming with his approved procedure for final acceptance inspection and the removal and replacement effort and that the turnover documentation package for the equipment is complete and acceptable.
- c) UE&C Field QA performs a Final verification which identifies as a minimum the following:

Listing of applicable documentation which shall be considered as substantiating the quality of the item, activity or installation.

Listing of those visual observations, including cleanliness, lack of damage, painting, etc., which shall be considered as affecting the physical quality of the item or activity.

Statement that outstanding NCR's have been resolved and hold tags have been cleared.

17.4.10.3 c) (CONTINUED)

Other unique attributes of the item or system necessary for final acceptance, such as code stamps, markings, identification, punch list, etc.

17.4.11 Test Control

The Nuclear QA Manual for the Construction Site establishes a system of control to assure that Site Contractors' test activities are performed in accordance with predetermined contractor requirements, approved and delineated in written test procedures and instructions. This system will also assure that these site test results are acceptable and fully documented.

17.4.11.1 Test Requirements

- a) Test requirements for Site Contractors during Construction and installation at the job site are delineated in the Contract specifications in conformance with good engineering and Construction practices and code requirements. Conformance to NRC regulatory guides are also considered when the required tests are specified in the Contract specification.
- b) Site Contractors written test procedures for review and audit by Site Quality Assurance, describe the method of inspection and test control, and verification that tests have been performed in accordance with specified test procedures and instructions, and that test results are within the specified limits.
- c) Storage tests provide a periodic check of stored equipment which are conducted in accordance with Site Contractor and Project approved written test instructions. Measuring and test equipment checks provide periodic calibration checks in accordance with 17.4.12 as defined in the appropriate approved contractor procedures. Receiving tests provide continuous inspection test control based on Project approved test documentation for pre-purchased material and Contractor approved test documentation for Contractor purchased materials. Tests performed to verify installations are in accordance with

17.4.11.1 Test Requirements (Continued)

- c) written procedures and verified by contractor personnel charged with the Quality Control responsibility for the installation.
- d) Records of all field tests and field check results are fully documented and available for audit by Site Quality Assurance. Assurance is maintained, by this Site QA audit and surveillance function, that adequate test instrumentation and qualified personnel are used in the performance of these tests.

17.4.11.2 Pre-Operational and Start-up Test

- a) Plant pre-operational testing and start-up phases of construction are in accordance with Chapter 14 of this PSAR. The system of QA Surveillance and Auditing implemented at the Construction site will be further developed, as contractual responsibilities are defined, to assure that the pre-operational and start-up activities have been carried out in accordance with specifications and procedures.

17.4.12 Control of Measuring and Test Equipment

All measuring and testing equipment which is used to determine the acceptability of materials, equipment or installations at the site is under control of a site control and calibration program maintained according to written procedures contained in the UESC Nuclear QA Manual and Site Contractors' Quality Assurance programs. Site Quality Assurance perform auditing and surveillance of this program to ensure that it is functioning properly.

17.4.12.1 Procedure

- a) The UESC Nuclear QA Manual and Site Contractors' approved procedure, establish a system for the control, calibration and adjustment of tools, gauges, instruments and other inspection, measuring, testing and maintenance devices used at the site. This system is established such that conformance to established requirements is verified by Site Quality Assurance at specific periods of time to assure the usage of proper type, range and accuracy of the device.

17.4.12.1 Procedure (Continued)

- b) Prior to releasing for use, measuring and test equipment is identified by the Site Contractor (e.g., color codes, tags, labels, stamps, serialization) to indicate that it has been calibrated, when the next calibration is due and who performed the calibration.
- c) Schedules are established by the Contractor and records are maintained to assure that calibration is performed periodically and has been fully documented. Site Quality Assurance personnel audit and survey these schedules to verify contractor conformance to these procedures.

17.4.12.2 Control Requirements

- a) Site Contractor approved procedures require that the following detailed control requirements shall be implemented at the site as part of the site measuring and test equipment calibration program.
 - 1) Maintenance and control of the appropriate standards facilities with the associated records.
 - 2) Establishing identification methods of devices under calibration control.
 - 3) Method of correcting, adjusting, returning for repair and replacement of measurement standards.
 - 4) Calibration control of new devices and establishing of calibration guidelines.
 - 5) Qualification of personnel using these "measuring devices".
 - 6) Provision for frequency of surveillance activity.

17.4.12.3 Standards of Control

- a) Primary and secondary standards are maintained at a proper site facility by the responsible Site Contractor along with certification data. Calibration of site measuring devices are performed in accordance with guidelines in National Bureau of Standards (NBS) manuals; ASTM manuals and equipment manufacturers recommendations.
- b) Site Contractor procedures provide for these calibrations to have been performed under conditions traceable to the NBS and the following conditions of:

Temperature

Temperature rate of change

Relative humidity

Dust

- c) Site Contractor calibration frequency charts provide requirements for frequency of calibration and a certified percent of accuracy traceable to the NBS for primary standards (e.g., dimensional, pressure, electrical, thermal, weight), secondary standards and general test instruments.

17.4.12.4 Calibration and Control Records

- a) Identification of calibration records for testing and measuring equipment used by Site Contractors during receiving, storage, construction and installation inspections and tests are established so that equipment can be readily recalled for recalibration or adjustment. These site records also serve as an indication of which devices were used on specific tests and inspections, and also provide for traceability if such devices are found to be out of calibration and require corrective action.
- b) The use of uncalibrated equipment constitutes a rejection of the site test or site inspection with the disposition identified as part of the nonconformance report which is issued.

17.4.13 Handling, Storage and Shipping

Site "storage" of material and equipment and the program for implementing control of "storage" areas are in accordance with written procedures based on the contract specification requirements, suppliers recommendation and accepted practices. Site QA provides the audit and surveillance activity to assure that the Site Contractors are implementing approved "storage" procedures with qualified personnel.

* In this section, "storage" (in quotes) pertains to storage, preservation, handling and cleaning activities.

17.4.13.1 Procedure

- a) "Storage" of site materials and equipment will be under the responsibility of Contractors, whether equipment is pre-purchased or purchased by installing Site Contractors, with the contract specification providing the requirements for these activities.
- b) Contractors responsible for the administration of the pre-purchased equipment "storage" program implement written, approved procedures which provide for "storage" inspection, "storage" maintenance, "storage" handling, "storage" surveillance and generating all "storage" records. Site Quality Assurance personnel provide the audit and surveillance activity to assure implementation of these procedures.
- c) Site Contractors responsible for "storage" of Contractor purchased equipment develop written procedures which are submitted for review and approval. Site Quality Assurance personnel provide the audit and surveillance activity to assure Contractor implementation of his procedures.

17.4.13.2 Storage Categories and Requirements

- a) The Site Quality Assurance Program provides for establishing and maintaining various categories of storage on the site. Each Vendor and Contractor procedure for the delivery, receiving inspection and site storage of equipment provides the requirements from which the type of storage is selected and applied.

17.4.13.3 Periodic Inspection and Surveillance

- a) Audit and surveillance of "storage" activities on the site is provided by Site Quality Assurance to assure that Site Storage Contractors are implementing approved procedures.
- b) Storage inspection procedures provide for initial and periodic inspection of stored equipment to assure that the integrity of the equipment has not been compromised when received and during storage, and that specified maintenance requirements have been performed. Schedules of inspections are established by the Contractor for materials in storage with unsatisfactory conditions being brought to the attention of responsible parties, in accordance with Contractual procedures, for corrective action. Adequate records of storage inspection are maintained by the appropriate Contractor to show satisfactory condition or report of unsatisfactory condition.

17.4.13.4 Records and Handling

- a) "Storage" procedures provide for each "Storage" Contractor to administer his "storage" program by means of a system of records, logs, and reporting. Contractual documents provide how such "storage" records pertaining to quality are to be controlled, examined, reviewed and filed.

17.4.14 Inspection, Test and Operating Status

The Nuclear QA Manual provides measures for indicating the status of tests and inspections performed upon materials, parts and components when received, tested, inspected, stored and installed at the construction site. The status of the item is established by a Project system of tagging which, when applied and recorded, prevents their inadvertent operation and precludes the inadvertent bypassing of their inspection and test requirements.

17.4.14.1 Item Status

Inspection and test status are defined in the general categories described below:

17.4.14.1 Item Status (Continued)

- a) ACCEPT status is assigned to materials, parts and components which are inspected and found satisfactory for construction use, and in conformance with applicable contract specifications. This status is recorded and the materials, parts and components are released to warehouse facilities, storage areas or fabrication and erection areas.
- b) REJECT status is assigned to materials, parts and components which are inspected and found unsatisfactory for construction use, and not in accordance with applicable contract specifications. This status is recorded and rejected items are segregated to a controlled reject area until such time that a disposition is made. If segregation of rejected materials is not practical, the items are physically tagged to clearly show status. Nonconforming material identified with a "REJECT" tag is subjected to the nonconforming material control procedure as described in 17.4.15.
- c) HOLD status is assigned to materials, parts and components that have been identified as nonconforming and are awaiting disposition of an attribute which differs from specification requirements. The hold status is identified on a written record and the item is appropriately tagged. Such items are segregated from accepted items until a disposition of the hold status is made. For materials, parts and components which are released for limited work, awaiting disposition of a nonconformance, a "Conditional Release" is assigned.
- d) CONDITIONAL RELEASE status is assigned to materials, parts and components that have not been fully accepted for use, but which are conditionally released to relocate, store in place or install to a point where the item can be removed or corrected without damage or contamination to the associated permanent plant equipment or structures. This status is recorded and controlled in accordance with written procedures.
- e) AWAITING INSPECTION status is assigned to materials, parts and components that have been received at the site and are awaiting:

17.4.14.1 Item Status (Continued)

- e) 1. ² Inspection
- 2. Identification
- 3. Documentation

17.4.14.2 Records and Stamps

- a) Subsequent to material and equipment installation, the inspection, test or operating status is indicated by attached tags or by traceable records such as inspection check plans, inspection reports, or routing forms. Sole authority for the attachment and removal of these tags rests with the applicable quality control organization.
- b) Lots of materials which can be identified by heat number, lot number, etc., may be identified with a single tag, providing the tag is marked to completely identify the lot. When physical size or material composition precludes tag attachment (e.g., cement, aggregate, sand, etc.), the inspection status is identified on traceable records.
- c) After construction and installation testing is completed and accepted, WPPSS procedures provide for the attachment of test accepted tags to the system or structure. This procedure provides for the continuation of equipment status identification through the pre-operational test period and final system testing by WPPSS.
- c) Appropriate inspection stamps (e.g., welding, NDE, radiography, inspection, etc.), when utilized by the site contractors and site Quality Assurance personnel, are applied to documents (e.g., dispatch orders, etc.), to provide notice to the site contractor installation function that equipment and parts have been inspected. Issuance, application and removal of these stamps is under strict control of Site Contractor and Site Quality Assurance to prevent use by anyone other than the person to whom it was issued.

17.4.15 Nonconforming Materials, Parts and Components

The Nuclear QA Manual provides for the identification, documentation, segregation, review, disposition and notification to affected organizations of nonconforming materials, parts and components at any stage of manufacturing, fabrication, erection or construction to prevent their inadvertent use or installation. Written procedures provide for the handling, processing, and dispositioning of nonconforming materials, parts or components.

17.4.15.1 Nonconformances

A nonconformance is a deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate. Examples of nonconformance include physical defects, test failure, inaccurate or inadequate documentation or deviating from prescribed processing, inspection or test procedures.

17.4.15.2 Procedure

- a) Nonconforming materials, parts, components or activities at the site are documented by the Site Contractors and Site QA by use of the Project Nonconformance Report form.
- b) Nonconforming items are identified and marked with a "hold" tag (when possible), removed to a site "hold" area, roped off, or otherwise segregated to prevent their inadvertent use. The dispositioned NCR is returned to the organization responsible for carrying out the corrective action.

17.4.15.3 Controlling NCR Forms (Site)

- a) NCR forms for site activity provide for similar requirements, explanations, justifications, concurrences, dispositions, corrective actions, reinspections and approvals. Distribution of preliminary and completed NCR forms is standard and they are maintained in accordance with an established procedure.
- b) Control of nonconformances by Site Contractors is evaluated by Site Quality Assurance audits during performance of the work.

17.4.15.4 Maintenance of NCR Records

- a) A log is maintained by the Site Quality Assurance for NCR's initiated at the site.
- b) A log is maintained by the site contractor for contractor initiated NCR's listing as a minimum, the date, number, item and nonconformance description and disposition.
- c) All site NCR's remain "open" until disposition has been resolved, implemented and reinspected and the NCR completed (cleared).

17.4.15.5 Nonconformance Review Board

- a) All site nonconformances are submitted to Site Quality Assurance. Each NCR is evaluated for adequate disposition or the necessity for Nonconformance Review Board (NRB) approval. The NRB approves dispositions when required as determined by reference to specific criteria and in accordance with applicable project procedures.
- b) The Nonconformance Review Board meets as required at the construction site to review and approve the disposition of applicable site nonconformances. The NRB has the following representation:
 - 1. UE&C Engineering
 - 2. WPPSS Engineering
 - 3. UE&C Quality Assurance
 - 4. WPPSS Quality Assurance
 - 5. WPPSS Construction

17.4.15.6 Disposition

Disposition of all nonconformances at the site are approved by Project Engineering and are noted on the respective NCR forms with the dispositioning action in accordance with the Nuclear QA Manual.

17.4.15.7 Reinspection

After the responsible organization has performed the required actions to clear the nonconformance, the originating organization's QA inspects the item,

17.4.15.7 Reinspection (Continued)

determines its acceptability and signs off the nonconformance as approved.

17.4.15.8 Reporting

Copies of all nonconformance reports are submitted to Site Quality Assurance when originated, when dispositioned and again when cleared.

17.4.16 Corrective Action

The Nuclear QA Manual provides for procedures for identifying, documenting, reporting to management and dispositioning those site conditions adverse to quality. The program also provides a method for assuring that site conditions adverse to quality are determined and corrected to preclude repetition.

17.4.16.1 Corrective Action Requests

- a) The Nuclear QA Manual requires that the Site contractor initiate Corrective Action Requests in accordance with an approved procedure when the contractor is found to be operating in such a way that his committed QA/QC program cannot be implemented as required. The contractor is also required to respond in a timely manner to corrective action requests written by Site Quality Assurance.
- b) The QA Program requires that a corrective action request be initiated by Site Quality Assurance when site construction practices indicate that repeated violations of the same nature are occurring.

17.4.16.2 Implementing Corrective Action

- a) For project corrective action implementation, the designated responsible party describes the corrective action that he intends to implement and specifies the date by which it will be implemented. If corrective action specified is not adequate or does not meet the intent of the request, Site Quality Assurance resolves the difference in accordance with an approved procedure.

17.4.16.2 Implementing Corrective Action (Continued)

- b) For Site Contractor corrective action initiated by Site Quality Assurance, the designated responsible site contractor describes the corrective action that he intends to implement and specifies the date by which it will be implemented. Site Quality Assurance maintains a site audit and surveillance activity to ascertain the adequacy and intent with the approved contractor procedure.

17.4.16.3 Verification and Analysis

- a) When actual corrective action has been satisfactorily implemented, the Field Superintendent Quality Assurance verifies the implementation of the corrective action on the Corrective Action Request, dates and signs the request form to indicate Quality Assurance approval of acceptable action. Standard distribution of the information to affected activities is then implemented.
- b) Site contractor and Project corrective action forms are filed and logged and the effectiveness of the corrective actions are reviewed by Site Quality Assurance. Such actions may include stopping the site contractor inspection or construction effort for poor quality performance or stopping the Project construction management effort for disregard of approved QA or Project procedures.
- c) Feedback information on nonconformances is obtained from site contractors and Project Construction Management by Site Quality Assurance. The data are analyzed and evaluated by Project Engineering and QA personnel, after which corrective action is recommended to assist in controlling and preventing recurrences of site nonconformances.
- d) Significant differences in design and construction will be documented and reported promptly. These activities are governed by written procedures.
- e) Effectiveness of corrective action is checked by Site QA audits in accordance with 17.4.18.

17.4.16.4 Failure to Respond

- a) Failure to respond either by the Site Contractors or Project Construction Management to Corrective Action Requests within a reasonable time will result in notification of the Site Contractor or Contractor Management with a requirement for immediate response. Lack of response will result in stoppage of work in the affected area in accordance with the Nuclear QA Manual.

17.4.16.5 Stop Work Authority

- a) Stop work authority for site activity rests with the Project Manager based on direction received via a "Stop Work Order" from the Field Superintendent Quality Assurance.
- b) Work may be restarted with the approval of the Field Superintendent Quality Assurance only after action has been taken to eliminate the nonconformance and the responsible party has satisfactorily replied to the "Stop Work Order".

17.4.17 Quality Assurance Records

Site Quality Assurance is responsible for the maintenance and control of the WNP-1 Site Quality Assurance Master Files. During construction of the ASME Section III, Div. 2 Containments. Applicable records will be maintained throughout the receiving, storage, construction, installation and testing phases of the project and will be collected at the site to form a permanent file of documentation furnished by the Project. The Nuclear QA Manual describes the method for the accumulation, organization, custody and retention of QA and QC records for materials, equipment and activities at the construction site.

17.4.17.1 Site Record Requirements

- a) Quality records requirements for site contractors are defined in the applicable Construction Contract specification, codes and standards and in the Nuclear Quality Assurance Manual which govern quality associated site activities. These records include, but are not limited to, results of receiving and storage inspections, Site QA surveillance and audits, construction and installation tests, material analysis, monitoring of work performance, NCR's, maintenance reports, corrective action requests, qualification of personnel, procedures and equipment and other documentation.

17.4.17.1 Site Record Requirements (Continued)

- b) Records are identified with the system, structure or components to which they pertain and are filed (17.4.17.3) to provide accurate retrieval without undue delay. Records will be maintained in accordance with ANSI N45.2.9, "Requirements for Collection, Storage and Maintenance of Quality Assurance Records for Nuclear Power Plants". Contract specifications direct the Site Contractor to provide a positive method of traceability from documentation to installation of the part.

17.4.17.2 Site Records Review

- a) Site Quality Assurance implements an audit and surveillance effort of Contractor inspection groups in order to be assured that each site contractor is following approved methods of verifying acceptability of their data. Surveillance of reports and inspection data applicable to (1) vendor generated documentation for pre-purchased equipment; (2) contractor generated documentation for contractor purchased equipment and; (3) site contractor generated documentation, is implemented to assure proper approvals and acceptances.
- b) The review of records (data) at site receiving areas for pre-purchased equipment is initiated performed, approved and filed by Site Quality Assurance in accordance with the Nuclear QA Manual. This data review confirms that the data, as received, is consistent with the contract documents.
- c) The review of records (data) at site receiving areas for site contractor purchased equipment, is initiated, performed and recorded by contractor personnel in accordance with an approved procedure. This records review is to check the documentation received for availability and technical adequacy against required documentation as defined in the Contractor Procurement documents.
- d) The review of records at turnover for pre-purchased and contractor purchased equipment at the construction site is initiated, performed and

17.4.17.2 Site Records Review (Continued)

- d) recorded by Site Quality Assurance. This records review is to check the available documentation used for the equipment installation against the required documentation and to verify the completeness and acceptability of turnover documentation package for the equipment.

17.4.17.3 Site Records File

- a) The Master QA file contains records pertinent to Quality Control and Quality Assurance and will be located within the offices of the Site Quality Assurance. Access to these master files will be controlled by the Project Quality Assurance Manager. Authorized representatives of site QA, inspection agencies and audit personnel will be permitted access to the Master files under the direct supervision of the Field Superintendent Quality Assurance.
- b) The Master Quality Assurance File will consist of:
 - 1. Purchase Documents which contain data packages received with the components and associated documentation whether purchased by the Project or a contractor.
 - 2. General Documents such as surveillance reports, nonconformance reports and corrective action requests.
 - 3. Component Documents which consists of a copy of all Receiving Records Review.
 - 4. Systems Documents which consists of a copy of all Data Review Receiving and Data Review Installation Records.
 - 5. Site Contractor Documents. The original site contractor files will be maintained by the contractor until turned over to Site QA during the course of construction.

17.4.17.3 Site Records File (Continued)

- c) To provide protection against loss or destruction, records will be maintained in accordance with ANSI N45.2.9. Documents shall be indexed and microfilmed in accordance with appropriate procedures.
- d) QA records filed as part of the Site Master Quality Assurance Files shall be indexed, cross-referenced, filed and controlled in accordance with the Nuclear QA Manual.

17.4.17.4 Site Records Storage

- a) The Master Quality Assurance files will be located in a suitably protected environment at the construction site for storage of quality related records generated during the procurement and construction phases of the project, and will serve the function of providing readily accessible documentary evidence of compliance with the quality requirements of equipment and installation specifications and applicable codes and standards.
- b) QA records storage facilities at the site will be constructed and located as to protect contents from possible destruction by causes of fire, flooding, larceny, vandalism, rodents and from possible deterioration by a combination of extreme variations in temperature and humidity conditions.
- c) Access to Quality Assurance Record storage facilities will be restricted to designated individuals within the Site Quality Assurance organization responsible for safekeeping of the documents.

17.4.17.5 Site Records Retention

- a) All records will be retained during the site construction effort, at the end of which, retention periods (i.e., life time, nonpermanent time period) for the records will be assigned.
- b) Site Contractors will maintain their on-site QA files, and original records shall not be removed from the site without prior approval of Site Quality Assurance.

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- c) All records are the property of the Owner and shall not be destroyed or otherwise disposed of without the written consent of the Owner. All records shall be turned over to the Owner or his agent after completion of construction.

17.4.18 Audits

The Site QA Audit Program provides for regularly scheduled and unscheduled audits of each site contractor's Quality Assurance program which will verify their compliance with their approved QA and QC procedures. These audit records of the contractors construction and installation practices offer objective evidence of implementation of and compliance with requirements, and consistency in the discharge of their site responsibilities.

17.4.18.1 Types and Categories

Audits will be performed on Site Contractors, to verify that activities and items are in conformance with specified requirements and to ascertain that the procedures and other documents governing their respective site activities and construction items contain sufficient requirements to assure that the quality specified is achieved. These audits will be performed by Site Quality Assurance Personnel who, by the nature of their positions, are independent from the Manufacturing and Construction disciplines and who have no responsibility for the site activities being audited.

a) Site Contractor Audits

The audit program of site contractors activities is implemented by the Field Superintendent Quality Assurance. The FSQA defines the scope, selects auditors, schedules audits and follows up on corrective actions. The auditor (team chairman) prepares a written checklist delineating the characteristics to be audited. The audit of the activity is then conducted in accordance with this checklist and upon completion of the audit, the results are presented, discussed and summarized in a written report.

17.4.18.2 Audit Planning

- a) The general schedule for the activities for which audits are required is established defining the frequency of audits for each activity; dates of audits, if feasible; including verification audits, auditor(s) and tentative dates of subsequent audits. The frequency of audits in any particular site activity is predicated by:

17.4.18.2 Audit Planning (Continued)

- a) 1. The level of activity in the particular area, as dictated by the stages of construction.
- 2. Results of previous audits of that particular site contractor activity.
- 3. Adverse indications through an analysis of nonconformance reports or complaints.

Unless otherwise determined by the above conditions, each area will be audited on an annual basis.

- b) The audit categories encompassing quality related activities will be based on the applicable criteria of 10CFR50, Appendix B, and ASME Section III, Div. 2 by Site Quality Assurance. Audits of these site activities include an evaluation of procedures in use in the area being checked, the effectiveness of their implementation and a sampling of the area output and associated documents and records.

17.4.18.3 Audit Team

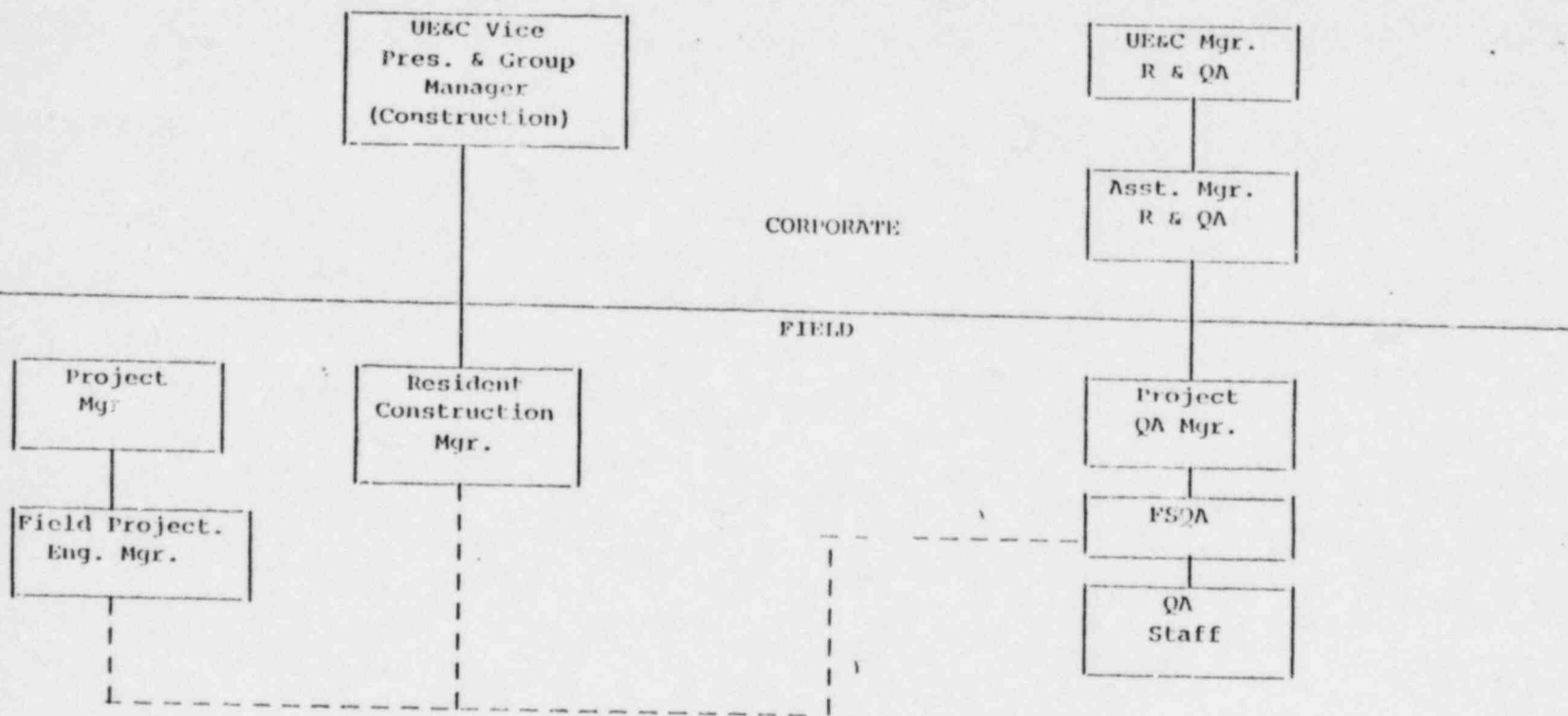
- a) The requirements for audit team selection and participation for site Contractor audits, audit preparation, planning and reporting, and suitable training and the maintenance of proficiency records for auditors of construction activity are in accordance with the Nuclear QA Manual.

17.4.18.4 Audit Procedure

- a) Preparation for the site contractor audit by the Audit Team Leader entails coordination with the appropriate Site Contractor QA personnel for scheduling arrangements.
- b) Site audits are performed in accordance with the Nuclear QA Manual.
- c) A complete record file is kept of audits performed, which provide Project Management with the means to analyze and evaluate the contractor implementation of the Quality Assurance program.

17.4.18.5 Site Audit Analysis

- a) A monthly site audit status report of Site QA findings will be published by the FSQA with distribution to the appropriate Project Management personnel. The report will identify findings of site audits conducted during the reporting period and record the status of items still pending from previous site audits.
- b) FSQA uses these reports as the basis for determining quality trends developing in the various areas of the site Quality Assurance Program for the project.
- c) FSQA pursues resolution of those areas of concern which indicate a decrease in the effectiveness of the Site QA program for the project.
- d) Unsatisfactory trends will be resolved by the FSQA in accordance with Section 17.4.16.



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	FIG. 17.4-1