



INFRASTRUCTURE

MINING & METALS

NUCLEAR, SECURITY & ENVIRONMENTAL

OIL, GAS & CHEMICALS

BECHTEL QUALITY ASSURANCE PROGRAM FOR NUCLEAR POWER PLANTS TOPICAL REPORT BQ-TOP-1 2007 EDITION, **REVISION 003** *

** Revision 003 supersedes and replaces all previous revisions and versions of this Topical Report*

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FOREWORD AND QUALITY POLICY STATEMENT

This report establishes the Quality Assurance Program requirements for work performed by or for Bechtel Power Corporation on Nuclear Power Plants designed and/or constructed in accordance with the requirements of the Nuclear Regulatory Commission Regulation 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants. Bechtel Power Corporation shall follow the Program defined in this report for nuclear power projects referencing ASME NQA-1-1994 or later revisions of the standard.

The ~~Senior Vice President, of Bechtel Power Corporation, with direct responsibility for Bechtel Power Corporation's Nuclear Power Plant business, is~~ authorized the Nuclear Power Operations Manager to issue revisions to this report and instructions for implementing the Program.

Signature on file _____ Date 15 July 2018
Margaret G. McCullough
President
Bechtel Power Corporation

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ABSTRACT

This document describes the Bechtel Quality Assurance Program plan for use by the Bechtel organization during the Early Site Permitting (ESP)/Combined Construction and Operating License (COLA) support, design, procurement, construction, and/or modification and maintenance of nuclear power plants. This program plan meets the requirements of the Nuclear Regulatory Commission Regulation 10 CFR 50, Appendix B.

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NOTICE

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INTRODUCTION

This report describes the Quality Assurance Program applied by the Bechtel Power Corporation and the contracting entities through which they act to support the clients' ESP/COLA activities, design, procurement, construction, and/or modification and maintenance during the operations phase of nuclear power plants.

Changes to the QA program described in this Topical Report that do not reduce the commitments shall be submitted to the NRC within 90 days. Changes that do reduce the commitments shall be submitted to the NRC for approval prior to implementation.

The Quality Assurance Program described in this report is consistent with the Bechtel overall goals and objectives of maintaining the competence of its service and the quality of its end products at contractually required levels. This Quality Assurance Program is applied by Bechtel to those safety-related structures, systems, and components (Q-List items) identified in appropriate sections of the safety analysis report for which Bechtel has the responsibility for design, procurement, construction (or construction management), and/or modification and maintenance during the operations phase.

Quality is achieved through the use of skilled personnel, adequate planning, use of suitable tools and procedures, proper definition of job requirements, and appropriate supervision and technical direction. Quality is verified through surveillance, inspection, testing, checking, and review of work activities and documentation. It is Bechtel policy that the organization or group that performs the activity (i.e., Engineering, Procurement, Construction, etc.) is responsible for the generation of a quality product. Quality control and quality verification are performed by individuals who are not directly responsible for performing the work activity. The separation of responsibilities by organization for performance of the work activities and for performance of quality control and quality verification is discussed in Section 1 of this report.

In addition, it is Bechtel policy that a quality assurance function consisting of program definition, program coordination, and the review, surveillance, and the audit of quality-related activities is assigned to a group, which is independent of the organizations responsible for the work. This group, called Quality Assurance, is also responsible to verify compliance with established requirements and to review program adequacy. The overall Bechtel Quality Assurance Program, which includes the activities of the organizations performing work as well as those performing quality control and quality assurance function, is also referred to as the Bechtel Quality Program.

The Bechtel Quality Program is based on the requirements of ASME NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II, as specified in this report and commits to comply with the requirements of NRC Regulations, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," 10 CFR 50, Appendix B. The Bechtel QA Program Topical Report was developed to be consistent with staff guidance in NU-REG-0800, Standard Review Plan Section 17.5.

The terms used in this report follow the definitions provided in ASME NQA-1-1994, PART I, Section 400 "Terms and Definitions," supplemented by the following additional terms and definitions applicable to this report.

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1. Administrative Direction (Administrative Supervision): Responsibility for hiring, salary review, and assignment of an individual.
2. Approve: When used in context with Bechtel review of supplier documents, the word “approve” or words of like importance, such as “review” and “accept,” shall mean, unless the context clearly indicates otherwise, that the supplier shall, before implementing the information in the document, submit the document, obtain resolution of any comments, and obtain authorization to proceed, and shall not mean that a complete check will be performed. Authorization to proceed shall not constitute acceptance or approval of design details, calculations, analyses, test methods, or materials developed or selected by the supplier and shall not relieve supplier from full compliance with contractual obligations.
3. Coordination: Bringing together and assuring communication between independent groups, including responsibility for identification of interface problems, reconciling a position, and arriving at agreement.
4. Quality Policies: Instructions defining requirements and responsibilities for accomplishing Quality Program functions. Quality Policies and their amendments, for which this report is applicable, are governed by the program described in this report.
5. Formulate: To be responsible for coordination of effort by affected organizations and preparation of documentation describing or defining a policy or procedure.
6. Monitor: To watch over, observe, or examine a work operation. Results of the observations and examination may be recorded; however, signoff responsibility is not included.
7. **Operational or Project Direction**: Directions or instructions concerned with **functional or** project operations. Includes coordination and day-to-day direction of the activities of **functional or** project entities receiving technical direction from others, but does not include authority to overrule prescribed procedures or technical decisions of such entities.
8. Project Home Office: The **Execution Unit** home office or area office assigned responsibility for management of the project.
9. Q-List Items: Safety-related structures, systems, and components.
10. Quality Policy Statement: Management direction provided in the foreword to this document.
11. Review: Examination of any form of documentation for the purpose of establishing acceptability to the requirements of the function represented by the reviewer. Reviews may range from a thorough investigation to a spot check. Reviews are generally not hold points, but signoff evidence of review on the documents or records traceable to the documents is required.
12. Subcontractor: Supplier of construction site services, materials, or equipment. On construction management jobs, contractors under direct contract to the client may provide construction site services.
13. Surveillance: A broad term pertaining to and including both monitoring and witnessing.
14. Surveillance: Review, observation, or inspection of supplier personnel, material, equipment, processes, and test results at random or selected stages of manufacture for the purpose of determining if an action has been accomplished or a document(s) prepared in accordance with selected requirements of a contract document(s). Surveillance does not take the place of suppliers’ quality programs or assume any responsibility for such programs or product quality. Surveillance inspection is intended to provide a degree of

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added confidence that supplier materials and equipment meet specific contract requirements. Such inspections will not relieve the supplier or construction contractor of any responsibilities under the applicable contract, or act as waiver by Bechtel or Client of any of the conditions thereof.

For additional information, see Section 7, Subsection 7.2, QUALITY SURVEILLANCE.

15. Technical Direction: Instructions and directions defining technical requirements for an activity. This may include furnishing prescribed procedures, technical requirements, design approaches, specifications, and design details.
16. Technical Guidance: Providing advice representing a preferred method or approach to a function or activity. This may include establishing general requirements or policy but not specific procedures or instructions.
17. Witness: To watch over, observe, or examine a specific test or work operation that includes signoff responsibility.

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SECTION 1 ORGANIZATION

1.1 BECHTEL GROUP OF COMPANIES (FIGURE 1)

Figure 1 is the organization chart for the Bechtel Group of Companies, which consists of several market sectors called Global Business Units. All activities associated with power projects are assigned to managed by the Nuclear Security & Operations Business Line within the Power Global Business Unit Nuclear, Security and Environmental (NS&E) Global Business Unit (GBU). Bechtel Power Corporation (BPC) is a legal entity under the Power GBU the legal entity with authority and responsibility for the quality of the projects. BPC's world headquarters operation is located in Frederick, Maryland Reston, Virginia, and BPC is responsible for the execution of nuclear power projects and associated activities around the world.

1.2 POWER GBUNUCLEAR SECURITY & OPERATIONS – NUCLEAR BUSINESS LINE – BECHTEL POWER CORPORATION (FIGURE 2)

Bechtel Power Corporation Nuclear business line resides within the Power Nuclear Security & Operations Business Line and is assigned the responsibility for all commercial nuclear power plant related activities conducted by Bechtel.

The President, Bechtel Power Corporation is responsible for Bechtel Nuclear Quality Program functions implemented within the company and authorizes (approves for use) Quality Policies.

The responsible management chain for work performed by Power GBUBPC is the President of Bechtel Power Corporation BPC, the President of, the Nuclear business line Power Operations Manager, and the BPC responsible managers. Figure 2 identifies the relationships of the foregoing with the Power NS&E GBU, Nuclear Security & Operations Business Line, and Bechtel Power Corporation (BPC)

The President of BPC Nuclear Security & Operation Business Line has delegated the responsibility for establishing the quality assurance program for nuclear power projects work to the President, Bechtel Power Corporation, including Nuclear business line. He is responsible responsibility for the adequacy and overall effectiveness of the quality assurance program described in this manual.

The Nuclear Power Operations Manager, provides administrative, oversight and day-to-day direction to Nuclear Projects and operational guidance direction to the responsible aBPC responsible Mmanagers.

The Execution Unit (EU) Manager is responsible for effective implementation of the quality assurance program described in this report. (Ref. Figure 2). The EU Manager Manager of Functions provides technical guidance and administrative and day-to-day direction to the NS&E GBU Functional Managers of Engineering, Procurement, Contracts, Construction, and Information Systems & Technology (IS&T); and technical and administrative direction to the managers of Office & Administrative Services, and Quality & Six Sigma. In turn, the Power NS&E GBU department Functional Mmanagers provide technical and administrative direction to the nuclear Responsible functional managers BPC responsible mManagers. Power NS&E GBU department Functional Mmanagers' and responsible nuclear functional managers BPC responsible Mmanagers' duties and responsibilities are described in section 1.4.

1.3 GLOBAL CORPORATE FUNCTIONS

Figure 1 includes EPC Functions as a component of Bechtel group of companies. Corporate Construction, and Procurement & Contracts, and Information Systems & Technology (IS&T) functions provide centralized services to all Bechtel GBUs. When performing these services, the centralized functions are responsible to the Power GBU management.

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1.3.1 CORPORATE CONSTRUCTION – WELDING AND NDE SERVICES (Figure 3)

~~Construction is responsible for providing construction services to all Bechtel group of companies. As shown in Figure 3, Managers of Construction assigned to GBUs report to the President of BCOI. The Manager of Construction Engineering & Technologies (CE&T), the President of BCOI, and the Global Craft Resources manager report to the Bechtel Group of Companies Manager of Construction.~~

~~The CE&T group provides both field engineering personnel and technical resources to Construction managers in the execution of projects. The Manager of CE&T is responsible for Construction procedures and technical guidance of the Construction Quality Manager. The Construction Quality Manager is responsible for preparing and maintaining standard construction quality control procedures and instructions. In addition, tThe Manager of CE&TWelding & NDE Services –reports to the Corporate Manager of Construction and is responsible for field welding and for providing nondestructive examination services to projects with the following responsibilities:~~

1. Develop and qualify welding procedures and welders
2. Provide specialized welding and NDE technical direction to field welding engineers.
3. Qualify and certify Nondestructive Examination (NDE) personnel.
4. Support Construction in the evaluation of subcontractor welding and nondestructive examination.
5. Participate, if requested, in audits of NDE and subcontracted laboratory services suppliers and of Bechtel field construction.

1.3.2 CORPORATE PROCUREMENT & CONTRACTS – SUPPLIER QUALITY AND EXPEDITING

~~Figure 4 identifies the Central Procurement & Contracts organization. Corporate Procurement & Contracts, a Bechtel service organization, is responsible for the procurement of equipment, materials, and services specified by the Nuclear Business Line.~~

~~Figure 8 corresponds to the Supplier Quality organization. Supplier Quality manager assigned to the Power GBU receives technical direction from the Manager of Supplier Quality & Expediting and administrative direction from the Power GBU Manager, Procurement, as shown in Figure 6. The following activities are the responsibility of the The Manager of Corporate Supplier Quality & Expediting Manager reports to the Corporate Manager of Procurement & Contracts, and is –and are accomplished with responsibility with the assistance of the Power Supplier Quality Manager assigned to BPC for the following:~~

1. Prepare, maintain, and implement the Supplier Quality Manual and associated procedures and forms.
2. Prepare the training and development program; train and qualify Supplier Quality personnel.
3. Perform surveys and quality program audits at suppliers and offsite subcontractors as required by project and company procedures.
4. Prepare and implement quality surveillance plans.
5. Perform quality surveillance of items; review quality verification documents and release items for shipment.
6. Review supplier QA programs.

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1.—Coordinate Supplier Quality activities with other quality functions.

7.

1.8. Monitor the adequacy of quality surveillance plans and procedures in use by Supplier Quality personnel.

2.9. Maintain BPC evaluated supplier list (ESL)

1.4 ~~—~~ BPC MANAGEMENT (FIGURE 22)

~~BPC coordinates the activities of other Bechtel entities to perform the nuclear power plant related functions of engineering, construction, project management, quality assurance, procurement, and contracts. Support services to BPC are provided from the Global Bechtel group functions such as Procurement & Contract, Construction and Information Systems & Technology. When performing these services, the centralized functions are responsible to the Power GBU management.~~

~~Reporting to the Power EU Manager, as outlined in section 1.2 above, the department managers are responsible to provide technical and administrative direction to the nuclear functional managers, who receive the operational guidance from the Manager of Operations, Nuclear business line (Ref. Figure 3.).~~

~~1.4.3~~ 1.4.1 ENGINEERING

The Manager of Engineering for the ~~Power NS&E~~ GBU, ~~as shown in Figure 5~~, provides technical and administrative direction to the Engineering ~~Department~~ function.

The Nuclear Power ~~Nuclear~~ Engineering Manager, is responsible for the management and technical direction of nuclear projects and for assuring that the projects are provided with adequate personnel and are following company procedures for conduct of engineering activities. Engineering Manager provides technical and administrative direction to the Project Engineer.

The Chief Engineers, reporting to the Manager of Engineering for the ~~Power NS&E~~ GBU, are responsible for assigning the engineers, designers, and technicians required to perform engineering functions within their respective disciplines on projects and for maintaining a staff of specialists and other support personnel to provide technical guidance to the projects. Chief Engineers provide administrative and technical direction to the engineers in their respective disciplines.

In addition to its design responsibilities, the Engineering ~~Department~~ function is responsible for:

1. Preparing quality program related Engineering procedures and instructions.
2. Developing and conducting quality program related indoctrination and training programs for Engineering Department personnel.
3. Preparing specifications that include supplier, contractor, or subcontractor quality assurance program requirements.

1.—

~~1.4.5~~ 1.4.2 PROCUREMENT & CONTRACTS

~~Figures 6 and 7 show Power GBU Procurement and Contracts organizations respectively reporting to the Power GBU Manager of Procurement & Contracts. Power NS&E GBU~~

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Procurement & Contracts ~~organization function~~ is supported by ~~Global Corporate~~ Procurement & Contracts, which provides policies, manuals, procedures, and functional guidance.

Procurement & Contracts ~~organization function~~ does not establish technical or quality requirements contained in procurement documents, nor does it initiate or approve changes thereto, as those functions are the responsibility of Engineering. The functions of Procurement & Contracts include:

1. Purchasing of equipment, materials and services. This includes purchases for delivery to the project site and contracting/subcontracting where the work involves field labor.
2. Prime contract administration and subcontract formation and administration.
3. Traffic services to control the flow of materials and provide shipping arrangements necessary for efficient delivery to the jobsite.

~~3.~~ The Procurement & Contracts and ~~Contracts Operation~~ Managers ~~assigned to Nuclear business line BPC~~ ~~get~~ receives technical and administrative direction from the ~~Power NS&E~~ GBU Manager of Procurement & Contracts and ~~is~~ ~~are~~ responsible for procurement of equipment and materials, and subcontract services for projects respectively. ~~Procurement and Contracts Operations Managers are responsible for~~ providing adequate resources to the projects as well as technical and administrative direction to the assigned personnel.

1.4.3 CONSTRUCTION

~~Figure 9 shows the Power GBU Construction organization.~~ The Construction Manager, reports to the Manager of Construction for the ~~Power NS&E~~ GBU for technical and administrative direction. Reporting to the Construction Manager, ~~Nuclear~~ are the Site Managers. The Site Manager is responsible for the management and technical direction of the assigned project personnel, and for ensuring that the project is provided with appropriate personnel and are following prescribed practices and procedures.

The Nuclear Construction Quality Manager is responsible for the supervision of formal quality verification inspection and onsite subcontractor/contractor quality surveillance activities performed by Bechtel. The Nuclear Construction Quality Manager is responsible for administrative and technical direction of the Construction Quality Control Engineers as follows:

1. Approve project quality control procedures and instructions.
2. Hire and assign quality control engineers to the projects.
3. Train and qualify quality control engineers.
4. Provide technical and administrative direction to construction quality control engineers.

1.4.4 ADMINISTRATION & PROJECT SERVICES (A&PS)

Administration and Project Services (A&PS) is part of the Office and Administrative Services (O&AS) ~~Department as shown in Figure 11 function.~~ A&PS is responsible for the Records Management Programs for ~~the Power GBUBPC.~~

The Nuclear A&PS Manager reports to the ~~NS&E~~ GBU Manager of Office and Administrative Services for technical and administrative direction.

The A&PS Manager provides technical and administrative direction to the Project Administrators and administrative staff assigned to the projects.

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A&PS responsibilities include the following:

1. Developing and implementing the Document Management System (DMS).
2. Maintaining and managing the Inactive Records Center (IRC) for the secure storage and retrieval of inactive business records of Bechtel organizations.
3. Reviewing and approving the records retention and turnover programs for projects and departments.
4. Providing document control functions for the projects.

1.4.5 QUALITY ASSURANCE

The Manager of Quality ~~& Six Sigma~~ is assigned the responsibility of the Quality Assurance function for NS&E GBU, and provides technical and administrative direction to the Manager of Quality Assurance, who provides technical and administrative direction to the Quality Assurance group.

The Manager of Quality Assurance, ~~independent from cost and schedule, reports directly to the President, Bechtel Power Corporation for receives~~ quality assurance program direction from the President, Bechtel Power Corporation, ~~on management~~ and has authority to perform quality assurance activities including verification of quality affecting activities to determine the effectiveness of quality assurance program implementation. ~~Quality & Six Sigma organization is shown in Figure 10.~~ The Manager of Quality Assurance is responsible for:

1. Formulating and approving Quality Assurance Policies.
2. Approving Quality Assurance procedures and instructions, which define responsibilities and functions of Quality Assurance personnel.
3. Providing concurrence to the quality-related procedures and manuals prepared by departments and projects for conformance to quality assurance policies.
4. Formulating audit programs and conducting audits and reviews to assure Bechtel management and clients that the quality assurance programs of its projects conform to policies and requirements of Bechtel and the client.
5. Providing periodic reports to the President on the status and adequacy of company and project quality programs and advising of any problems requiring special attention.
6. Providing and maintaining a qualified and suitably trained staff of quality assurance engineers to carry out required project and staff functions.
7. Formulating programs for maintaining the professional competence of personnel within his organization and providing assistance in training and indoctrination programs for engineering, procurement, contracts, and construction personnel whose activities affect quality.
8. Coordinating the Quality Assurance Program within ~~the Nuclear Security & Operations Business Line~~ through formulating of Quality Policy, reviewing and concurring with departmental quality procedures, directing the corrective action program, developing project quality assurance programs, and coordinating quality-related activities of ~~Power GBUBPC~~ with other Bechtel organizations, e.g., ~~Global Corporate~~ Construction, Procurement & Contracts, and IS&T, etc.
9. Evaluating the effectiveness of the Quality Assurance Program and reporting on the adequacy of implementation to the management.

9. _____

1.5 PROJECT ORGANIZATION AND FUNCTIONS (FIGURE 3)

A Project Manager is assigned to each power project. (A project involving engineering only may not have a Project Manager.) Project Managers report to the ~~Manager of Operations Manager, nuclear business line~~ Nuclear Power Operations Manager, (ref. Figure 2), who provides administrative and technical direction and assures ~~the GBU's~~ consistent and coordinated application of Bechtel policies and skills for the benefit of the project.

The Project Manager is responsible for project direction to reflect the contract, client requirements, Bechtel policies, and project procedures. The Project Manager is the leader of the Bechtel project team that includes the Project Engineer, Site Manager, Project Quality Assurance Manager, Project Procurement Manager, Project Contracts Manager, Project Manager, Project Start-Up Engineer, and representatives from other functional groups as required. He provides direction to the project team, except the Project Quality Assurance Manager, to assure satisfactory performance. The Project Manager coordinates the project's quality related activities with the Project Quality Assurance Manager. ~~A typical Project Team Organization and its relationship to management are shown in Figure 11.~~

1.5.1 PROJECT QUALITY ASSURANCE

The project quality assurance program is directed and controlled by the Project Quality Manager (PQM) ~~* or the Project Quality Assurance Manager (PQAM)~~, who is responsible to assure that quality assurance ~~and quality control actions activities~~ as listed below are performed throughout the project organization and are accomplished in accordance with the requirements of the project.

The PQAM or ~~his representative~~ designee at the site is responsible for directing and managing the project quality program at the site.

Project quality assurance responsibilities include the following:

1. Coordinate the functions of the project quality program.
2. Coordinate project quality-related activities of Engineering, Procurement, Contracts and Construction.
3. Monitor ~~and audit~~ project quality-related functions and adherence to procedures and advise management of the status of program implementation.
4. ~~Monitor and audit project quality-related functions and adherence to procedures and advise management of the status of program implementation.~~
- 4.5. Review supplier and subcontractor quality assurance program requirements in procurement documents, conditional releases of nonconforming items at the construction site, and on a sampling basis the completed quality verification records packages prior to turnover to the client.
- 5-6. Concur with the evaluation of the supplier and subcontractor's quality assurance programs in accordance with Subsection 7.1 when they are required to be submitted to Bechtel for review by procurement documents.
- 6-7. Take stop work action when warranted.

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- 7-8. Identify quality problems, initiate documented action leading to a solution, and verify implementation of solutions.
- 8-9. Review project plans and schedules for quality-related activities to assure timely and effective implementation of the quality assurance functions for the project.

* *The Project Quality Manager (PQM) could also be referred to as Project Quality Assurance Manager (PQAMM)*

- 9-10. Serve as the focal point for project communication on matters relating to the project quality assurance program.
- 10-11. Provide periodic reports to the Manager of Quality Assurance and Project Manager evaluating the status of the project quality assurance program and advising of any problems requiring special attention.
- 11-12. Coordinate quality assurance functions within the project and with groups external to the project providing project support.
- 12-13. Assure that quality assurance-related procedures and manuals prepared by or used for the project meet project quality program requirements and initiate revisions when necessary.
- 13-14. Review, prior to use, Procurement Quality surveillance plans and Quality Control instructions for clarity and the existence of the information described in Sections 7 and 10. In addition, evaluate the adequacy of selected plans and instructions by performing an in-depth review of:
 - a. Accuracy of translation of drawing and specifications requirements.
 - b. Basis for determining inspection level and sequence.
 - c. Adequacy of inspection method.
- 15. Review and provide concurrence for Commercial Grade Dedication plans.
- 14-16. Review and provide concurrence for the conditional releases of nonconforming items at the plant site.

1.5.2 PROJECT ENGINEERING

The Project Engineer is responsible for the conduct of engineering on his project. One or more Assistant Project Engineers may assist the Project Engineer. The Project Engineer provides project direction to the Engineering Group Supervisors. He is responsible for ensuring that engineering work under Bechtel cognizance is carried out in accordance with the project direction received from the Bechtel Project Manager and the technical direction received from the Engineering Manager.

The Engineering Group Supervisors are responsible for the quality and technical adequacy of the engineering work performed under their guidance and they receive their technical direction in these matters from the Chief Engineers for their respective disciplines. The Engineering Group Supervisors are assigned a team of engineers and designers by their respective Chief Engineers. The Project Engineer, group supervisors, engineers, and designers comprise the project engineering team. The project engineering team is responsible for all Bechtel engineering design work performed by and for the project, and for the checking functions performed on the project. Specialty groups furnish special design support to the Project Engineer. The Project Engineer is responsible for such special design work conducted off the

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project and for requiring that it be subjected to the same degree of checking and control as that conducted on the project. Personnel on the staff of the Chief Engineer also review key design work off the project.

The project engineering team has the following responsibilities:

1. Prepare calculations, drawings, and specifications, which constitute the engineering designs.
2. Assure that drawings, specifications, procedures, and instructions produced conform to project requirements, Bechtel standards, applicable industry standards, regulatory agency requirements, and the design bases as defined in Safety Analysis Reports.
3. Prepare specifications for supplier and subcontractor quality assurance program requirements.
4. Establish the need for procurement quality surveillance and audit, and monitor results of it.
5. Review and approve the design changes and approve nonconformances with “repair” or “use as is” disposition.
6. Review drawings, procedures, test data, manuals, and reports submitted to Engineering by suppliers and subcontractors.
7. Indoctrinate Engineering personnel in the use of engineering procedures.
8. Provide design information, criteria, and guidelines to Bechtel field engineering for certain design work, which may be completed in the field.

1.5.3 PROJECT CONSTRUCTION, MAINTENANCE, OR MODIFICATION

A Site Manager is assigned to each nuclear plant project involving construction or construction management scope, and he is responsible for the project field construction performance.

The Site Manager is responsible for assuring that construction activities are performed in accordance with the design requirements as established by Project Engineering and other applicable requirements.

A typical project Construction organization is shown in Figure 423.

The project construction organization includes:

- Superintendents, who are in direct charge of the crafts (on projects for which Bechtel is assigned direct construction responsibility);
- Field Engineers, who perform field engineering, provide technical guidance and monitoring of construction work;
- Field procurement personnel under the Field Procurement Manager, who are responsible for purchase of field-procured items and control of materials prior to release for construction;
- the Subcontracts Administrator, who coordinates activities of field subcontractors; and
- Construction Quality Control Engineers (assigned by and administratively and technically responsible to the Nuclear Construction Quality Manager), who are responsible for the Bechtel field quality control program, including performance of all quality verification inspection performed by Bechtel. Quality Control activities are coordinated by the Site Manager.

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Quality control is the responsibility of the Project Field Quality Control Engineer. Quality Control personnel are responsible for quality verification at the construction site. This includes physical inspection of construction performed directly by Bechtel and quality surveillance on construction work performed by subcontractors (or contractors for construction management activities).

Quality surveillance by Bechtel Quality Control supplements the quality control program of the subcontractor and determines conformance to quality requirements.

This quality surveillance includes either selected physical inspections at prescribed hold points, or observation and witness of inspections performed by subcontractors, quality control personnel, or both.

Quality Control Engineers are responsible to:

1. Perform Bechtel jobsite quality verification inspection.
2. Prepare Bechtel jobsite quality control documentation and maintain quality control records.
3. Prepare and approve additions to approved quality control procedures and instructions.
4. Perform surveillance of subcontractor/contractor quality program implementation when the subcontractor/contractor has responsibility for first-level quality control.
5. Provide technical direction to testing laboratories and inspection subcontractors.
6. Administer the Bechtel nonconforming material control system.
7. Review field material requisitions prior to release.
8. Review supplier quality verification documentation package(s) for completeness and traceability to the item(s).
9. Identify quality problems, initiate action leading to solutions, and verify solutions.
10. Review contractor/subcontractor quality programs.
11. Review contractor/subcontractor quality verification documentation.

On construction management projects, a comparable construction management organization is provided. The contractors are normally assigned first-level responsibility for the control of the quality of their work. Their performance is coordinated and monitored by the Bechtel field organization. The Bechtel Quality Control organization performs quality surveillance and provides documentation appropriate for the individual contractors.

In cases where the contractors are responsible for quality verification inspection or other quality assurance functions, the procurement documents incorporate the requirements for the contractors' quality assurance program including ASME Boiler and Pressure Vessel Code, Section III, as appropriate. Contractors' quality assurance and quality control personnel are required to have the appropriate authority, organizational freedom, and independence within their own organization.

In the event that the contractor is unable to provide an acceptable program, Bechtel may assume quality verification inspection responsibilities or these may be contracted to another organization.

1.5.4 PROJECT PROCUREMENT

The Project Procurement Manager receives technical and administrative direction from the ~~Manager of Procurement & Contracts~~ **Operations Manager** and project direction from the

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Project Manager as shown in Figure 3. The Project Procurement Manager provides project direction for assigned procurement activities at the project level and project coordination to Project Supplier Quality Supervisors.

Project Supplier Quality Supervisors report to the Supplier Quality Manager/Supervisor for technical and administrative direction. The functions of the Project Supplier Quality Supervisors are:

1. Coordinate project procurement quality surveillance activities with Project Engineering and Supplier Quality.
2. Comment on technical specifications prior to issuance for bids.
3. Initiate supplier surveys, quality surveillance assignments, and coordinate supplier audits with Supplier Quality.
4. Review and accept procurement quality surveillance reports.
5. Give project direction on project Supplier Quality assignments to the Supplier Quality Representative involving shop inspection surveillance.

Field procurement services are provided to the project construction team through the Field Procurement Manager at the jobsite. The Field Procurement Manager receives project direction from the Site Manager and/or the Project Procurement Manager and technical and administrative direction from the ~~Power-GBU-Field-Procurement~~**Nuclear-Procurement and Contracts Operation** Manager.

1.5.5 PROJECT CONTRACTS

The Project Contracts Manager reports for technical and administrative direction to the ~~Procurement and Contracts Operation Manager~~**NS&E-GBU-Contracts Manager** and for project direction to the Project Manager. His responsibilities include:

1. Formation of contract and administrative activities including selection and preparation of pro forma documents.
- ~~1-2.~~ **Development of prime contract flow-down requirements and then preparation of the project-specific set of pro-forma contract documents.**
- ~~2-3.~~ **Performance of bid evaluation of all contract/subcontract proposals.**
4. Administration of awarded contracts.

1.5.6 PROJECT ADMINISTRATION

The Project Administrator (PA) and the administrative staff provide administrative services to the project. The PA develops and implements administrative policies and procedures. The PA shall have the following responsibilities:

1. Establish and maintain the Project Document Control Center for handling project communications and documents internally generated or received from outside sources.
2. Coordinate the records management program as custodian of quality assurance records. This function includes establishing, documenting, and implementing systems and procedures for collecting, storing, maintaining, and disposing of quality assurance records.

3. _____

1.6 NQA-1-1994 COMMITMENT

In establishing its organizational structure, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 1 and Supplement 1S-1.

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SECTION 2 QUALITY ASSURANCE PROGRAM

2.1 SCOPE

The program described in this report is applied to the design, procurement, construction, and/or modification and maintenance during the operations phase of those structures, systems, and components (items) whose satisfactory performance is required to prevent accidents that may cause undue risk to the health and safety of the public or to mitigate the consequences of such accidents if they were to occur. These items are defined as safety related and are identified in the safety analysis report for the project. Also, the program is applied to the ESP/COLA activities performed by Bechtel to the extent that such activities can affect either directly or indirectly the safety related site characterization and related analysis.

2.2 POLICY

The Bechtel Quality Program described in this report is designed to comply with the requirements of the NRC Regulation 10 CFR 50, Appendix B, and the practices prescribed by ASME NQA-1-1994 Parts I and II, Quality Assurance Requirements for Nuclear Facility Applications as further described in this report, client requirements, and Bechtel policies. The program assigns the responsibility for quality to the organization responsible for performing the work and includes as a basic requirement that individuals responsible for verifying and checking are independent of the individual or group responsible for performing the work. Additionally, independent review, audit, and surveillance are performed by individuals not affiliated with the organizational entities responsible for performance of the work.

The President, ~~the Nuclear business line~~ Bechtel Power Corporation (BPC) is responsible for the overall quality policy. Quality policies are formulated by the Manager of Quality Assurance, ~~who reports to GBU management. Quality policies are,~~ and authorized for use by the President, ~~the Nuclear business line~~ Bechtel Power Corporation. ~~BPC Project and Functional activities ; department, and Power GBU quality practices~~ are subject to audit by Quality Assurance.

The policies are implemented through procedures and manuals issued by the various departments and groups. The implementing procedures are approved for policy compliance and the program requirements of this report by Quality Assurance management (see Table 1). Project quality programs incorporate required ~~Power GBUBPC~~ policies and procedures suitably modified to meet the scope of the project and client requirements. The Project Quality ~~Assurance~~ Manager is responsible for coordinating the development of the project quality program and assuring that appropriate approvals are obtained. Quality Assurance personnel monitor and/or audit project program activities for compliance with approved procedures and policies. The Project Quality ~~Assurance~~ Manager coordinates project quality-related activities. Quality Assurance personnel have the responsibility and authority to carry out these functions, including identification of program problems, initiation of action to resolve such problems, and final verification that the action was taken and the problem satisfactorily solved.

The project quality program includes policies and procedures, which define the responsibility and authority of each group within the project, and identifies documents to be prepared and their distribution. Bechtel project communication is assured through the close physical relationship of project participants and the requirements for formal documentation and reporting.

Communication between the client QA organization and Bechtel depends on contractual relationships and the nature of the utility organization. The Project Quality ~~Assurance~~ Manager is the focal point for quality program communication. Formal quality assurance program reporting is performed either through the Project Manager or directly by the Project Quality ~~Assurance~~ Manager. In either case, the Project Quality ~~Assurance~~ Manager is responsible for

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coordinating preparation of quality program communication. Day-to-day communication on problems involving engineering, procurement, and construction may be carried out directly between the Bechtel group responsible for the activity and appropriate utility personnel. However, the Project Quality Assurance Manager is furnished copies of this correspondence, as appropriate.

Supplier and subcontractor quality control includes provision of specifications by Engineering requiring suppliers and subcontractors to execute appropriate quality programs; quality surveillance of suppliers by the Supplier Quality or by Construction Quality Control for onsite subcontractors; and surveillance and audit of these activities by Quality Assurance personnel and the Supplier Quality staff.

Control of construction activities performed directly by Bechtel includes in-process technical guidance and monitoring of the work by field engineering personnel who are independent of direct construction craft supervision; quality verification inspection and surveillance by Construction Quality Control; and audits by Quality Assurance personnel.

2.3 STOP WORK

The program provides Quality Assurance personnel with stop work authority over certain portions of project activity, and this authority is delineated in procedures. In addition, control of further processing of unacceptable work is provided by appropriate hold and release points as follows:

1. Design: Unsatisfactory work with respect to design documents prepared by Bechtel is controlled through the independent review process (prescribed by written procedures) and the refusal of the checker/reviewer to sign off the acceptance of the document, which blocks its further processing and issue for use. Each non-Bechtel design document for which Project Engineering has an interface and review responsibility has affixed a standard Bechtel stamp, which signifies the status of the document when it is returned to the originating entity. Any status other than permission to proceed automatically sets in motion follow-up and closeout actions.
2. Procurement: Bechtel control over supplier work is as follows: the Supplier Quality Representative, when required by procurement documents, must authorize supplier release for shipment (for purchased items) and may recommend stoppage of work on selected activities through designated contractual channels in situations which, if uncorrected, would render the item unacceptable for release. In cases of gross deficiencies or violations, procurement documents provide contractual relief, including termination, and these measures can be used when necessary.
3. Construction: Construction Quality Control has two primary mechanisms to control further processing of unacceptable work. These are the nonconforming material control system and the authority to refuse acceptance of completed work. Quality Control has authority to recommend stoppage in situations which, if uncorrected, would render the item nonconforming or unacceptable. In cases of contractor or subcontractor work, Construction Quality Control exercises controls similar to Procurement in 2 above.

2.4 PROGRAM DOCUMENTATION

Quality policies, * procedures, and instructions are contained in the documents listed in Table 1. Appendix B of this report lists the Quality Policies for nuclear work and identifies their scope and relationship to 10 CFR 50, Appendix B.

Figure 134 is a graphic presentation of the relationship of documents that comprise the quality program for projects. Each of these documents is authorized by the company or department

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manager responsible for the activity. ~~Power GBU and~~ Department standard procedures and practices form the basis for the quality assurance program on each nuclear project. The procedures and instructions contained in these standard manuals, modified to meet specific project requirements, are supplemented where necessary by specific work instructions and checklists where used. Project quality program manuals either contain or reference the procedures and manuals, which comprise the project quality program. These project manuals are controlled and maintained by the project team.

Each project has the responsibility for preparing and maintaining documentation defining project design criteria and applicable codes, standards, and regulatory requirements. Further, each project has the responsibility for preparing and maintaining organization charts and documentation defining interface responsibilities among various Bechtel groups and other major non-Bechtel project participants, such as the plant owner and the nuclear system steam supply supplier.

2.5 PERSONNEL

Bechtel personnel participating in the quality program are provided with specific indoctrination and training covering the project procedures applicable to their work. This is accomplished by general discussions of specific procedures and individual training by project supervision and staff specialists.

Similar programs are employed for indoctrination of individuals assigned to staff and specialist groups. Records are maintained showing completion of indoctrination and training. Indoctrination and training is conducted in accordance with written procedures.

In addition to the basic indoctrination and training program and performance reviews, certain minimum education and experience guidelines have been established for various positions responsible for managing and directing program activities.

While these are used for guidance in selecting candidates for these positions, they are not considered absolute requirements when other factors, such as the individual's demonstrated capability and staff technical support available to him, provide assurance that appropriate managerial and technical skill will be applied.

The basic qualification requirements for key management positions in the quality groups are:

- 1) Has a baccalaureate in engineering or related science
- 2) Has a minimum four years experience (three of the four years must include two years of nuclear power plant experience and one year of supervisory or management experience)
- 3) Has management and supervisory experience or training, including leadership, interpersonal communication, management responsibilities, motivation of personnel, problem analysis and decision making, and administrative policies and procedures
- 4) Has one year experience performing quality verification activities; and
- 5) Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

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** These policies define what is required and who is responsible for preparing procedures and instructions to implement the requirements. Specific methods for accomplishing the requirements are not included; however, essential features of the program are prescribed.*

The basic qualification requirements for supervisory and project quality functions, such as Project Quality Assurance Manager, Project Field Quality Control Engineer, etc. are an advanced degree with 2 or more years of appropriate supervisory and quality-related experience or a bachelor's degree with 5 or more years of appropriate experience. Additional pertinent (technical) experience is considered in lieu of a bachelor's degree. Records are maintained showing qualifications of key management, supervisory, and project personnel in quality groups.

The following specific qualification requirements are applied:

1. Personnel performing pressure boundary and structural welding and nondestructive examination are required to meet applicable qualification requirements of ASME Code, SNT-TC-1A, or other appropriate codes and standards as clarified further in paragraph 2.9 for nondestructive examination personnel qualification for ASME Section III and XI activities.
2. Quality Control Personnel –Quality Control Engineers and home office Quality Control staff and supervision will be qualified in accordance with the provisions of ASME NQA-1-1994, Supplement 2S-1 and/or Supplement 2S-2, as applicable.
3. Audit Personnel – Personnel performing audits will be qualified in accordance with the provisions of ASME NQA-1-1994, Supplement 2S-3 as modified in paragraph 2.9 of this report.
4. Supplier Quality Representatives – A formal training program, developed by the Supplier Quality, is required for Supplier Quality Representatives assigned nuclear plant purchase orders. This program is defined in the Bechtel Supplier Quality Manual (SQM) and conforms to the applicable requirements of ASME NQA-1-1994, Supplement 2S-1

2.6 PROGRAM CONTROL

Personnel performing quality assurance and quality control functions are provided with several means for controlling adherence to the quality program requirements. These include:

1. Various levels of approvals described in Section 1 of this report and subsection 2.2 above.
2. Stop work as described in subsection 2.3 above.
3. Inspection and review hold points for engineering documents, supplier work and documentation, and construction activities as described in various sections of this report.
4. Nonconformance and corrective action procedures as described in Sections 15 and 16 of this report.

In all of the above instances, decision of the assigned individual performing the quality assurance function is controlling, subject only to appeal by the line organization through their management and to the cognizant quality function management. In any case, personnel performing quality assurance and quality control functions have the authority to identify quality problems and initiate action leading to their solution.

The final authority on project quality program matters rests with the Project Quality Assurance Manager, subject only to appeal by the Project Manager to the Manager of Quality Assurance.

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Resolution of disputes, which are not resolved at lower levels, is as follows:

The final authority on quality program matters rests with the Manager of Quality Assurance, ~~Manager of Quality & Six Sigma, Execution Unit Manager, Nuclear Power~~ or the President, ~~Bechtel Power Corporation Nuclear business line~~ ~~Security & Operations~~, as applicable.

Quality-related activities, such as inspection and test, are performed with appropriate calibrated equipment and under suitable environmental conditions.

2.7 MANAGEMENT REVIEW

~~Nuclear Business Line~~ ~~BPC~~ Quality Assurance Program is reviewed annually by or for company management. ~~These reviews are performed by individuals above or outside the QA organization~~ to assess the adequacy of the quality assurance program and its effective implementation. The results of these reviews are documented and distributed to the ~~G-Nuclear Security & Operations Business~~ management of Bechtel Power Corporation.

The status of the project quality assurance program is reported regularly to cognizant management by the Project Quality ~~Assurance~~ Manager. These reports identify quality problems and summarize results of project quality assurance activities. Project quality program status also is identified and evaluated through management audit reports, which are conducted in accordance with the provisions of Section 18. Audit reports are reviewed by the Quality Assurance management and copies are submitted to the functional management and cognizant department management, as appropriate. The Manager of Quality Assurance is responsible for monitoring these reports and other information received from the project such as 50.55e and Part 21 reports and reports of client audits and NRC inspections and reviews.

2.8 PREOPERATIONAL TESTING AND PLANT TURNOVER

The client is responsible for the quality program during the preoperational testing phase. As defined in the scope of work for a project, Bechtel, in conjunction with the client, performs advance planning for control of managerial and technical interfaces between Bechtel, the client, the NSSS supplier, and other contractors during preoperational testing and plant turnover.

2.9 NQA-1-1994 COMMITMENT

In establishing qualification and training programs, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 2 and Supplements 2S-1, 2S-2, 2S-3 and 2S-4, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 2S-2
 - In lieu of Supplement 2S-2, for qualification of nondestructive examination personnel, Bechtel will follow the applicable standard cited in ~~the applicable engineering design documents~~ or the version(s) of Section III and Section XI of the ASME Boiler and Pressure Vessel Code approved by the NRC for use at project sites.
- NQA-1-1994, Supplement 2S-3
 - The requirement that prospective Lead Auditors have participated in a minimum of five (5) audits in the previous three (3) years is replaced by the following, “The prospective lead auditor shall demonstrate his/her ability to properly implement the audit process, as implemented by Bechtel, to effectively lead an audit team, and to effectively organize and report results, including participation in at least one nuclear audit within the year preceding the date of qualification.” All remaining criteria of SRP Section 17.5, Paragraph II.S.4.c will be met.

**SECTION 3
DESIGN CONTROL**

3.1 DESIGN INPUT

Engineering department policies, standards, design guides, procedures, and instructions are employed for control of engineering design work to meet technical and regulatory requirements. These controls identify responsibilities and provide procedures to assure that the design requirements are correctly translated into the final design. The controls also provide for preparation of appropriate documentation to permit review of the process used and of the results obtained. The controls provide for the identification and specification of appropriate quality standards and for control of changes and design interfaces.

Design criteria are assembled by the project during the initial stages of design. The design criteria are maintained current and serve as a basis for preparation of the final design.

The design control program incorporates measures for identification and control of design interfaces among the various engineering disciplines on the project, between the project and technical support groups within Bechtel, and of such external interfaces as nuclear steam supply system supplier, other equipment suppliers, subcontractors performing design work, and the client (plant owner). These measures include: (a) identification of technical responsibilities of the various design groups and provisions for coordination of design documents among them, (b) description of responsibilities of and provisions for coordination with other design and engineering support groups within Bechtel, and (c) definition of interfaces and control of communication with organizations external to Bechtel. Design interface information is documented and controlled.

Engineering procedures are structured to ensure that all necessary design input is available before completion of final design of the work affected by the input and that final design input is available for use in verification of the final design.

Engineering procedures governing the preparation, review, verification, and approval of design documents and establishment of the quality program requirements to be included in procurement documents are reviewed and concurred with by Quality Assurance personnel. (Ref. Table 1)

3.2 DESIGN VERIFICATION

Essentially all engineering documents are prepared by project personnel and include drawings, specifications, design analyses, system descriptions, and technical reports. They are verified in accordance with Engineering Department procedures. Engineering Group Supervisors are responsible for all engineering work performed within their discipline and for approval of engineering documents prepared within their groups. A process for verification of design documents is included in the procedures governing the preparation of these documents or in separate procedures or instructions. These procedures identify the responsibilities for verification and require that design errors be identified and followed up through correction. Cognizant engineering personnel on the project are required to verify the incorporation of required corrections. Design verification activities are normally completed before the design outputs are used by other organizations for design work, and before they are used to support other activities such as procurement, manufacture or construction.

When such timing cannot be achieved, the design verification is completed before relying on the item to perform its intended design or safety function. Verification methods include, but are not limited to, design reviews, alternative calculations, and qualification testing.

Engineering will identify and document the particular design verification method(s) used.

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Design review of safety-related structures, systems, and components (SSCs) is accomplished by **one or more of the following**:

- a. Interdisciplinary review
- b. Individual critical design review
- c. Independent off-project reviews by technical staff personnel

The design verification process includes checking and independent reviews, as required, depending on the nature and importance of the design product. The verifying or checking process is performed by individuals or groups other than those who performed the original design, but who may be from the same organization. The designer's immediate supervisor can perform the design verification provided the supervisor did not specify a singular design approach, or rule out certain design considerations and the supervisor did not establish the design inputs used in the design; or the supervisor is the only individual in the organization competent to perform the verification. If the verification is performed by the originator's supervisor, the justification of the need is documented and approved in advance by management. When previously verified calculations or computer programs are used, they are reviewed for applicability of use and reasonableness of results.

When design verification is accomplished by an interdisciplinary design review, the review team will be composed of individuals on or off project, or both, knowledgeable of the type of SSC and the design requirements. An individual who has participated directly in the design shall not be responsible for the independent design verification of his discipline.

Design work, including verification by specialists in groups, external to the project, such as, but not limited to, Materials Engineering & Technology, Geotechnical, Hydraulics, and Stress, is performed in accordance with project procedures or specialist group procedures meeting the requirements of this Topical Report. Such work must be reviewed and accepted by responsible project personnel for applicability to the project.

Chief Engineers coordinate and assist in the preparation of certain generic "standard" and "guide" documents. Standard documents include design standards, standard details, standard specifications, and technical topical reports. Guide documents include design guides; guide key documents, guide specifications, and Regulatory Guide positions. Generic "standard" and "guide" documents that are pre-engineered to a level suitable for direct project adoption are subject to design verification as described in this Section. Standard computer programs are validated on a generic basis prior to their use or the acceptability of computer program analysis results are verified for each application. Standard or guide documents, which have been qualified by design verification, need only be verified by a project for their applicability to project requirements. The acceptability of any significant changes to the qualified standard document must also be verified and documented.

When design verification is achieved by performing alternate calculations the appropriateness of assumptions, input data, and the computer program or other calculation methods used shall be evaluated and the results shall be checked through the use of alternate calculation methods to verify the correctness of the original calculations or analysis. Alternate calculations are, however, not required to go through the checking process.

As a matter of policy, Bechtel uses accepted industrial standards, specifications, and materials. Prototype testing is encouraged for equipment suppliers whose components have not previously demonstrated adequate performance. Prototype testing is not normally applicable to Bechtel design work; however, selected design details may be verified by test. When prototype testing is used for design verification, the test requirements are specified by Bechtel and meet the applicable regulatory and ASME NQA-1 provisions.

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Design documents are reviewed by individuals knowledgeable in QA to ensure the documents contain the necessary QA requirements.

3.3 DESIGN CHANGES

Design changes, including field changes, are subjected to design control measures commensurate with those applied to the original design. Checking and review of design changes are performed by the Project Engineering team to the same level as that of the original design. Interdisciplinary coordination is performed commensurate with the nature and significance of the change. Changes to design requirements or in completed designs produced by Project Engineering; which may be proposed by suppliers, subcontractors, or Bechtel construction; must be reviewed and accepted by Project Engineering.

In the case of proposed changes to the original design initiated at the construction site, documentation of the design change and acceptance by Project Engineering are required. Disposition of nonconforming items as “use as is” or “repair” are reviewed and approved by Project Engineering. Acceptance of the design change by Project Engineering is required prior to the point where the installation would become irreversible without extensive demolition and rework. For design changes proposed by suppliers, acceptance of the design change by Project Engineering is required prior to shipment of the item to the jobsite.

In all cases, approval of the proposed design change by Project Engineering is required prior to fuel load for plants under construction, or in the case of an operating plant, prior to relying on the component, system, or structure to perform its safety-related function.

Suppliers are not allowed to change Bechtel design requirements or Bechtel-reviewed supplier design documents without obtaining approval by Bechtel Project Engineering. Construction site changes to engineering design are documented by means of change notices or change requests, which require authorization by Project Engineering. Significant or unique changes are authorized individually; Project Engineering may give written authorization in the form of specifications or other instructions to Field Engineering to make routine changes.

Field Engineering has the authority to approve changes to design details in cases where the original design details were prepared, with the consent of Project Engineering, by Field Engineering.

3.4 FIELD DESIGN

Certain detail design work described below may be performed by Bechtel Field Engineering. This work is performed in accordance with requirements and within limits prescribed by Project Engineering and is not subject to design verification or checking as described above. The nature and scope of Field Engineering design work will vary with each Engineering discipline. Civil Field engineering design affecting safety-related structures, systems, and components is limited to functions such as the design of form details for concrete placement and design of temporary supports for reinforcing and embedded steel. There is no safety-related structural design performed by Field Engineering.

Instrumentation and Electrical Field Engineering design functions include the preparation of isometric drawings of electrical conduit and instrumentation tubing using sizes, separation, instrument location, and support criteria supplied by Project Engineering and the detailing and selection of hangers and supports from approved designs and spacing criteria provided by Project Engineering.

Piping Field Engineering design functions are normally limited to the preparation of isometric drawings and detailing of small (two-inch nominal and under) pipe, using sizes, materials, routing, and support criteria provided by Project Engineering.

3.5 NQA-1-1994 COMMITMENT

In establishing its program for design control and verification, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 3, and Supplement 3S-1, the subsurface investigations requirements contained in Subpart 2.20 and the standards for computer software contained in Subpart 2.7, and **Basic Requirements 11, Supplement 11S-2** -with the following clarifications and exceptions:

- NQA-1-1994, Supplement 3S-1
 - Section 3.0 implies traceability back from final design to the source of design input. It is not common engineering practice to identify all supporting documents (e.g. calculations, analyses, and computer programs and the sources of input that support the final output) on issued design drawings and documents, a clear and easily traceable path to all this supporting information is provided through the Information Management System (IMS) and the Calculation Index. It shall be possible to relate the criteria used and analyses performed to the final design documents and that record files will permit location of analyses supporting specific design output documents.
 - For records and documentation in section 7, in-process documentation relating to checking and coordination of drawings (for example, check and coordination prints) or copies of marked-up specifications used to solicit comments shall be retained until the drawing or specification is approved and issued for use outside of Bechtel Engineering. Such in-process documents will be available for review/audit until the document is approved, but may be discarded once the document has been approved. In the first sentence of the second paragraph the phrase “final design documents” shall mean those documents, which are the latest revision that has been issued for use.

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SECTION 4 PROCUREMENT DOCUMENT CONTROL

All procurement actions for safety related items and services, including off-the-shelf items and bulk commodities, whether performed by home office or Field Procurement groups, employ technical and quality requirements established by Project Engineering.

Project Engineering prepares (or provides) the technical and quality requirements appearing in procurement documents. These activities are governed by the same policies and procedures as those applied to design documents. Engineering and Procurement Departmental Procedures delineate the sequence of quality-related action to be accomplished in preparation, review, approval, and control of procurement documents and changes thereto.

Project Engineering is responsible for assuring that applicable regulatory requirements, design bases, supplier quality assurance program requirements, and other requirements, which are necessary to obtain and verify quality are included or referenced in the procurement documents. Project Engineering specifies, as necessary, special inspection/test requirements for “dedication” of commercial “off-the-shelf” items.

While the Project Engineering team is responsible for preparation of specifications for supplier, contractor, or subcontractor quality assurance programs, these specifications are based upon program policy formulated by Quality Assurance and guidance provided in approved Engineering Department Procedures and engineering specifications concurred with by Quality Assurance. The specifications are reviewed for appropriate quality program requirements by project quality assurance.

Procurement documents include specific technical specifications for the equipment and services to be furnished which define specific codes, standards, tests, inspections, and records to be applied for furnished items. The procurement documents also include quality assurance requirements either in separate specifications, which define requirements for the supplier’s quality assurance program or by incorporating appropriate requirements in the technical specifications and associated documents.

Quality programs may be specified by invoking the applicable Requirements and Parts of ASME NQA-1-1994 as appropriate to the circumstances of procurement and the ASME Boiler and Pressure Vessel Code, as applicable, or by incorporating requirements equivalent to those of these standards. The procurement documents also establish provisions for source surveillance and audits (including access to the supplier’s and sub supplier’s facilities and records for audit); invoke 10CFR Part 21. “Reporting of Defects and Noncompliance”; provide for extension of the applicable requirements to sub tier procurements; include provisions for control and approval of supplier nonconformances; and establish requirements for preparation and delivery of documentation. Specific requirements for documents, which must be submitted for review, approval, and/or verification, are provided.

Engineering Department procedures provide for establishing quality assurance requirements in procurement documents. Technical quality requirements are reviewed by technical personnel. Programmatic aspects are reviewed by Quality Assurance as described above, and the review also assures that the document was prepared, reviewed, and approved in accordance with the approved procedures.

Procurement documents normally contain general acceptance criteria. These are reviewed by suppliers, subcontractors, or Bechtel Construction Quality Control upon receipt of the documents to verify and supplement acceptance criteria.

Evidence of review and approval of procurement documents is available for verification.

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The following describes the sequence of steps in preparation of Bechtel home office procurement documents and review of bids:

1. Technical and quality requirements for procurement documents are originated by Project Engineering.
2. Quality assurance requirements are reviewed by Quality Assurance.
3. Project Engineering forwards the procurement document requirements to Procurement or Contracts, as applicable.
4. Procurement or Contracts prepares a formal bid request package, which is forwarded to qualified bidders.
5. Bids are received and reviewed for commercial terms by Procurement or Contracts and forwarded to Project Engineering for a technical evaluation.
6. Engineering and Quality Assurance determine the supplier's or subcontractor's capability to meet the specified quality requirements, as described in Section 7.
7. The Project Engineer approves the bid recommendations, obtains other necessary approvals, and forwards them to Procurement or Contracts.
8. After receipt of necessary approvals, the purchase order/subcontract is issued by Procurement/Contracts.

On some projects the client may place orders directly, in which case selected functions of the Procurement or Contract Departments are performed by the client.

The following describes the sequence of steps for Bechtel Field Procurement:

1. Field Engineering prepares requisitions employing technical and quality assurance requirement specifications that have been established by Project Engineering and have been reviewed by Quality Assurance.
2. The Project Construction Quality Control Engineer reviews the field material requisition to verify inclusion of specified quality assurance requirements.
3. Field Engineering forwards the material requisition to Field Procurement.
4. Field Procurement prepares a bid request package, which is forwarded to qualified bidders.
5. Bids are received and reviewed for commercial terms by the Field Procurement and forwarded to Field Engineering for technical evaluation.
6. Engineering and Quality Assurance determine the supplier's capability to meet the specified quality requirements, as described in Section 7.
7. Field Engineering approves the bid recommendation, obtains other necessary approvals, and forwards it to Field Procurement.
8. After receipt of necessary approvals, the purchase order/subcontract is issued by field Procurement.

4.1 NQA-1-1994 COMMITMENT

In establishing controls for procurement, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 4 and Supplement 4S-1, with the following clarifications and exceptions:

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- NQA-1-1994, Supplement 4S-1
 - Section 2.3 of Supplement 4S-1 includes a requirement that procurement documents require suppliers to have a documented QAP that implements NQA-1-1994, Part 1. In lieu of this requirement, Bechtel may require suppliers to have a documented supplier QAP that is determined to meet the applicable requirements of 10 CFR 50, Appendix B, as appropriate to the circumstances of the procurement.
 - With regard to service performed by a supplier, Bechtel procurement documents may allow the supplier to work under the Bechtel QAP, including implementing procedures, in lieu of the supplier having its own QAP.
 - Section 3 of supplement 4S-1 requires procurement documents to be reviewed prior to bid or award of contract. The quality assurance review of procurement documents is satisfied through review of the applicable procurement specification, including the technical and quality procurement requirements, prior to bid or award of contract. Procurement document changes (e.g., scope, technical or quality requirements) will also receive the quality assurance review by subjecting such change documents to the same degree of control as utilized in the preparation of the original documents.
 - Procurement documents for Commercial Grade Items that will be dedicated by Bechtel as safety-related items shall contain technical and quality requirements such that the procured item can be appropriately dedicated.

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SECTION 5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

The documented instructions and procedures governing the program are identified in Section 2.

Procedures and manuals governing the activities of organizations and groups performing quality-related functions include procedures for the preparation and review of instructions, procedures, and drawings.

Documented instructions from Project Engineering to Construction, subcontractors, and suppliers are in the form of engineering specifications and addenda or change notices thereto, drawings, and drawing change notices. These documents contain, reference, or require procedures and instructions, as appropriate, and provide necessary acceptance criteria. When approved by Project Engineering, these documents are released for construction work.

Bechtel procurement documents require suppliers and subcontractors to submit specified drawings and procedures to Bechtel for acceptance prior to start of fabrication or construction. Bechtel reviews of these documents are performed to determine that interfacing design features are compatible with overall design and installation requirements and those procedures are acceptable.

Procedures for construction activities are prepared by Construction and describe, define, or specify administrative and functional requirements for performing construction activities. Procedures include training of personnel; jobsite housekeeping; storage, maintenance, and handling of items; document control; changes to design documents; reviewing supplier engineering documents; and field requisitioning of items and services.

Field Engineering (construction) prepares other procedures when engineering documents require amplification to perform various discipline activities associated with fabrication, cleaning, erection, installation, test, repair, modification, etc., of items.

The requirements, procedures, and instructions for the Construction Quality Control activities are contained in the Construction Quality Control Manual. The elements of this manual include qualifications, indoctrination, certification, and training; inspection, examination, and test control; control of nonconforming items; field procurement control; control of measuring and test equipment; documentation and records control; final inspection and turnover; and contractor and subcontractor control.

Construction procedures contain provisions for control of temporary changes to procedures. In cases of emergency, personnel are authorized to depart from approved procedures when necessary to prevent injury to personnel or damage to items and equipment. Such departures are recorded describing the prevailing conditions and reasons for the action taken.

Assurance that work is accomplished in accordance with approved instructions, procedures, and drawings is obtained through the various levels of surveillance inspection and audit described in other sections of this report.

5.1 NQA-1-1994 COMMITMENT

In establishing procedural controls, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 5.

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SECTION 6 DOCUMENT CONTROL

The program documents identified in Section 2 provide means for document control. These include procedures providing Engineering, Procurement, and Construction controls for the review, approval, and release of documents and changes thereto.

Documents pertaining to quality-related items, as identified in this paragraph, are required to be controlled. The documents listed in Table 1 are on controlled distribution. Instructions, procedures, specifications, drawings, procurement documents, quality surveillance plans, design calculations, design criteria, field change requests, safety analysis reports, and inspection test procedures are identified by requesting electronically generated reports or queries from the Electronic Document Management System (EDMS). Drawings, coordination prints, specifications, calculations, databases, manuals, reports, and other related documents may be in either hardcopy or electronic format. In certain cases, electronic 3D models may be provided in lieu of 2D drawings. All electronic formats will have comparable controls and safeguards as hardcopies.

Nonconformance reports, supplier deviation reports, corrective action reports, documentary evidence of design reviews, memoranda, and correspondence are identified by requesting electronically generated reports or queries from the EDMS, which provide for traceability of closeout action.

Document Control Centers for the project are set up in the [Project Engineeringhome](#) office and the jobsite. Controlled documents are released, received, controlled, and distributed through these centers.

Engineering Department procedures prescribe the requirements for preparation, control, and distribution of design documents. Approved drawings and specifications prepared by Project Engineering are issued to organizations and individuals responsible for performing the work and to those responsible for inspection. * Electronically generated reports or queries from the EDMS identify the drawings, specifications, and other design output documents and their current status.

Transmittal forms are employed to forward drawings and specifications and require that signed receipts be returned from the addressee. When electronic notifications are employed to forward drawings and specifications, provision will be made for electronic acknowledgment receipts from the addressee.

Changes made to approved design documents by Project Engineering or proposed by Field Engineering are reviewed and approved by Project Engineering in accordance with established procedures, which provide that changes are reviewed in the same manner as the original issue.

Supplier-submitted documents, such as drawings, specifications, procedures, manuals, and other data, are controlled through the use of an Electronic Documents Management System (EDMS) which provides identification and status of supplier documents. Transmittal forms and/or electronic notifications are used to return and show review status of evaluated supplier documents. Bechtel Supplier Quality Representatives are informed as to the current status of supplier documents. Applicable supplier documents are formally transmitted via electronic notification to the construction site with provision for receipt acknowledgement.

** Bechtel Supplier Quality Representatives receive copies of the transmittal notices and/or electronic notifications listing the documents and their approval status, but normally do not*

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receive copies of the documents. These are available at the supplier's plant for the Supplier Quality Representative

The project construction organization at the jobsite employs standard prescribed procedures for control of the distribution of approved drawings, specifications, and other documents. These procedures include provisions for field receipt, review, and distribution of approved documents, and for appropriate marking or destruction of obsolete documents.

Approved changes are promptly included in governing documents or controlled change notices provided for interim revision. Changes may not be implemented without appropriate documented approvals. Procedures provide for incorporation of change notices in the governing documents.

Controls to ensure that work activities are conducted in accordance with the necessary procedures or other documents take several forms. These controls will be included in the following:

1. Procurement Documents
2. Appropriate department or group manuals and procedures
3. Engineering compliance monitored by Quality Assurance
4. Supplier compliance monitored by Supplier Quality
5. Construction compliance monitored by Construction Quality Control and Quality Assurance

The Bechtel supplier quality surveillance program includes procedures, governing the initial quality surveillance visit, which are designed to identify necessary documentation and verify that the controls are in place for preparation and approval of procedures prior to performance of work governed by the procedure. Construction inspection planning includes identification of documents required, and these must be available for use prior to performing inspections governed by the procedure.

Control of documents in the ~~engineering-home~~ office and ~~construction-offices~~ jobsites is regularly audited by Quality Assurance personnel. In addition, Construction Quality Control assures that construction work is performed in accordance with current approved design documents as an integral part of their quality inspection program.

6.1 NQA-1-1994 COMMITMENT

In establishing provisions for document control, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 6 and Supplement 6S-1.

SECTION 7
CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

7.1 SUPPLIER EVALUATION AND SELECTION

Procurement maintains files of suppliers and subcontractors. These files identify suppliers and subcontractors who have demonstrated their ability to provide quality material, equipment, or services or who have been established as capable by survey.

Suppliers' and subcontractors' quality history files contain information on scope of services and capability and results of recent shop surveys and audits. Periodic reports identifying data contained in quality history files are issued by Supplier Quality to interested groups.

Engineering and Construction departments review welding and nondestructive examination procedures for work involving compliance with the ASME Boiler and Pressure Vessel Code and for fabrication of metal structures and protective coating procedures.

After completing reviews and evaluations of these documents, Procurement and Contracts are provided with information for summary listings of the approved vendor information on file. This information is available to projects for assistance in identification and evaluation of qualified sources.

Supplier Quality procedures include provisions for source surveys which may be used to supplement data in a supplier's quality history file. Requests for source survey are initiated by Purchasing or Engineering in cases where inadequate historical data is available to evaluate the supplier's capability to produce the commodity.

Prior to award*, the following technical and quality requirements must be met for suppliers or subcontractors other than suppliers of commercial "off-the-shelf" items:

1. Determination by engineering that the source is responsive to the technical requirements of the specification.
2. Determination by Engineering and Quality Assurance that the supplier or subcontractor quality program is capable of meeting the specified requirements.

The supplier's or subcontractor's quality program capability determination for selection may be based on any or a combination of:

- A review of program summary descriptions submitted with the bid.
- Program manuals previously submitted and evaluated by Bechtel.
- Program manuals submitted or made available for review in the bidder's facilities in connection with the specific procurement or subcontract.
- Evaluation of performance on previous Bechtel project.
- Quality performance history from other sources
- Source survey or audit performed previously or in connection with the specific procurement.
- The evaluations may be performed by Supplier Quality or Construction Quality Control.

When suppliers or subcontractors are required to submit their QA programs for Bechtel's review, the review shall be performed by Engineering.

** In some instances, it may be necessary to place a purchase order or contract without fully satisfying these criteria. For these cases, the criteria shall be met prior to start of safety related work activities.*

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For work covered entirely by ASME Boiler and Pressure Vessel Code, Section III requirements, possession of the appropriate Certificate of Authorization or Quality System Certificate (Materials) issued by ASME constitutes an acceptable minimum requirement for bidder qualification.

7.2 QUALITY SURVEILLANCE

For purchased items, the primary responsibility for quality rests with the supplier. Technical control of supplier work is provided by Project Engineering through review of specified supplier documents, including drawings and procedures. Engineering is also responsible for providing or accepting supplier-proposed resolutions to discrepancies encountered. Inspection of supplier's work is the responsibility of supplier's inspection department. Bechtel Supplier Quality Representatives perform quality surveillance of supplier's work, which may include specific measurements and examinations performed by the Supplier Quality Representative, but generally includes monitoring and witnessing of inspections and tests performed by the supplier's quality control organization. Project Engineering identifies procurements (both home office and field) requiring source quality surveillance and/or audit. Procurement may recommend additional items. Manufactured or fabricated safety related items are typically subject to quality surveillance.

For safety related items, Bechtel Supplier Quality Representatives perform their quality surveillance in accordance with quality surveillance plans and instructions. These plans are prepared by Supplier Quality based on instructions in the Supplier Quality Manual and may be modified by Project Engineering. They provide for identification of witness and/or hold points, identification of the examinations and tests to be witnessed by the Bechtel Supplier Quality Representative, and documentary evidence of completion of each witness and hold point operation, test, or examination. A supplier may not proceed with the work beyond a hold point without written agreement of waiver of hold points from Supplier Quality based on agreement from Project Engineering and Quality Assurance representative.

It is the responsibility of the Supplier Quality Representative to verify, to the extent required by the quality surveillance plan, that the supplier has met the quality requirements contained in the procurement documents before the item is released for shipment. This responsibility of the Supplier Quality Representatives is met through quality surveillance, which includes observations and checks at random of selected intervals (or points) of materials of construction, in-process fabrication, heat treatment, welding, examination, testing, dimensions, preparation for shipment, marking, tagging, and quality verification. Bechtel Supplier Quality Representatives do not perform nondestructive examinations or tests on material and equipment at suppliers' plants. Such examinations and tests are performed by the supplier and selectively witnessed or otherwise monitored by the Supplier Quality Representative.

Quality surveillance may be performed by resident or area Supplier Quality Representatives assigned to several suppliers. Reports documenting quality surveillances performed, tests witnessed, and discrepancies observed are prepared by the Supplier Quality Representative and distributed to appropriate Engineering, Construction, Procurement, and Quality Assurance personnel. Bechtel Supplier Quality Representatives are responsible for assuring that their quality surveillances of material, equipment, and specified documentation conform to the requirements of the quality surveillance plan and/or instructions and for releasing inspected items for shipment. Bechtel Supplier Quality Representatives have the authority to refuse release of nonconforming material.

Consistent with the complexity of the quality surveillance assignment, the Supplier Quality Representative will review with the supplier the requirements of the applicable quality surveillance plan. In addition, the Supplier Quality Representative will establish witness and hold points in accordance with the applicable quality surveillance plans and procurement

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Electronic documents, once printed, are uncontrolled.

Refer to the electronic documents in *EDMS* for current revisions.

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documents. During the course of progressive quality surveillance, the Supplier Quality Representative has the prerogative to make other quality surveillance and witness other examinations and tests necessary to determine the supplier's compliance with the requirements of the procurement documents.

Quality surveillance of jobsite subcontractors on Bechtel construction jobs and contractors on Bechtel construction management jobs is the responsibility of Construction Quality Control utilizing Quality Control Instructions and Inspection Records provided by procedures contained in the Construction Quality Control Manual.

Contractors on Bechtel construction management jobs are for monitoring the effectiveness of their inspection program and those of their subcontractors.

7.3 RECEIVING INSPECTION

Receiving inspection practices conform to the requirements of Part 2.2, ASME NQA-1-1994. These are performed in accordance with Quality Control Instructions by Construction Quality Control personnel or suitably trained personnel under the supervision of Construction Quality Control.

Documentary evidence that the item conforms to procurement documents is required to be available at the construction site prior to installation or use. This evidence includes the following:

1. For Bechtel procured* and inspected items not covered by ASME Boiler and Pressure Vessel Code requirements, a certificate of conformance** (signed by an authorized representative of the supplier identifying the specific technical requirements met by the item by referencing the appropriate Bechtel specification and/or other governing codes and standards) and acknowledgement that the Bechtel Supplier Quality Representative has reviewed the required documentation and has released the item. This may be obtained by having the certificate signed by the Bechtel Supplier Quality Representative to verify that he has reviewed applicable supplier documentation supporting the certificate and released the items or by receipt of a separate report from the Supplier Quality Representative indicating that his quality surveillance is complete and the item has been released.
Receipt of the certificate of conformance and the Bechtel Supplier Quality Representative release constitutes documentary evidence that materials and equipment conforms to procurement requirements and may be installed. If the balance of the documentation package required by the procurement documents is received prior to or with the shipment, the certificate of conformance may be waived.
- 1-2. For Bechtel procured and inspected items covered by ASME Boiler and Pressure Vessel Code requirements, the same requirements prevail as above, plus the appropriate Code Data Report.
- 2-3. For Bechtel procured and non-inspected items, all quality verification documentation required to be submitted by the procurement documents must be reviewed and verified (as a part of receiving inspection) at the construction site by Quality Control or Supplier Quality personnel.
- 3-4. For nuclear steam supply system supplier furnished items, appropriate certification from the NSSS supplier in accordance with his quality program.

* Also applies to cases of Bechtel client procured items for which Bechtel is acting as agent for the client.

** The certificate of conformance conforms to Supplement 7S-1, ASME NQA-1-1994

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5. For cases when procurement documents do not require the supplier to furnish quality verification documentation, satisfactory receiving inspection results constitute the necessary documentary evidence that items conform to procurement documents.

Complete quality verification record packages are requested for delivery prior to, or with, the shipment. Documented control measures, with provisions for follow-up, are provided to expedite receipt of quality verification packages, which are delayed beyond the time of shipment. Completed quality verification records packages received at the construction site are checked for completeness and traceability by Quality Control or Supplier Quality personnel, and audited by Quality Assurance. Project Engineering may elect to have selected quality verification documentation delivered to the design office for review by so specifying in procurement documents.

7.4 SUPPLIER AND SUBCONTRACTOR AUDITS

The supplier and subcontractor control program provides for periodic audits of selected suppliers' and subcontractors' quality assurance programs. Design subcontractor and consulting work is monitored by Project Engineering.

Audits of non-ASME Code suppliers of items and services subject to audit are conducted on a triennial basis when the supplier has performed continuing work for a Bechtel project during the past 3 years. If Bechtel and other purchasers buy from the same supplier, Bechtel may either perform or arrange for an audit of the supplier on behalf of Bechtel and other purchasers to reduce the number of external audits of the supplier. For acceptance of an audit of a supplier or subcontractor performed by other than Bechtel, a review of the scope of such an audit and the pertinent audit report is performed to ensure the adequacy of the audit and coverage of Bechtel needs. In addition, Bechtel may utilize audits conducted by outside organizations for supplier qualification provided that the scope and adequacy of audits meet Bechtel requirements. To be credited for a triennial audit, the pre-award survey or audit performed by or for Bechtel for the qualification of a supplier, such pre-award survey or audit is required to satisfy all auditing elements and criteria as those used on other triennial audits consistent with the ASME NQA-1-1994. However, a subsequent purchase order/contract or a purchase order/contract modification significantly enlarges the scope of, or changes the methods or controls for activities performed by the same supplier, an audit of the modified requirements is conducted, thus starting a new triennial period. Documented annual evaluations are performed for qualified suppliers to assure they continue to provide acceptable products and services. Periodic performance evaluations are performed, at least annually, between the triennial audits. The following subjects are reviewed and when determined necessary, restrictions to the continued use of the supplier are documented.

1. Nonconformance and corrective action documents pertaining to the supplier's product.
2. Results of the Bechtel project audits or surveillances.
3. Results of the audits of the supplier conducted by organizations other than Bechtel, e.g., customers, NUPIC, ASME, or NRC.
4. Bechtel supplier warnings and/or advisories.

Suppliers of ASME items and services who are holders of valid Certificates of Authorization or Quality System Certificate are not surveyed or audited for awarding purchase orders or subcontracts; however, they are subject to Supplier Quality surveillance provisions of Section 7.2. Additionally, selected suppliers of ASME items and services are subject to audit. (Ref. NRC Information Notice 86-21, supplement 2 [and Regulation Guide RG 1.28](#)).

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7.5 NQA-1-1994 COMMITMENT

In establishing procurement verification controls, Bechtel commits to compliance with NQA-1-1994, Basic requirement 7 and Supplement 7S-1, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 7S-1
 - When a Certificate of Conformance is used, Bechtel interprets that the person attesting to a certificate shall be an authorized and responsible employee of the supplier and shall be identified by the supplier.
 - Verification of the Validity of Supplier Certificates and the Effectiveness of the Certification System, is as follows: The verification of the validity of supplier certificates and the effectiveness of the certification system are accomplished as an integral part of the total supplier control and product acceptance program, and no separate Bechtel system exists that addresses itself solely to such verification.

The degree of verification required will depend upon the type of item or service and their safety importance. The means of verification may include source witness/hold points, source audits, and document reviews; independent inspections at the time of material receipt; user tests on selected commodities, such as concrete components; and tests after installation on selected components and systems.

All of these means are to verify whether or not a supplier has fulfilled procurement document requirements and whether or not a certification system is effective.

- Bechtel considers that 10 CFR 50 licensees, Authorized Nuclear Inspection Agencies, National Institute of Standards and Technology, or other State and Federal agencies which may provide items or services to Bechtel projects are not required to be evaluated or audited.
- When purchasing commercial-grade calibration and testing services from domestic and international calibration and testing laboratories accredited by an ILAC MRA signatory, the ILAC MRA accreditation process may be used in lieu of performing a commercial-grade survey as part of the commercial-grade dedication process, provided each of the following conditions are met: ~~When purchasing commercial-grade calibration services from a domestic calibration laboratory, procurement source evaluation and selection measures need not to be performed provided each of the following conditions are met:~~
 - (1) A documented review of the supplier's accreditation is performed and includes a verification of the following: ~~the purchase documents impose any additional technical and administrative requirements, as necessary, to comply with the Bechtel QA program and technical provisions. The purchase document shall require the calibration certificate/report include identification of the laboratory equipment/standard used.~~
 - (2) —The calibration or test laboratory holds accreditation by an accrediting body recognized by the ILAC MRA. The accreditation encompasses ISO/IEC 17025:2005 (or subsequent edition(s) accepted by the NRC), "General Requirements for the Competence of Testing and Calibration Laboratories."

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- For procurement of calibration services, the published scope of accreditation for the calibration laboratory covers the needed measurement parameters, ranges, and uncertainties.
 - For procurement of testing services, the published scope of accreditation for the test laboratory covers the needed testing services including test methodology and tolerances/uncertainty.
- (2) The purchase documents require that:
- The service must be provided in accordance with their accredited ISO/IEC 17025:2005 program (or subsequent edition accepted by the NRC) and scope of accreditation.
 - As-found calibration data must be reported in the certificate of calibration when calibrated items are found to be out-of-tolerance (for calibration services only).
 - The equipment/standards used to perform the calibration must be identified in the certificate of calibration (for calibration services only).
 - The customer must be notified of any condition that adversely impacts the laboratory's ability to maintain the scope of accreditation.
 - Any additional technical and quality requirements, as necessary, based upon a review of the procured scope of services, which may include, but are not necessarily limited to, tolerances, accuracies, ranges, and industry standards.
- (3) It is validated, at receipt inspection, that the laboratory's documentation certifies that:
- The contracted calibration or test service has been performed in accordance with their ISO/IEC-17025:2005 (or subsequent edition(s) accepted by the NRC) program and has been performed within their scope of accreditation, and
 - The purchase order's requirements are met.
- ~~—the purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.~~
- (3) ~~a documented review of the supplier's accreditation shall be shall be performed and shall include a verification of each of the following:~~
- ~~The calibration laboratory holds an accreditation by the National Voluntary Laboratory Accreditation Program (NVLAP) or by the American Association for Laboratory Accreditation (A2LA) as recognized by NAVLAP through the international Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA).~~
 - ~~The accreditation is based on ANSI/ISO/IEC 17025.~~
 - ~~The published scope of accreditation for the calibration laboratory covers the necessary measurement parameters, ranges, and uncertainties.~~
- For Section 8.1, Bechtel considers documents that may be stored in approved electronic media under *Bechtel* control and not physically located on the plant

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site but which are accessible from the respective nuclear facility site as meeting the NQA-1 requirement for documents to be available at the site.

- In lieu of the requirements of Section 10, Commercial Grade Items, controls for commercial grade items and services are established in Bechtel documents using 10 CFR 21 and the guidance of EPRI NP-5652 as discussed in Generic Letter 89-02, ~~and~~ Generic Letter 91-05 and RG 1.164.:
- For commercial grade items, special quality verification requirements are established and described in Bechtel documents to provide the necessary assurance an item will perform satisfactorily in service. The Bechtel documents address determining the critical characteristics that ensure an item is suitable for its intended use, technical evaluation of the item, receipt requirements, and quality evaluation of the item.
- Bechtel will also use other appropriate approved regulatory means and controls to support *Bechtel* commercial grade dedication activities. One example of this is NRC Regulatory Issue Summary 2002-22. Bechtel will assume 10 CFR 21 reporting responsibility for all items that Bechtel dedicates as safety-related.

**SECTION 8
IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS**

Identification requirements are determined during the generation of specifications and design drawings. Procurement documents provide the requirements for identification of purchased items.

Parts, components, subassemblies and equipment, and partially fabricated items may be identified by stenciled or etched markings, strip marking, imprinted tape, color-coding, and tags. Where specified, shelf life of an item will be identified and controlled. Large quantities of small items, unless specifically required by code or standard, may be identified as to heat, batch, lot, or specification by applying markings to bags, bins, tanks, or other suitable containers. Identification of installed or assembled items requiring traceability may be transferred to inspection records or as-built documents if desired and is required if markings are hidden or subject to obliteration during fabrication or installation.

Organizations receiving materials, parts, or components verify that these are properly identified and are accompanied by appropriate documentation. Provisions are made for handling and storing items to retain identification and to prevent intermixing and the use of incorrect or defective items.

8.1 NQA-1-1994 COMMITMENT

In establishing provisions for identification and control of items, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 8 and Supplement 8S-1

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SECTION 9 CONTROL OF SPECIAL PROCESSES

The requirements of the ASME Boiler and Pressure Vessel Code are invoked, as applicable, in the Bechtel program. Special processes requiring procedure and/or personnel qualification beyond those required by the code are identified in technical specifications by reference to appropriate industry codes and standards, where available, or by specific identification in the technical specification. Supplier and subcontractor special process qualification data are subject to review by Bechtel.

Special processes performed by Bechtel, including welding, nondestructive examination, protective coating, cleaning, and flushing, are performed in accordance with the requirements of applicable codes and standards. The requirements for welding and nondestructive examination comply with applicable portions of the ASME Boiler and Pressure Vessel Code, American Welding Society standards, and the Society of Nondestructive testing (SNT-TC-1A and supplements), as applicable. Cleaning and flushing procedures and personnel qualifications conform to the requirements of Part 2.1, ASME NQA-1-1994.

Other unique special processes for work operations identified by the nuclear steam system supplier or Project Engineering are properly qualified and performed by trained personnel in accordance with specified technical requirements. Special process is a process where the results are highly dependent on the control of the process or the skill of the operator, or both, and for which the specified quality cannot be readily determined by inspection or test of the product.

Current qualification records of procedures, equipment, and personnel are maintained at the jobsite. Active files are maintained in the home office, and copies are provided to each affected project of qualification records covering special processes and procedures. Projects are required to maintain up-to-date lists of personnel qualifications and/or applicable equipment qualifications for special processes. Controls are provided to assure that personnel qualification records are regularly reviewed and the appropriate requirements for re-qualification are implemented. Implementation of these controls is verified by Construction Quality Control personnel and audited by Quality Assurance with the assistance of off-project technical personnel from Engineering and/or Construction.

9.1 NQA-1-1994 COMMITMENT

In establishing measures for the control of special processes, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 9 and Supplement 9S-1.

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SECTION 10 INSPECTION

As described in Section 7, suppliers' and subcontractors' programs are subject to quality surveillance by Bechtel Supplier Quality Representatives and Construction Quality Control personnel, as applicable.

The responsibilities for inspection of Bechtel construction work are identified in Sections 1 and 2. Quality verification inspection, witness of testing activities, and evaluation of test results are performed by Construction Quality Control personnel who are independent of field engineering and craft supervision. Quality Control personnel are assigned by and receive administrative and technical direction from the Construction Quality Manager. As needed, Field Engineers may perform Quality Control inspections provided they are qualified in accordance with the QC training and inspection procedure requirements and are independent of those who performed or supervised the work. When such inspections are performed, the Field Engineer performance of inspections is subjected to the QC manager's review and over sight of the Field Engineer's inspection duties. The overall inspection program is monitored and audited by resident construction site Quality Assurance personnel.

Inspection, witness of testing activities, and evaluation of test results are performed in accordance with procedures contained in the Nuclear Quality Control Manual supplemented by construction quality control instructions, or work operations and planning documents. Inspection planning includes receiving inspection, construction and installation inspection, and testing.

Quality control instruction and inspection records are prepared to cover onsite receiving, maintenance, installation, testing, and subcontracted work activities performed during the construction phase. These are the controlling documents used by Quality Control personnel for performance of onsite quality verification activities. These identify what inspections are required, the inspection acceptance/rejection criteria, how and by whom the inspections are to be performed, and the sequence. They are available prior to inspection.

Inspection and acceptance criteria are derived from engineering design documents, supplier information, and construction procedures. Standard inspection instructions to be used on the project are approved by the Construction Quality Manager.

In addition, all work covered by the ASME Boiler and Pressure Vessel Code, Section III, is also subject to independent inspection by authorized Code Inspectors in accordance with the Code rules.

Inspection procedures or instructions and records provide the following information:

1. Reference to applicable documents such as drawings, specifications, and procedures.
2. Identification of prerequisites and special process control requirements, such as personnel, procedure, or equipment qualification.
3. Identification of characteristics to be inspected.
4. Individuals or groups responsible for performing the inspection.
5. Acceptance criteria (explicit or by reference) obtained from specifications, drawings, supplier instructions, and construction standards.
6. A description of the method of inspection and equipment to be used or reference to an appropriate procedure.

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7. Identification of frequency of inspection or sampling plan.
8. Record of results of the inspection, including any special documentation, and sign-off by the inspector.
9. Verification that all inspection operations are complete and acceptable.

The personnel qualification procedures establish inspection personnel qualification programs and include provisions to maintain and periodically review records of inspectors' qualifications to ensure that they are kept current. The inspection personnel qualification program is described in Section 2 of this Report.

Inspections of modifications, repairs, and replacements are performed either in accordance with the original inspection procedure, instruction or plan, or special procedures or plans appropriate to the work activity.

10.1 NQA-1-1994 COMMITMENT

In establishing inspection requirements, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 10 NQA-1-1994 Commitment and Supplement 10S-1 and Subpart 2.4. In addition, Bechtel commits to compliance with the requirements of Subparts 2.5 and 2.8 for establishing appropriate inspection requirements.

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SECTION 11 TEST CONTROL

Engineering drawings, specifications, or test procedures shall identify tests that are required for qualifying, demonstrating, or assuring the quality of procured items or completed construction.

Construction tests are an extension of construction inspection. Construction testing is conducted to demonstrate that the equipment installation is complete and that the electrical systems are properly wired. Test procedures will include, consistent with the effect on safety, (1) instructions and prerequisites to perform the test, (2) use of proper test equipment, (3) acceptance criteria, and (4) mandatory verification points as necessary to confirm satisfactory test completion. Test plans or procedures and test reports and records are used to demonstrate that completed tests have met test objectives.

System cleaning, flushing, instrument and control settings, and performance demonstration are part of the preoperational and start-up test program. Preoperational and start-up testing is normally under the control of the client. Bechtel start-up engineers may provide assistance to the client in the preparation of start-up procedures and supervision of start-up tests. Bechtel start-up engineers are independent of the construction and of the client's operating organization and are qualified to collect, analyze, and evaluate test results in accordance with the requirements of Section 2 of this Report.

11.1 NQA-1-1994 COMMITMENT

In establishing provisions for testing, Bechtel commits to compliance with NQA-1-1994, Basic Requirement and Supplement 11S-1

11.2 NQA-1-1994 COMMITMENT FOR COMPUTER PROGRAM TESTING

Bechtel establishes and implements provisions to assure that computer software used in applications affecting safety is prepared, documented, verified and tested, and used such that the expected output is obtained and configuration control maintained. To this end Bechtel commits to compliance with the requirements of NQA-1-1994, Supplement 11S-2 and Subpart 2.7 to establish the appropriate provisions.

**SECTION 12
CONTROL OF MEASURING AND TEST EQUIPMENT**

The Bechtel Construction Quality Control Program provides for control of calibration, maintenance, and use of measuring and test equipment (M&TE) by Bechtel in construction. Procedures provide for unique identification of each instrument or equipment item requiring calibration or checking; establishment of calibration schedules based upon the elapsed time or usage cycles; and provisions for identification of calibration status by tags, labels, or markings applied to the item or other controls to indicate its calibration status and to ensure its traceability to calibration test data. Records are maintained to show the status of items under the calibration program.

Inspection procedures require that the inspector check calibration labels or tags as well as apparent proper functioning of the instrument prior to use to assure that the calibration period has not lapsed and the equipment is in proper working order.

The identification of measuring and test equipment used in performing tests is entered in the test records when the validity of the test result is critically dependent on the accuracy of the test equipment.

Calibration standards are traceable to nationally recognized standards, or the basis for calibration is properly documented. Calibration standards have an uncertainty (error) requirement of no more than $\frac{1}{4}$ of the tolerance of the intended use of the equipment being calibrated. A greater uncertainty (error) is acceptable when limited by the state of the art.

Provisions for contractor's control of measuring and test equipment are included in procurement documents by specifying ASME NQA-1 Basic Requirement 12 and Supplement 12S-1. The Bechtel quality surveillance program of contractor's activities includes review of this element in the contractor's program. Contractors are required to apply practices similar to those described for the Bechtel program. The suppliers of commercial-grade calibration services shall be controlled as described in Section 7 of this report.

Performance and adequacy of supplier, contractor, subcontractor, and Bechtel construction programs for control of measuring and test equipment are verified by Bechtel Supplier Quality, Quality Control, or Quality Assurance personnel, as applicable.

12.1 NQA-1-1994 COMMITMENT

In establishing provisions for control of measuring and test equipment, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 12 and Supplement 12S-1 with the following clarification:

The out of calibration conditions described in paragraph 3.2 of Supplement 12S-1 are interpreted as "when the M&TE is found out of the required accuracy limits, i.e. out of tolerance, during calibration."

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SECTION 13 HANDLING, STORAGE, AND SHIPPING

The requirements for packaging, marking, and shipping are specified in procurement documents by reference to ANSI/ASME NQA-1-1994, Basic Requirement 13 and Supplement 13S-1 or by provision of specific technical requirements which meet the intent of this standard.

Procedures include appropriate requirements for equipment and system cleaning and flushing and cleanness controls.

For supplier, contractor, or subcontractor work, special handling, storage, shipping, and preservation requirements are identified in technical specifications which either provide, or require the supplier, contractor, or subcontractor to provide, the required procedures and instructions. The packaging, handling, and shipping practices of the suppliers are subject to review by Bechtel Supplier Quality Representatives at the source prior to shipment for compliance with requirements defined in procurement documents.

At the construction site, materials and equipment are received, inspected, stored, and maintained in accordance with standard field procedures supplemented by special procedures and requirements issued by Project Engineering or furnished by suppliers. Materials and equipment are physically inspected upon arrival at the jobsite and moved into prescribed storage areas or to the installation site if adequate protection is available. Special environmental conditions, such as inert gas, specific moisture content levels, and temperature levels prescribed in procedures or specifications, are controlled at the site.

Procedures are provided, as appropriate, for handling special items and for the care and maintenance of material handling equipment. Otherwise, standard material handling methods are used to ensure care and protection against physical damage. Special handling instructions and procedures for major or special items are included in procedures reviewed by Project Engineering or Bechtel construction specialists. Personnel responsible for handling these major or special items will be qualified to the extent required by these special handling instructions and procedures. Preparation for and performance of rigging operations involving major equipment, such as reactor vessels, steam generators, and pressurizers, are witnessed by Bechtel construction rigging specialists.

13.1 HOUSEKEEPING

Housekeeping practices are established to account for conditions or environments that could affect the quality of structures, systems and components within the plant. This includes control of cleanness of facilities and materials, fire prevention and protection, disposal of combustible material and debris, control of access to work areas, protection of equipment, radioactive contamination control and storage of solid radioactive waste. Housekeeping practices help assure that only proper materials, equipment, processes and procedures are used and that the quality of items is not degraded. Necessary procedures or work instructions, such as for electrical bus and control center cleaning, cleaning of control consoles, and radioactive decontamination are developed and used.

13.2 NQA-1-1994 COMMITMENT

In establishing provisions for handling, storage and shipping, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 13 and Supplement 13S-1. *Bechtel* also commits, during the construction and pre-operational phase of the plant, to compliance with the requirements of NQA-1-1994, Subpart 2.2, with the clarifications and exceptions shown below

In addition, *Bechtel* commits, during the construction and pre-operational phase of the plant, to compliance with the requirements of NQA-1-1994, Subpart 2.1, to establish appropriate

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provisions for the cleaning of fluid systems or air systems and associated components with the following clarifications and exceptions

- NQA-1-1994, Subpart 2.1
 - Subpart 2.1, Section 2.1, Planning: The required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the standard. Individual plans for each item or system are not normally prepared unless the work operations are unique. However, standard procedures or plans will be reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve required quality. However, final cleaning or flushing activities will be performed in accordance with procedures specific to the system.
 - Subpart 2.1, Section 5, Pre-installation Cleanliness: This section states, "From a cleanliness standpoint, consideration shall be given as to whether items should be delivered to the point of installation site sooner than necessary, i.e., whether the installation location is a better storage area..." As an alternate to this requirement, items may be delivered to the installation site sooner than ~~absolutely~~ necessary when determined to be advantageous for other considerations, for example, reduced handling or easier access, thereby reducing susceptibility to handling damage. In all such cases, equipment stored in place will be protected in accordance with Section 6 of Subpart 2.1.
- NQA -1-1994, Subpart 2.2
 - Subpart 2.2, Section .2.2, Classification of Items: The four-level classification system may not be used explicitly. However, the specific requirements for each classification as specified in the standard will be applied to the items suggested in each classification and for similar items.

Classification differing from Section 2.2 will be considered acceptable provided no degradation is assured; for example, electric motors designed for outside service may be stored in a level C area rather than a level B.
 - Subpart 2.2, sections 3.2 and 3.5: For items in storage the packaging requirements described under section 3, Packaging, may include alternate methods of affording required protection such as maintaining a storage atmosphere free from harmful contaminants in concentrations that could produce damage to the stored items, thereby utilizing storage practices that obviate the need for capping all openings
 - Subpart 2.2, Section 3.4.2, Inert Gas Blankets: There may be cases involving large or complex shapes for which an inert or dry air purge flow is provided rather than a static gas blanket in order to provide adequate protection due to difficulty of providing a leak proof barrier. In these cases, a positive pressure purge flow may be utilized as an alternative to the leak proof barrier.
 - Subpart 2.2, Section 8: The control of documentation and records shall be in accordance with Section 17 of this report.
- NQA-1-1994, Subpart 2.3
 - Alternative equivalent zone designations and requirements may be utilized to cover those situations not included in Subpart 2.3; for example, situations in

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which shoe covers and/or coveralls are required but material accountability is not. In addition, zones might be combined into the next more restrictive category in order to reduce total number of zones.

**SECTION 14
INSPECTION, TEST, AND OPERATING STATUS**

Construction procedures and inspection instructions provide for identification of inspection status of receipt inspection or work-in process by using work sequence plans, inspection records, physical locations, tags, markings, or other devices compatible with the item, system, or operation being inspected or tested. Progress of work is entered in records, and status identification is changed to reflect current conditions. At the completion of construction, a tagging system is employed to visually indicate the operating status of equipment and systems which are in test or rework. Records of test results are prepared and maintained.

Work is performed according to prescribed sequences required to assure quality and in accordance with the provisions contained in this report. Inspection points may be deferred or waived without generation of a nonconformance report only when specifically provided for in the governing procedure. Inspection points can be deferred only when the element can be inspected at a later time in the sequence and later hold point exits. In these cases, the inspection records or checklists are not completed until the inspection point is picked up at a later date. If physical control of the item is required to prevent its inadvertent use or installation beyond the point where the inspection can be performed, the item is tagged or otherwise identified and conditionally released with a limit placed on future work operations.

Temporary modifications, such as temporary bypass lines, electrical jumpers, lifted electrical leads, and temporary trip point setting, are controlled by approved procedures which include a requirement for independent verification.

Procedures or instructions include identification of the individuals or groups responsible for application and removal of status indicators.

Field Engineering and supervisory personnel are authorized to apply and remove identifying tags, markings, and labels on equipment in accordance with approved field procedures. Quality Control personnel are the only ones authorized to direct application and removal of inspection status indicators. Bechtel, in cooperation with the plant owners' operating personnel, establishes a tagging procedure which delineates those authorized for applying and removing tags during preoperational testing phases.

14.1 NQA-1-1-1994 COMMITMENT

In establishing measures for control of inspection, test, and operating status, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 14.

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SECTION 15 NONCONFORMING ITEMS

Suppliers and subcontractors are required to advise Bechtel of all nonconformances from procurement documents or Bechtel-approved designs for which the recommended disposition is “repair” or “use as is.” Bechtel reserves the right to accept or reject the disposition. Bechtel requires suppliers to submit proposed repair procedures for major nonconformances for approval by Project Engineering prior to their use. Reports of nonconformances identified by Bechtel personnel are prepared by the supplier, Bechtel Supplier Quality Representatives, or Project Engineering to assure complete and adequate documentation. Copies of completed nonconformance reports are forwarded to the jobsite prior to, or with, the release of the item; or list of outstanding nonconformances is included in the Supplier Quality Representative’s release.

Nonconformances discovered during Bechtel receiving inspection or construction activities are controlled and documented in accordance with a standard Quality Control procedure. The procedure provides for identification and documentation of the nonconformance and control of the item, identifies the authority for approval of proposed resolution, and provides for documentation of re-inspection results. Important elements of the procedure include requirements to:

1. Tag and segregate whenever practical.
2. Determine interim disposition by Project Field Engineering.
3. Have Project Engineering approve “repair” or “use as is” dispositions.
4. Advise Project Engineering after implementation for standard pre-approved repair procedures.
5. Provide conditional release of nonconforming items upon approval of Quality Control and Quality Assurance maintaining identification of the item and documenting the basis for such release.
6. Review of completed nonconformance reports by Quality Assurance to establish need for corrective action. Significant trends are reported to management in accordance with construction procedures.

The authority for disposition of nonconforming items follows the rules for approval of design changes described in Section 3 of this report. Field Engineering personnel are authorized to provide for disposition involving “reject,” “rework” (if Bechtel performed the original work), or “repair” (for those cases where standard pre-approved repair procedures have been provided by Project Engineering). Other “repair” and “use as is” dispositions require Project Engineering approval prior to their implementation. Quality Control is responsible for review and verification of the disposition, including re-inspection of rework and repair dispositions applying inspection processes at least equivalent to that applied to the original work. “Use as is” dispositions must be referred to the responsible design group for approval. “Repair” or “use as is” dispositions on nonconformances to procurement requirements at a supplier’s plant must be approved by Project Engineering.

Nonconforming items discovered at final inspection which cannot be corrected by rework or completion of originally prescribed processing are required to be identified, tagged, and/or segregated. Discrepancies in work not yet submitted for final inspection and which can be corrected by rework or completion of work processes is not considered to be nonconforming. For construction work performed by Bechtel, no further work can proceed on the nonconforming item until an approved disposition is implemented or a conditional release is approved by

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Construction Quality Control and Quality Assurance. Suppliers, contractors, or subcontractors, as required by procurement documents, apply similar procedures involving their quality assurance functions.

The program also provides for the participation of the ASME Authorized Inspector for nonconformance dispositions on Code covered items.

15.1 REPORTING REQUIREMENTS

Bechtel procedures provide necessary measures for implementing reporting program which conforms to the requirements of 10 CFR 50.55(e) and 10 CFR Part 21.

15.2 NQA-1-1994 COMMITMENT

In establishing measures for nonconforming materials, parts, or components, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 15 and Supplement 15S-1.

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SECTION 16 CORRECTIVE ACTION

The corrective action program provides procedures for prompt identification, documentation and correction of conditions adverse to quality, which may require corrective action. Corrective action, when initiated, shall be documented. A decision that corrective action is not required need not be documented.

Procedures or instructions include the requirement for identifying, documenting and correcting conditions adverse to quality. All personnel whose activities affect quality participate in the identification of such conditions.

Within the Bechtel program, the identification of situations which may need corrective action is accomplished through review of nonconformance reports, supplier surveillance activities, quality assurance surveillance and monitoring programs, and quality assurance audits. For significant conditions, including any identified significant adverse trends in quality performance, corrective action is [controlled/identified](#), documented and reported to appropriate level of management in accordance with the associated procedure. These provide for (a) the identification and reporting by any member of or external to the project team of situations or occurrences which warrant corrective action, (b) determination of the cause and identification of the corrective action to preclude recurrence to be taken by the responsible organization, (c) reporting the cause and corrective action to proper level of management, (d) verification that corrective action has been taken, and (e) review by the responsible organization for implication or effect on other work.

Errors detected after the design document is issued for use are reviewed for significance and are documented. Corrective action for such significant errors, including evaluation for reportability, is processed in accordance with the corrective action procedure.

16.1 REPORTING REQUIREMENTS

Bechtel procedures provide necessary measures for implementing reporting program which conforms to the requirements of 10 CFR 50.55(e) and 10 CFR Part 21, as applicable.

16.2 NQA-1-1994 COMMITMENT

In establishing provisions for corrective action, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 16.

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SECTION 17 QUALITY ASSURANCE RECORDS

Records produced during various stages of a nuclear power plant activities within the Bechtel scope of work and covered by the quality program described in this report are prepared and maintained by project groups, suppliers, and subcontractors as their work is being performed.

The records system(s) is defined, implemented, and enforced in accordance with written procedures, instructions, or other documentation. Records may be hard copy or electronic records. The term “record(s)” used throughout this section is to be interpreted as “Quality Assurance Record(s),” unless otherwise specified. When full processing is complete and issued for design, use, fabrication, manufacturing and construction a document is considered complete and is a Quality Assurance Record.

The records management program provides provisions for the administration, receipt, storage, preservation, safekeeping, retrieval, and disposition of all records. Requirements and responsibilities for record transmittal, location, distribution, retention, access controls, user privileges, maintenance, and disposition are described.

Documentation of the design review process is prepared and maintained in accordance with Section 3 of this report. Design changes may be issued on an interim basis by means of change notices. However, these are ultimately incorporated in revisions to the governing documents, unless the change is a limited waiver (e.g., “use as is” on a nonconformance report) which does not generally apply to the design document. Documents are routinely provided to the client and at the completion of the project all final copies of the records are turned over to the client. Bechtel Engineering retains control of design calculations and analyses. These are available for review by client and appropriate regulatory bodies.

In some instances, with the agreement of Bechtel and the client, suppliers may be permitted to retain custody of certain records which identify as-built status and verify quality of the work if retention procedures and storage facilities are adequate and access is provided to the Bechtel client.

While they remain in Bechtel custody, files of completed quality verification records, including nonconformance reports for “repair” and “use as is” dispositions, are provided access to client and appropriate regulatory groups. At the completion of the Bechtel assignment, these records are turned over to the client.

The requirements and guidelines for receipt, control, and retention of permanent quality assurance records contained in ASME NQA-1-1994 and ASME Boiler and Pressure Vessel Code, Section III, are employed for the control of construction site quality record files. Identification of the records and method of turnover to the client are established for each project through agreement between Bechtel and the client.

17.1 ELECTRONIC RECORDS

When using electronic records storage and retrieval systems, Bechtel complies with NRC guidance Generic Letter 88-18, “Plant Record Storage on Optical Disks.” Bechtel will manage the storage of QA Records in electronic media consistent with the intent of RIS 2000-18 and associated NIRMA Guidelines TG 11-1998, TG15-1998, TG16-1998, and TG21-1998.

17.2 AUTHENTICATION

Documents are considered valid records only if stamped, initialed, authenticated, or signed and dated by authorized personnel. This authentication may take the form of a statement by the responsible individual or organization. Handwritten signatures are not required if the document is clearly identified as a statement by the reporting individual or organization. These records

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may be originals or reproduced copies. For electronic records, authentication is accomplished by manually affixing seal, signature, an electronic representation (user ID/password combination, digital signature) or other acceptable process control that ensures genuineness, validity, or reliability.

17.3 NQA-1-1994 COMMITMENT

In establishing provisions for records, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 17 and Supplement 17S-1, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 17S-1
 - Supplement 17S-1, section 4.2(b) requires records to be firmly attached in binders or placed in folders or envelopes for storage in steel file cabinets or on shelving in containers. For hard-copy records maintained by Bechtel, the records are suitably stored in steel file cabinets or on shelving in containers, except that methods other than binders, folders or envelopes may be used to organize the records for storage.

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SECTION 18 AUDITS

A comprehensive program of audits is planned and conducted by Bechtel covering the various activities of the Quality Assurance Program.

18.1 AUDIT PERFORMANCE

The Bechtel internal audit program consists of audits conducted by Quality Assurance personnel assigned to projects at the plant site or home office as well as Quality Assurance management audits performed by personnel independent of project activities. The combination of project and Quality Assurance management audits of Bechtel activities satisfy the requirement for Bechtel internal audits of the applicable elements of the Quality Assurance Program. Design and construction phase projects' activities conducted prior to placing the facility in operation are audited at least annually or once within the life of the activity, whichever is shorter. For projects involving activities conducted after placing the facility in operation, audits of applicable safety-related activities within Bechtel's scope of work will be performed on a 2-year frequency or at least once within the life of the activity. The internal audits are planned, scheduled and documented. Following activities are audited by Quality Assurance personnel:

1. Project Engineering and Procurement activities.
2. Construction activities, post-operational modifications, and maintenance.
3. Engineering activities that are performed by personnel not assigned to Project Engineering teams.
4. Supplier Quality activities.

Results of these audits are documented and reported to cognizant management of the audited group and to Quality Assurance management.

The audits will verify compliance and effectiveness of implementation of Bechtel policies, department and project procedures and instructions, including associated record keeping. The audit system is reviewed periodically and revised as necessary to assure coverage commensurate with current and planned activities.

The Bechtel external audit program includes audits of suppliers' activities conducted by Supplier Quality personnel and audits of subcontractors' (contractors on Construction Management jobs) and design consultants' activities, as appropriate, by Quality Assurance or Supplier Quality personnel. Supplier and subcontractor audits are described in Section 7

These audits are planned, scheduled, and documented. Results are reported to cognizant Bechtel management and the audited organization's management.

Audit frequencies vary, depending upon the nature and importance of the activity being performed and results achieved. Audits of activities are initiated early enough in the project cycle to assure effective implementation of the Quality Assurance Program, typically within 3 to 6 months after the start of work on activities affecting quality, and continue at regular intervals throughout the duration of the activity. The audit schedule is reviewed periodically and revised as necessary to ensure that coverage is maintained current.

A grace period of 90 days may be applied to annual evaluations and supplier audits that must be performed on a triennial basis. However, after the application of grace period the succeeding audit shall be scheduled based on the original audit performance date. Audit schedules are based on the month in which the audit starts. If, however, a subsequent contract or a contract modification significantly enlarges the scope of or changes the methods or controls for activities

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performed by the same supplier, an audit of the modified requirements is conducted, thus starting a new triennial period.

Audits are accomplished using instructions, procedures or checklists by trained and qualified personnel not having direct responsibilities in the area ~~of~~ being audited under the direction of a qualified lead auditor. When procedures associated with the activities audited are identified in the audit report and are retained, the procedures are not required to be retained as records associated with the conduct of audits. If checklist(s) are used and the audit report identifies the activities audited and the audit results, contained in the checklist(s), the checklist(s) are not required to be retained.

Audits include an objective evaluation of quality-related practices, procedures, and instructions; activities and items; and review of documents, records, and ongoing activities to ensure that the QA program is effective and properly implemented. Audit findings are documented, reviewed with supervision having responsibility in the audit area, and reported to management.

Audit programs include provisions for identification of deficiencies, determination that corrective action is defined and follow-up to verify that timely corrective action has been taken and is effective.

18.2 NQA-1-1994 COMMITMENT

In establishing the independent audit program, Bechtel commits to compliance with NQA-1-1994, Basic Requirement 18 and Supplement 18S-1, [with the following clarification and exceptions:-](#)

- NQA-1-1994, Supplement 18S-1
 - NQA-1-1994, Supplement 18S-1, section 3.2 requires that in the case of internal audits, personnel having direct responsibility for performing the activities being audited shall not be involved in the selection of the audit team. In lieu of the requirements of Supplement 18S-1, section 3.2, –Bechtel commits to the requirements of NQA-1-2008, section 302, where audit personnel shall have sufficient authority and organizational freedom to make the audit process meaningful and effective.

SECTION 19
NON-SAFETY RELATED SSC QUALITY CONTROL

19.1 NON-SAFETY RELATED SSCs - SIGNIFICANT CONTRIBUTORS TO PLANT SAFETY

Specific program controls are applied to non-safety related SSCs, for which 10 CFR 50, Appendix B is not applicable, that are significant contributors to plant safety. The specific program controls consistent with applicable sections of the QAPD are applied to those items in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety.

The following clarify the applicability of the QA Program to the non-safety related SSCs and related activities, including the identification of exceptions to the QA Program described in Sections 1 through 18 taken for non-safety related SSCs.

19.1.1 Organization

The verification activities described in this section may be performed by the line organization, the QA or QC organizations are not required to perform these functions.

19.1.2 QA Program

QA requirements for non-safety related SSCs are contained in this report and appropriate procedures. Suppliers of these SSCs or related services describe the quality controls applied in appropriate procedures; a new or separate QA program is not required.

19.1.3 Design Control

Design control measures are established to ensure that the contractually established design requirements are included in the design. These measures ensure that applicable design inputs are included or correctly translated into the design documents, and deviations from those requirements are controlled. Design verification is provided through the normal supervisory review of the designer's work.

19.1.4 Procurement Document Control

Procurement documents for items and services obtained by or for Bechtel shall include or reference documents describing applicable design bases, design requirements, and other requirements necessary to ensure component performance. The procurement documents are controlled to address deviations from the specified requirements.

19.1.5 Instructions, Procedures, and Drawings

Written instructions, drawings, vendor technical manuals, and special instructions in work orders, direct the performance of activities affecting quality. The method of instruction employed will provide an appropriate degree of guidance to the personnel performing the activity to achieve acceptable functional performance of the SSC.

19.1.6 Document Control

Controls are established for the issuance and change of documents that specify quality requirements or prescribe activities affecting quality to ensure that correct documents are used. These controls include review and approval of documents, identification of the appropriate revision for use, and measures to preclude the use of superseded or obsolete documents.

19.1.7 Control of Purchased Material, Equipment, and Services

Measures are established, such as inspection of items or documents upon receipt or acceptance testing, to ensure that all purchased items and services conform to appropriate procurement documents.

19.1.8 Identification and Control of Materials, Parts, and Components

Measures are established where necessary, to identify purchased items and preserve their functional performance capability. Storage controls take into account appropriate environmental, maintenance, or shelf life restrictions for the items.

19.1.9 Control of Special Processes

Process and procedure controls are established for special processes, including welding, heat treating, and nondestructive testing. These controls are based on applicable codes, standards, specifications, criteria, or other special requirements for the special process.

19.1.10 Inspection

Documented instructions are established to ensure necessary inspections are performed to verify conformance of an item or activity to specified requirements or to verify that activities are satisfactorily accomplished. These inspections may be performed by personnel in the line organization through the process that utilizes knowledgeable personnel to perform the verification function.

19.1.11 Test Control

Measures are established to identify required testing that demonstrates that equipment conforms to design requirements. These tests are performed in accordance with test instructions or procedures. The test results are recorded, and authorized individuals evaluate the results to ensure that test requirements are met.

19.1.12 Control of Measuring and Test Equipment (M&TE)

Measures are established to control M&TE use, and calibration and adjustment at specific intervals or prior to use.

19.1.13 Handling, Storage, and Shipping

Measures are established to control the handling, storage, cleaning, packaging, shipping, and preservation of items to prevent damage or loss and to minimize deterioration. These measures include appropriate marking or labels, and identification of any special storage or handling requirements.

19.1.14 Inspection, Test, and Operating Status

Measures are established to identify items that have satisfactorily passed required tests and inspections and to indicate the status of inspection, test, and operability as appropriate.

19.1.15 Control of Nonconforming Items

Measures are established to identify and control items that do not conform to specified requirements to prevent their inadvertent installation or use.

19.1.16 Corrective Action

Measures are established to ensure that failures, malfunctions, deficiencies, deviations, defective components, and nonconformances are properly identified, reported, and corrected.

19.1.17 Quality Assurance Records

Measures are established to ensure records are prepared and maintained to furnish evidence that the above requirements for design, procurement, document control, inspection, and test activities have been met.

19.1.18 Audits

Measures are established for line management to periodically review and document the adequacy of the process and take any necessary corrective action; audits independent of line management are not required. Line management is responsible for determining whether reviews conducted by line management or audits conducted by any organization independent of line management are appropriate. If performed, audits are conducted and documented to verify compliance with design and procurement documents, instructions, procedures, drawings, and inspection and test activities. Where the measures of this Section 19 are implemented by the same programs, processes, or procedures as the comparable activities of Sections 1 through 18, the audits performed under the provisions of Sections 1 through 18 may be used to satisfy the review requirements of this Section (19.1.18).

19.2 NON-SAFETY RELATED SSCs CREDITED FOR REGULATORY EVENTS

The following criteria applies to fire protection (10 CFR 50.48), anticipated transients without scram (ATWS) (10 CFR 50.62), the station blackout (SBO) (10 CFR 50.63) SSCs that are not safety related.

Quality requirements will be implemented to the fire protection system in accordance with Regulatory Position 1.7, “Quality Assurance,” in Regulatory Guide 1.189, “Fire Protection for Operating Nuclear Power Plants.”

Quality requirements will be implemented to ATWS equipment in accordance with Generic Letter 85-06, “Quality Assurance Guidance for ATWS Equipment That Is Not Safety Related.”

Quality requirements will be implemented to SBO equipment in accordance with Regulatory Position 3.5, “Quality Assurance and Specific Guidance for SBO Equipment That Is Not Safety Related,” and Appendix A, “Quality Assurance Guidance for Non-Safety Systems and Equipment,” in Regulatory Guide 1.155, “Station Blackout.”

