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June 10, 1983

Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Subject: Limerick Generating Station, Units 1 & 2
Docket Nos. 50-352 and 50-353

Dear Sir:

Pursuant to Section 50.55(f)(2) of the Commission's Regulations, enclosed are 3 copies of a document entitled "Limerick Generating Station Units 1 & 2 - Summary Description of the Quality Assurance Program for Design and Construction" dated June 10, 1983. This document contains the current description of the Quality Assurance Program being implemented for Limerick Units 1 & 2 for inclusion in the Preliminary Safety Analysis Report. It is identical in format to Appendix D to the Limerick PSAR and supersedes the Quality Assurance Program description contained therein. Differences from the PSAR description are identified by change bars in the right hand margin of the enclosed document.

REF: 1

The Quality Assurance Program for the operations phase described in Chapter 17 of the Limerick FSAR is currently under review by the NRC staff. Following issuance of an operating license, changes to this program will be reported pursuant to the requirements of Sections 50.54 and 50.71 of the Commission's Regulations.

Very truly yours,

Eugene J. Bradley

EJB/pkc
Enclosures

Copy to: See Attached Service List

REF: 1

cc: Judge Lawrence Brenner (w/enclosure)
Judge Richard F. Cole (w/o enclosure)
Judge Peter A. Morris (w/o enclosure)
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REF: 1

LIMERICK GENERATING STATION

UNITS 1 & 2

SUMMARY DESCRIPTION

OF THE

QUALITY ASSURANCE PROGRAM

FOR

DESIGN AND CONSTRUCTION

JUNE 10, 1983

REF: 1

APPENDIX D

QUALITY ASSURANCE PROGRAM

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APPENDIX D

QUALITY ASSURANCE PROGRAM

D.1 INTRODUCTION

Philadelphia Electric Company has the responsibility to assure that the Limerick Generating Station Units 1 and 2 are fabricated and constructed in accordance with applicable regulations, codes, and specifications. Accordingly, Philadelphia Electric has established a comprehensive quality assurance program which starts with the initial station design and carries through all phases of equipment procurement, fabrication, erection and construction. This program provides for review of specifications to insure that necessary quality control requirements are included and for the performance of quality assurance surveillance and audits to insure that specified requirements are met.

Philadelphia Electric has established an organization to implement this quality assurance program. The Philadelphia Electric Manager, Quality Assurance is responsible for coordinating the program to assure that all necessary quality control requirements and procedures are followed during all phases of design, shop fabrication, and site construction. The main participants in this quality assurance program, other than Philadelphia Electric itself, are General Electric Nuclear Energy Business Operation and Bechtel Corporation.

The Philadelphia Electric Manager, Quality Assurance is assisted by various consultants in monitoring the quality assurance performance of General Electric, the various divisions of Bechtel, and their subcontractors. A chart describing Philadelphia Electric's organization as related to the Quality Assurance Program is shown on Figure D.1.1.

The QA program described herein is modified as applied to the design and fabrication of the High Density Spent Fuel Storage Racks. Philadelphia Electric Company shall be responsible for developing the equipment specification for the Spent Fuel Storage Racks, for evaluating bids, vendor selection and procurement for review of the vendor's design, and for surveillance of the vendor up to the point of delivery at the construction site, at which time the Racks shall come under the Bechtel Construction QA/QC program. Philadelphia Electric Company shall issue procedures to control activities affecting quality which are performed by Philadelphia Electric and for surveillance of the vendor. The equipment specificaton shall impose appropriate QA program requirements on the vendor.

REF: 1

LGS

The Quality Assurance program described herein is modified as applied to the activities related to the Reactor Pressure Vessel (RPV) safe end removal and replacement and the Feedwater Closure Welds to the Reactor Pressure Vessel safe ends. Philadelphia Electric Company (PECO) shall be responsible for developing the administrative and quality assurance requirements, for preparing and issuing purchase orders, for review and approval of the subcontractor's Quality Assurance Plan and procedures, and for second level audit of the subcontractor's activities. PECO shall issue procedures to control the activities affecting quality which are performed by PECO and for audit of the subcontractor. The subcontractor shall issue procedures as required by the purchase order to control their activities which affect quality including first level inspection and audits. The technical requirements for the Reactor Vessel removal and replacement work are prepared by General Electric NEBO. The technical requirements for the welding and nondestructive examination of the Feedwater Closure Welds to the Reactor Vessel safe ends are supplied by Bechtel Power Corporation.

REF: 1

D.2 GENERAL

D.2.1 Scope and General Approach

The quality assurance program described herein applies to those structures, systems, and components of reactor facilities which are essential to the prevention of accidents which could affect the public health and safety or to mitigation of their consequences. Those structures, systems, and components which are considered as "essential" are listed in Table D.2.1.

The quality assurance program starts at the initial design phase with development of specifications and/or associated purchase documents which contain quality control and inspection requirements, and proceeds through the selection of the supplier, manufacture of the components or systems, and erection and installation. Specific quality control requirements cover such areas as material control, welding requirements, nondestructive testing requirements, provisions for comprehensive auditing of manufacturers' or constructors' efforts, the preparation and retention of quality control records, etc., and will be included, as appropriate, in the various specifications and/or associated purchase documents. General Electric-NEBO and Bechtel, as Philadelphia Electric's design contractors, are responsible for seeing that the necessary quality control requirements are included or referenced in the component and construction specifications and/or associated purchase documents for which they are responsible.

Where specifications include interfaces between major contractor responsibilities, quality control requirements will be jointly established.

Specifications and/or associated purchase documents pertaining to the "essential" items receive at least one independent review for evaluation of quality control requirements.

The selection of a component manufacturer or field erection and installation subcontractor is made only after it has been ascertained that his organization has the necessary quality control capability and the qualified personnel to provide the level of integrity required for the equipment or construction involved.

The quality control programs of component manufacturers, subcontractors, and Bechtel Construction are normally under the audit/surveillance of the Philadelphia Electric contractor (GE-NEBO or Bechtel) which is responsible for that portion of plant design. This quality assurance effort by the appropriate Philadelphia Electric contractor is in addition to the quality control and inspection programs of the individual manufacturer or site constructor. The purpose of this effort is to assure that the work of the various manufacturers and constructors is actually proceeding in accordance with the specification or other approved program requirements. A description of the Quality Assurance Programs of General Electric and Bechtel is contained in subsections D.5 and D.6 respectively.

In addition, to assure that the quality assurance program is functioning as desired, Philadelphia Electric conducts quality assurance audits on a spot-check basis, on the quality programs of General Electric-NEBO, Bechtel and their subcontractors.

D.2.2 Organization and Definition of the Philadelphia Electric Quality Assurance Program

Figure D.2.1 is an overall functional Quality Assurance Chart showing the working relationships between Philadelphia Electric and its contractors for the Limerick Generating Station. This Quality Assurance Program is divided into three levels. These levels are indicated on the left hand side of Figure D.2.1. The definitions and functions of the three levels indicated on the organization chart are described in the following subsections.

D.2.2.1 First Level - Quality Control and Inspection

The First Level is defined as the Quality Control and Inspection function. Component manufacturers are required contractually to have a quality control and inspection program. Bechtel Construction performs first level inspection on Bechtel site activities and selected on-site subcontract activities. Subcontractors are required to either provide a quality control and inspection program, or may have first level inspection performed by Bechtel Construction. Each inspecting agent has the responsibility to ensure that the fabrication/construction activities meet specification requirements.

For those cases that Bechtel Corporation Construction Division subcontracts site construction work (e.g. Containment Vessel), the subcontractors are required to either provide a quality control and inspection program, or may have first level inspection performed by Bechtel Construction. Bechtel Construction performs first level inspection on Bechtel site activities and selected on-site subcontract activities. Bechtel Construction performs a second level surveillance function on the subcontractor's Quality Control and Inspection efforts when first level surveillance is performed by the subcontractor. In certain cases where the subcontractor provides first level inspection, the Bechtel (second level) Quality Assurance or Quality Control surveillance function may not be considered necessary when Philadelphia Electric Company performs third level Quality Assurance Audits of a more comprehensive nature.

D.2.2.2 Second Level - Quality Assurance Surveillance

The Second Level, which is defined as a Quality Assurance Surveillance function, includes auditing and/or surveillance, performed by the Philadelphia Electric contractor (General Electric NEBO or Bechtel) which is responsible for furnishing the requirement specifications for materials, components, construction, and installation which in turn are used by the first level groups.

When Bechtel Corporation Construction Division subcontracts site construction work, the Quality Assurance Surveillance function is normally performed by Bechtel Corporation. In certain cases where the subcontractor provides first level inspection the Bechtel Quality Assurance second level Surveillance function may not be considered necessary when Philadelphia Electric Company performs second or third level Quality Assurance Audits of a more comprehensive nature.

The Philadelphia Electric contractors which perform this second level function each have quality assurance capability which is used by their respective organizations in assisting in this quality effort. This quality assurance capability includes personnel with technical backgrounds in appropriate disciplines (e.g., electrical, mechanical, civil).

REF: 1

D.2.2.3 Third Level - Quality Assurance Auditing

The Third Level is defined as the Quality Assurance Auditing function performed by Philadelphia Electric. Selected QA Consultants assist Philadelphia Electric in implementing this program. The purpose of this quality assurance function is to ensure that the overall Quality Assurance Program is functioning as planned. To accomplish this, Philadelphia Electric reviews, prior to order placement, specifications and associated purchase documents furnished by the design contractors (General Electric-NEBO and Bechtel) to ensure that the necessary quality requirements have been incorporated in these documents. In addition, on a spot-check monitoring basis, Philadelphia Electric performs quality assurance audits to ensure that the Quality Programs of the first and second level groups are actually functioning as required.

D.2.2.4 Program Plans

Detailed descriptions of the Philadelphia Electric, General Electric-NEBO, and Bechtel Power Corporation programs which contain guidelines, criteria, organizational responsibilities, and other pertinent information for the implementation of the Philadelphia Electric Quality Assurance program will be contained in the following quality assurance plans.

a. Philadelphia Electric Quality Assurance plan for Limerick Generating Station Units 1 and 2, Volume I.

b. General Electric-NEBO Boiling Water Reactor Quality Assurance Program Description, NEDO-11209.

c. Bechtel Nuclear Quality Assurance Manual.

The foregoing QA plans used to implement the quality assurance program described in the PSAR may be revised to incorporate improvements which evolve as experience is gained. These detailed quality assurance plans will be available to NRC personnel as they perform audits to evaluate the implementation of the Philadelphia Electric Quality Assurance Program.

D.2.2.5 Application of the Quality Assurance Program

The Quality Assurance program has been expanded to include the following systems and/or items of activity.

REF: 1

(1) Fire Protection

The Quality Assurance Program applies to fire protection equipment including fire sensing, fire suppression, emergency lighting, and communication equipment in safety related areas and in the main turbine lube oil reservoir area.

(2) Base-Line Preservice Inspection

This Quality Assurance program applies to the base line preservice inspection except that there will be a two level program concept instead of three level for actual base line inspection activity at the plant. The first level will be the subcontractors, including surveillance and auditing as contractually required. The Second Level is the PECO quality assurance auditing function.

(3) Pre-Operational Test Phase

The Quality Assurance Plan applies to the Pre-Operational Test Phase with two exceptions. These exceptions are; 1) that PECO Electric Production Department is responsible for the direction of the preoperational and acceptance tests conducted by the Startup organization and 2) the two level program concept will be used instead of the three level. The first level is that of the testers (quality control) and the 2nd level is the PECO quality assurance auditing (and where appropriate) QC inspection functions. Based on the fact that the pre-operational test phase responsibilities cover both Engineering and Research Department and the Electric Production Department activities, the audit responsibilities have been divided between the respective QA groups (Engineering and Research QA Section and Electric Production QA Division).

(4) High Density Spent Fuel Storage Racks

The quality Assurance Program applies to the design and fabrication of the "as modified" high density spent fuel storage racks.

REF: 1

(5) Reactor Vessel Safe End Removal and Replacement and Feedwater Closure Weld to Reactor Vessel Safe End

The Quality Assurance program is applied to the activities related to the Reactor Pressure Vessel (RPV) safe end removal and replacement and the Feedwater Closure Welds to the Reactor Pressure Vessel safe ends as described in the Quality Assurance Plan. Philadelphia Electric Company (PECO) shall be responsible for developing the administrative and quality assurance requirements, for preparing and issuing purchase orders, for review and approval of the subcontractor's Quality Assurance Plan and procedures, and for second level audit of the subcontractor's activities. PECO shall issue procedures to control the activities affecting quality which are performed by PECO and for audit of the subcontractor.

(6) Emergency Response Facilities Data Acquisition System (ERFDS)

The quality assurance program is applied to the purchase of the ERFDS as described in the Quality Assurance Plan. PECO shall be responsible for developing the purchase specification, for evaluating bids, vendor selection and procurement, for review of the vendor's design and for audit of the vendor's design and field activities.

REF: 1

LGS

TABLE D.2-1

SUMMARY Q-LIST

I. Civil-Structural

Reactor Building
Primary Containment
Diesel-Generator Building, Control Room Area
Complex and Intake Structure Housing Critical Pumps
Diesel Fuel Storage Facilities
Supports for Nuclear Class I and II System Components
Spent Fuel Pool

II. Mechanical

Reactor Assembly

Fuel Assembly
Reactor Vessel
Reactor Vessel Support
Reactor Vessel Stabilizer
Shroud and Shroud Support, including Core Spray Sparger
Core Spray Line
Core Support
Top Guide
Orificed Fuel Support
Control Rod including Velocity Limiter
Control Rod Drive
Control Rod Drive Housing
Control Rod Drive Housing Support
Jet Pump Assembly
Power Range Neutron Detectors
LCPI Coupling Flange

Nuclear Boiler System

Reactor Vessel Relief Valves
Reactor Vessel Safety Valves
Main Steam Line Flow Restrictors
Main Steam Piping and Isolation Valves
Main Steam Line Suspension
Selected Instrumentation
Selected Valves

REF: 1

Reactor Recirculation System

Recirculation Pumps
Recirculation Valves
By-Pass Valves
Recirculation Piping
Recirculation Loop Suspension
Recirculation Loop Restraints
Selected Instrumentation

Control Rod Hydraulic System

Portions of the Hydraulic Control System necessary for Scram.

Standby Liquid Control Systems

Standby Liquid Control Tank
Accumulator
Pumps
Explosive Valves
Selected Instrumentation
Selected Piping, Valves and Suspension

Neutron Monitoring System

Intermediate Range Monitor
Average Power Range Monitor including Local Power Range Monitor Inputs

Residual Heat Removal System

Heat Exchangers
Pumps
Selected Instrumentation
Selected Piping, Valves and Suspension

RHR Service Water System

RHR Service Water Pumps
RHR Service Water Piping, Valves and Suspension
Instrumentation

REF: 1

Core Spray System

Core Spray Pumps
Selected Instrumentation
Selected Piping, Valves and Suspension

High Pressure Coolant Injection System

HPCI Pump
HPCI Turbine
Selected Instrumentation
Selected Piping, Valves and Suspension

Reactor Core Isolation Cooling System

RCIC Pump
RCIC Turbine
Selected Instrumentation
Selected Piping, Valves and Suspension

Primary Containment and Reactor Vessel Isolation Control System

Trip Systems A and B
Isolation Initiation Channels

Incident Detection Circuitry

Core Standby Cooling Systems Initiating Channels and Logic
Automatic Depressurization System Initiating Channels and Logic

Drywell Drain Isolation Valves

Reactor Water Cleanup System

Piping, Valves, Suspension and Instrumentation within Primary Pressure Boundary

Service Water Systems

Serving Engineered Safeguards Equipment

Reactor Building Recirculation System

Fans
Duct Work and Pipe including Reactor Building Vent
Valves and Dampers
Instrumentation

High Density Spent Fuel Storage Racks

Standby Gas Treatment System

Fans and Filters
Duct Work and Pipe
Valves and Dampers
Suspension System
Instrumentation

Cooling System for:

RCIC, HPCI
RHR and Core Spray Rooms

Control Room Ventilation Supply System

Emergency Switchgear Room Ventilation

Reactor Building Isolation Control System

Reactor Building Recirculation System

Primary Containment Atmosphere Control System through Isolation Valve

Reactor Building Crane

III. Electrical

Standby Diesel Generator

Including Cooling and Fuel Supply Systems

Electrical Power System Associated with Safety Related System

Control Room Panels (Safety Related)

Local Panels and Racks (Safety Related)

REF: 1

LGS

D.3 PHILADELPHIA ELECTRIC COMPANY QUALITY ASSURANCE PROGRAM

The Philadelphia Electric quality assurance program has been developed with the NRC quality assurance criteria as its basis. It provides a systematic, controlled method of applying applicable portions of the NRC criteria at all levels of the Limerick project and establishes a means of follow-up and evaluation to ensure that the intent of these criteria are actually met.

More specifically, Philadelphia Electric requires of its contractors, General Electric-NEBO and Bechtel Corporation, that they meet the provisions of the NRC criteria and that the applicable requirements be invoked upon their Vendors. The plant constructor and site subcontractors are required to meet the same type of quality control provisions. This is accomplished as follows:

a. Quality control provisions are specifically applied to first level vendors, through a generic quality assurance specification (Bechtel Corporation) or specific quality control plans (General Electric) coupled with provisions of applicable specifications, drawings, and purchase documents. The contractors will designate the essential equipment depending upon such considerations as the safety related function to be performed, its importance to the overall system, and whether it is duplicated in redundant installation. Appropriate NRC criteria will be applied to each component.

b. The quality control requirements to be placed on key vendors, the constructor, and selected site subcontractors will be reviewed by Philadelphia Electric.

c. The quality control capability of potential vendors will be evaluated by General Electric-NEBO and Bechtel.

d. The Philadelphia Electric three level quality assurance program identifies a clear line of responsibility for implementing quality requirements and provides a means for ensuring that the quality requirements specified are being met. This, the first level vendors, the constructor, and the site subcontractors are required to have their own inspection and quality control efforts to assure that specifications and other requirement documents are met. The second level quality assurance audit or surveillance functions performed by General Electric-NEBO and Bechtel provides a means for ensuring the work carried out by the vendors, constructor, and subcontractors meet specified requirements. Finally, the third level Philadelphia Electric quality assurance effort provides a separate and independent monitoring of the overall QA program to ensure that it is functioning as planned.

e. Pertinent inspection, quality control, and quality assurance documentation will be maintained for this project.

REF: 1

The Philadelphia Electric Manager, Quality Assurance is responsible for coordinating the quality assurance program. The Philadelphia Electric Manager, Quality Assurance has the authority to stop work. The overall organization of this program is shown on Figure D.2.1 Philadelphia Electric will station Quality Assurance Engineers at the construction site to audit the construction and installation work. These site Quality Assurance Engineers report to Philadelphia Electric Manager, Quality Assurance. Assistance from Philadelphia Electric Engineering and Research Department engineers is available to the Manager, Quality Assurance.

Various divisions of the Philadelphia Electric Company or consultants assist the Philadelphia Electric Manager, Quality Assurance in monitoring the overall Quality Assurance Program. Philadelphia Electric has retained selected QA consultants to assist in monitoring this program. This assistance is in conjunction with the quality functions that are performed by Philadelphia Electric and its contractors and their subcontractors, as follows:

a. Review of specifications, drawings, procedures, inspection check-off lists, and other pertinent documents to assure that the quality control and test requirements for components and systems are included.

b. Periodic quality assurance audits and checks at manufacturer's plants and at the site to evaluate the performance of Philadelphia Electric contractors and subcontractors in implementing the specified quality control and testing requirements and maintaining necessary records.

c. Witness, on a spot-check basis, tests on components and systems.

In the performance of the Quality Assurance tasks the QA consultants will advise the Philadelphia Electric Manager, Quality Assurance or the Philadelphia Electric site Quality Assurance Engineers, as appropriate, of any deviations or deficiencies found during quality assurance audits of component fabrication and site construction, so that corrective action can be taken without delay.

Philadelphia Electric uses written procedures or checklists for reviewing documents and performing quality assurance audits. The reviews, audits, and follow-up action are documented.

Beginning February 1983, Philadelphia Electric initiated the performance of field quality control inspections.

These PECO QC inspections are performed on the various systems as completed by Bechtel and turned over to PECO for field test and calibration of instruments. The inspections are documented on a Quality Control Inspection Checklist (QCIC).

REF: 1

LGS

D.4 FIRST LEVEL ORGANIZATION QUALITY CONTROL REQUIREMENTS

When deemed appropriate by Bechtel and General Electric-NEBO the equipment vendors and subcontractors will be required by the applicable equipment or construction specifications and/or associated purchase documents to have a quality control program. In addition, Bechtel Construction will have a Quality Control Program. These programs shall cover the necessary quality control requirements for the fabrication, installation, testing, or construction of the "essential" portions of the plant and shall include appropriate elements of the following items:

D.4.1 Organization

The vendor (in this subsection, the term "vendor" shall include Bechtel site subcontractors) shall have a quality control organization which has the authority and responsibility for seeing that the quality control program is established, planned and implemented. The quality control organization shall delineate its responsibility and duties in writing and shall provide sufficient organizational freedom to permit identification of quality control problems and initiation of appropriate corrective action.

D.4.2 Planning

The vendor, during the earliest practical phase of contract performance, shall conduct a review of the requirements of the contract and take timely action to ensure that necessary quality control procedures and provisions are established in accordance with the applicable specifications, codes and standards. In particular, the vendor shall make timely provisions for having the required qualified personnel available and written procedures of this program in effect prior to their actual use in manufacturing or fabrication of the item under contract.

Bechtel and General Electric will judge quality assurance programs against the quality assurance requirements invoked in the specifications and purchase orders. In addition, Philadelphia Electric will monitor this work to assure that an adequate evaluation has been made.

The adequacy of the implementation of these programs is assessed by the surveillance or auditing performed by the second level contractors. Philadelphia Electric, through spot check audits, will evaluate the adequacy of implementation of vendor and second level quality assurance programs.

D.4.3 Control of Special Processes, Tests and Inspections

1. The vendor shall operate under a controlled manufacturing system and shall have written procedures or instructions for control of special fabrication and construction processes such as welding, heat treatment, cleaning, control of tools and fixtures, weld electrode control, concrete production and placement, special equipment installation at the construction site, etc.

2. The vendor shall have written procedures for control of the required testing and inspection programs on the item under contract. These procedures shall cover all nondestructive testing (radiography, magnetic particle, liquid penetrant, ultrasonic, etc.) weld fit-up inspections, soap bubble tests, hydrostatic tests, etc.

REF: 1

D.4.4 Control and Identification of Material, Parts, and Components

The vendor shall have written procedures for assuring the control, identification, and location of materials, parts, and components used in the finished item under contract.

D.4.5 Control of Purchased Material, Equipment and Services

The vendor shall have written procedures to assure the control of purchased material, equipment, and services, including such items as purchase documents, receiving inspection, identification and certification of incoming material and equipment to insure that it conforms to the requirements of the purchase specification. In addition, the vendor is responsible for assuring that supplies and services procured from his subvendors conform to the contract requirements considered applicable. The vendor shall further provide for the submittal of required quality plans and documentation from his subvendors and shall, as appropriate, obtain the right of source inspection and visitation for himself and/or his representatives.

D.4.6 In-Process and Final Inspection

The vendor shall have written and documented In-Process and Final Inspection Programs for the item under contract. As a portion of these plans, the vendor shall establish an inspection and testing plan, check-off lists, or other suitable systems to assure that required inspection and tests are performed and to provide records of their performance. Such plans shall indicate, as appropriate, inspection points to be witnessed and witnessing organizations.

D.4.7 Control of Inspection Status

The vendor shall have a system designed to assure that the current inspection status of the item under contract is known at all stages in the production process. This may be accomplished by means of stamps, tags, routing cards, multicolor tape, or other suitable methods.

D.4.8 Control of Measurements, Inspection and Testing Equipment

The vendor shall have written instructions governing the control of measurement, inspection and test equipment. These instructions shall include, as appropriate, calibration to standards traceable to nationally recognized standards, accuracy requirements, and recalibration frequency requirements.

D.4.9 Handling, Storage, Shipping and Preservation

1. Where appropriate, equipment vendors shall have written instructions to govern the handling, storage, shipping, and preservation of the items under contract so as to prevent degradation of the quality below that required by the applicable equipment specifications.

2. Similarly, site installation and construction contractors shall have written instructions to govern the handling, storage, and preservation of equipment prior to and after installation.

D.4.10 Control of Non-Conforming Material Parts, Equipment or Workmanship

The vendor shall have written procedures governing the identification, control, and disposition of materials, parts, or equipment that do not meet specification requirements. Repairs shall be in accordance with documented instructions. Major repairs shall be in accordance with documented procedures approved by General Electric or Bechtel.

D.4.11 Control of Quality Records

There shall be written requirements governing the accumulation, storage, and disposition of appropriate manufacturing, installation, construction, inspection, test, and quality control records for the item under contract. There shall be a specific list of records which the vendor will turn over to General Electric or Bechtel (as appropriate) for transmittal to Philadelphia Electric, and/or those which shall be maintained for the life of the plant (i.e., 40 years). This list shall be in compliance with the contractual arrangement between General Electric and Philadelphia Electric concerning records to be provided to, or maintained for, Philadelphia Electric. The vendor procedures governing the control of records he retains shall describe what steps he will take to ensure that these records will be adequately stored and readily retrievable for the life of the plant. Quality control records produced by Bechtel and obtained from vendors will be accumulated and turned over to Philadelphia Electric at the end of the job.

D.4.12 Corrective Action

The vendor's quality control program shall provide for quality information reporting to management and others having quality system responsibility concerning the overall status of product quality and quality-related plans and programs. The program shall provide input for the initiation of corrective action and follow-up as appropriate.

D.4.13 Control of Specifications, Drawings, Procedures, and Instructions

The vendor shall have written procedures governing the control and use of specifications, drawings, and the various work, test, and inspection procedures. The procedures shall indicate how the vendor assures that only appropriately approved versions of specifications, drawings and procedures are actually used by his work force and inspection personnel. In addition, the vendor shall obtain the concurrence of General Electric-NEBO or Bechtel Engineering (as appropriate) to changes in specifications, drawings or procedures which the latter originally prepared or approved.

D.4.14 Quality Control Program Documentation

Quality control documentation of vendor work will be maintained in accordance with written requirements contained in the applicable generic quality control specification (Bechtel) or quality control plans (General Electric-NEBO), individual specifications, and purchase order requirements.

REF: 1

General Electric-NEBO and Bechtel will maintain the specified quality control records supplied by their vendors for the equipment they prepare (except for such records that code requirements specify the vendor must retain). It is planned that these records be turned over to Philadelphia Electric.

Pertinent audit and surveillance inspection reports, and the documentation of design reviews will be maintained by General Electric NEBO and Bechtel according to written provisions in their quality control plans.

Bechtel will document site work according to specific requirements contained in applicable specifications and field quality control procedures. These records will be compiled and turned over to Philadelphia Electric at the completion of the project construction.

Philadelphia Electric will document audits and reviews of specifications, drawings and other technical requirements.

The vendor shall have documents which describe his quality control program and organization including administrative policies and procedures affecting quality.

The vendor shall make available, upon request, his quality control program documentation including the applicable procedures, records, and qualifications governing subsections D.4.1 through D.4.13 for review by General Electric or Bechtel (as appropriate). If concurrence with these documents is required by the purchase order, the vendor shall not start work on a specific task governed by a procedure until the procedure has been reviewed and comments resolved satisfactorily.

Manufacturing processing, testing, and inspection operations performed by vendors and their subcontractors shall be subject to quality audit or surveillance with respect to the contract work by General Electric or Bechtel, as appropriate. Philadelphia Electric and/or its agent, working through General Electric or Bechtel, shall be accorded access for audit or witness purposes. In this regard, any quality audit or surveillance by General Electric, Bechtel, or Philadelphia Electric and/or its agent shall not relieve the vendor or subcontractor of any responsibility for meeting contract requirements.

D.4.15 Audit of the QA Program

Surevillance and auditing by the second and third level groups on the first level will be used to assure that the vendors are complying with specifications, including the approrpirate NRC criteria as invoked in the order.

The following is Bechtel's procedure for assuring that vendors are following the NRC QA criteria:

a. Project Engineering prepares specifications and procurement documents telling the vendor what technical requirements have to be met and requesting that the vendor describe his QA program showing how he will satisfy the NRC QA criteria.

REF: 1

b. Project Engineering reviews the vendor's program to see that it satisfactorily meets the NRC QA criteria and technical requirements as set forth in the specifications.

c. The requirements of the vendor's QA program are included in the contractual documents and once the contract is awarded, the vendor accepts responsibility to assure contractual commitments are met including the applicable NRC QA criteria and technical requirements.

d. To assure the vendor's shop practices are meeting the applicable NRC QA criteria and technical requirements, Bechtel Procurement provides surveillance of the vendors' shops.

The following is General Electric's procedure for assuring that vendors are satisfying the intent of the NRC QA criteria:

a. General Electric, previously and currently, has been applying appropriate QC plans on vendor supplied equipment. These QC plans embody the appropriate requirements of the 18 QA criteria.

b. General Electric will provide an audit or surveillance function of its vendors' work to assure that the specified quality requirements are met.

c. Design control activities are documented in formal General Electric document systems that require vendor compliance with design criteria and submittal of designs, specifications, and designated vendor procedures to General Electric for review and approval.

Philadelphia Electric audits on a spot check basis the General Electric NEBO and Bechtel efforts to ensure vendor compliance with the intent of the NRC criteria and similarly audits selected vendors.

REF: 1

D.5 GENERAL ELECTRIC QUALITY ASSURANCE PROGRAM

The responsibilities of General Electric in this quality assurance program can be summarized as follows. (Also See Section D.3)

D.5.1 Management

General Electric-NEBO is responsible for establishing quality control requirements for the equipment within General Electric-NEBO's scope of supply and assuring that such requirements are followed. General Electric-NEBO is also responsible for developing site receipt inspection storage, and installation requirements for "essential" components under its scope of supply. The prime General Electric-NEBO representative is the Project Manager who is responsible for liaison with the owner of project quality related matters. The Project Manager is assisted in the accomplishment of the quality task by the following:

a. The Manager of the Quality Assurance and Reliability Operation who reports to the Senior Vice President and Group Executive of the NEBO, is responsible for integrating the various quality assurance programs within NEBO. The Product and Quality Assurance Operation is a staff component assigned responsibility for defining intra-Division quality-related responsibilities and relationships, for establishing uniform quality-related procedures and practices at the Division level, and for integrating, measuring and auditing the quality-related work across the entire spectrum of the BWR business as conducted by NEBO line organizations.

   The Quality Assurance Section Manager reporting to the Manager of the Quality Assurance and Reliability Operation, is a staff position assigned responsibility for establishing, documenting and directing an overall quality system and for integrating, measuring, and auditing the quality-related work across the entire spectrum of the BWR business as conducted by line components.

   A BWR Quality Council, with the Manager, Quality Assurance Reliability Operation as Chairman, provides for intra-Division communication and integration of quality assurance policies, procedures and practices. The BWR Quality Council consists of representatives from each of the contributing organizational components of the BWR business and regularly meets to review status of the overall quality system, to provide management reports of quality related activities, and to plan future efforts.

b. Managers - NEBO Design Engineering and Application Engineering are responsible for establishing overall quality objectives and quality requirements and are also responsible for conducting design control for the overall system design.

c. Manager - NEBO Quality Control - Engineered Equipment and Installation who is responsible for the quality planning and implementation for General Electric/NEBO scope of purchased equipment, except for General Electric/NEBO manufactured equipment.

REF: 1

d. Managers - Quality Control - In the Control and Instrumentation Manufacturing, NEBO Manufacturing, and Nuclear Fuels Manufacturing who are responsible for the quality planning and implementation for their respective manufactured products.

e. Site Resident Manager who is responsible for supplying technical direction for field installation, preoperational testing, and start-up activities on General Electric/NEBO scope of supplied systems and components. Aiding him in some of this effort is a Quality Control Site Representative who reports to the Manager - Quality Control - Engineered Equipment and Installation.

The foregoing organizational relationships are shown on the accompanying Figure D.2.1.

D.5.2 Preparation of Specifications and Drawings

General Electric/NEBO is responsible for the specifications, drawings, and purchase documents for essential equipment within General Electric's scope of supply. These documents and drawings will incorporate applicable design PSAR commitments, code requirements, and applicable quality control provisions as covered in subsection D.4 above.

In addition General Electric/NEBO prepares the necessary requirements for the receipt, inspection, and storage of components at the construction site prior to installation, and for their subsequent handling and installation. The implementation of these site requirements is the responsibility of Bechtel Construction.

D.5.3 Procurement of Equipment

All components procured by General Electric/NEBO, whether they are manufactured in General Electric facilities or by other manufacturers, will be subjected to two separate quality programs; one a quality control and inspection program and the other a quality assurance audit or surveillance program.

D.5.3.1 Equipment Manufactured by Other Companies

A manufacturer for a given component is selected by General Electric/NEBO on the basis of a determination that the manufacturer has the capability to fabricate the component to the desired level of integrity and that he has the necessary experience and an adequate quality control system.

General Electric/NEBO will perform quality assurance surveillance on components and materials procured from such manufacturers to assure that specification and drawing requirements are being met. This effort will be administered by General Electric/NEBO's Quality Control - Engineered Equipment and Installation.

REF: 1

D.5.3.2 Components Manufactured by General Electric NEBO Departments

To confirm adequate control on components and materials manufactured by other General Electric/NEBO Departments, the Manager Quality Assurance and Reliability Operation will conduct quality assurance audits of the quality control programs of those departments.

General Electric will coordinate the retention of quality records for the work they and their subvendors perform under the contractual arrangement with Philadelphia Electric.

D.5.4 Construction Site

General Electric/NEBO will have a site resident manager located at the construction site. This resident manager reports to General Electric/NEBO's Project Manager and is responsible for providing technical assistance to Bechtel Construction for field installation of General Electric supplied equipment and systems. Also located at the construction site is a Site Quality Control Representative who reports to the Manager of General Electric/NEBO's Quality Control - Engineered Equipment and Installation. This representative is responsible for monitoring Bechtel Corporation to ensure that they are implementing the General Electric/NEBO quality requirements for receipt inspection, storage, handling, and installation of General Electric supplied equipment and systems. The General Electric/NEBO Site QC representative does not perform a Second Level Quality Assurance function as defined in paragraph D.2.2.2. His function is to monitor site activities for warranty purposes only. He will report significant discrepancies to Philadelphia Electric and Bechtel through appropriate channels.

REF: 1

D.6 BECHTEL POWER CORPORATION QUALITY ASSURANCE PROGRAM

Responsibilities of Bechtel Power Corporation in this Quality Assurance Program can be summarized as follows (see also Section D.3):

The Division Quality Assurance Manager is responsible for overall technical direction of the Quality Assurance Program, including formulating and implementing policy, administration, and coordination of the Nuclear Quality Assurance Program, and administrative and technical direction of the Project Quality Assurance Engineer thru the cognizant Quality Assurance Manager. The Quality Assurance Manager is responsible for providing overall coordination of Engineering, Procurement, and Construction departments in quality assurance activities to effectively implement the Division Quality Assurance Program.

The Quality Assurance Managers, who report to the Division Quality Assurance Manager, are responsible for direct supervision of the Quality Assurance Program, and provide direction to Quality Assurance Engineers. They are responsible to assure coordination of Engineering, Procurement and Construction in Quality Assurance activities to effectively implement the program. In addition, they coordinate QAE's, review and evaluate Project Quality Assurance Programs, and audit the performance of the various programs. They provide an indpendent channel for QAE communication to management.

D.6.1 Project Management

The Project Manager has responsibility for the surveillance, evaluation, and reporting to San Francisco Power Division Management, of the Engineering, Construction and Procurement implementation of the Project Quality Assurance Program. The Project Quality Assurance Engineer directs and controls the Project Quality Assurance Program. The Project Quality Assurance Engineer coordinates with the Project Manager and assists him by monitoring the quality engineering and quality control functions of the project engineering, construction and procurement activities; he provides the Project Manager with periodic reports of his activities. The Project Quality Assurance Engineer is assigned to the project by and receives technical direction and assistance from the Division Quality Assurance Manager thru a cognizant Quality Assurance Manager. Additional Quality Assurance Engineers will be provided when required by the work load.

D.6.1.1. QA Surveillance of Project Engineering Activities

The Lead Office Quality Assurance Engineer monitors Project Engineering in the implementation of the Quality Assurance Program and reports directly to the Project Quality Assurance Engineer. He may be assisted by Office Quality Assurance Engineers.

D.6.1.2 QA Surveillance of Construction Site Activities REF: 1

Bechtel Project Management is responsible for monitoring to assure that the quality control requirements for the storage of components and materials, and the installation and construction of the components and systems are effectively implemented. The Lead Site Quality Assurance Engineer assisted by a Staff of Discipline Quality Assurance Engineers is located at the construction site to monitor construction quality control activities and reports directly to the Project Quality Assurance Engineer. The Site Quality Assurance Engineers are the field representatives of Project Management and perform the second level quality assurance function at the site. The Quality Assurance Engineers are assigned by, and administratively report to, the Quality Assurance Manager.

The Quality Assurance Engineers perform quality assurance surveillance of field activities including engineering, quality control, and construction. They review reports of non-conformances, perform surveillance of construction inspection work, and monitor the implementation of the overall quality control program.

The Lead Site Quality Assurance Engineer has the authority to stop field work for which Bechtel has direct construction responsibility, and can stop subcontract work through the Field Construction Manager in the event of non-conformance with drawings, specifications, and procedures for structures, systems, and units on the Q-List. The Quality Assurance Engineers also serve as field contacts for Philadelphia Electric Company's Quality Assurance organization and others concerned with quality assurance in the field.

The reports of the Bechtel Quality Assurance personnel concerning the monitoring of the constructor's quality control effort will be a part of the quality control history file for the plant and will be turned over to Philadelphia Electric upon completion of the plant.

D.6.1.3 Auditing

The Quality Assurance Program provides a comprehensive system of Project and Management audits of project engineering activities; field engineering, construction, and quality control inspection activities; and the Procurement Department activities as they relate to the Limerick Project.

All of the above are carried out, on a sampling basis, periodically, during the design and construction period. At the completion of construction for systems and structures subject to the Quality Assurance Program, a final inspection is performed on the work and associated quality assurance records to assure that necessary inspections and records have been prepared and are on file. A final inspection report is prepared confirming this final examination and audit.

Bechtel's procedures for conducting and documenting results of management-type QA audits are summarized as follows:

a. General Audits are conducted on an annual basis commencing after award of contract or construction permit. Random unscheduled audits are conducted as conditions warrant or as requested.

REF: 1

b. A general audit plan, including appropriate check lists, is prepared defining areas to be audited. This plan is developed in a preaudit meeting with Project Engineering, Procurement, or Construction, depending on the type of audit, and QA management.

c. An audit review discussion is held with Engineering, Procurement, or Construction, as appropriate, to discuss the findings and obtain scheduled commitments to complete any necessary corrective action.

d. A report of the general audit noting deficiencies, recommendations and general comments is prepared and distributed to Division Management, and to Engineering Management, Procurement Management or Construction Management, as appropriate, and the Project Manager.

e. The responsible Quality Assurance Engineer formally reports, every month to the Quality Assurance Manager-Audits on the status of items requiring action until all items are closed.

D.6.2 Engineering Department

As plant design contractor for Philadelphia Electric, the Bechtel Engineering Department, through its Project Engineer, is responsible for establishing quality control and quality assurance requirements for equipment and materials, other than those in the General Electric NSSS scope of supply. This includes preparing or approving detailed procurement, storage, erection, construction and test specifications and assuring that the design is performed in accordance with the Quality Assurance Program.

The Project Engineer is assisted in the quality effort by Bechtel Engineering's Chief Engineers of various disciplines who report directly to higher management and as such are not directly a part of the Project Engineering team.

In assisting the Project Engineer, Chief Engineers in the Engineering Department are responsible for reviewing appropriate specifications, drawings, and purchase documents to assure that they include applicable code and quality control requirements as well as PSAR requirements.

The Supervisor of Quality Engineering reports to the Manager of Engineering and assists him in carrying out his quality functions for Engineering. The responsibilities of the Supervisor of Quality Engineering include defining and preparing Quality Program procedures for the Engineering Department, assisting Chief Engineers in establishing standard quality practices for the technical disciplines and assigning and training Quality Engineers.

A Project Quality Engineer is assigned to the Project Engineering Team by the Supervisor of Quality Engineering to implement the Quality Engineering Program. Assisting the Project Quality Engineer are Quality Engineers who report to and receive direction from him. The Project Quality Engineer and the Quality Engineers receive administrative supervision and quality program direction from the Supervisor of Quality Engineering. The Project Quality Engineer receives project direction from the Project Engineer. The duties of the Project Quality Engineer and the Quality Engineers include final acceptance of Supplier Quality Assurance Programs, participation, as necessary in Supplier Quality Assurance

REF: 1

audits, and review of engineering specifications prepared for Q-listed material, equipment, structures, systems, and components and for services affecting the quality of Q-listed material, equipment, structures, systems and components.

Quality Engineering Coordinators (QEC's) are appointed, as necessary by Discipline Group Supervisors to assist Discipline Groups in providing the required coverage in quality engineering program details. QEC's receive direction relating to the quality engineering program from the Project Quality Engineer through the Discipline Group Supervisors.

A Quality Engineering history file for work within Bechtel Engineering's scope of effort will be maintained by Bechtel. This file will be transferred to Philadelphia Electric at the completion of the plant.

D.6.2.1 Preparation of Specifications and Drawings

Engineering is responsible for preparing specifications for Q-Listed equipment (except for the nuclear components supplied by General Electric). It is also responsible for preparing construction specifications, drawings, and project installation requirements. These documents and drawings will incorporate applicable design, PSAR, and code requirements, and quality assurance provisions.

D.6.2.2 Procurement Activities

With the exception of the Nuclear Steam Supply System, Philadelphia Electric or Bechtel will purchase Q-Listed equipment and material to specifications and drawings prepared by Bechtel or PECO Engineering. A manufacturer for a given component will be approved by Philadelphia Electric only after Bechtel has ascertained the manufacturer's capability to fabricate the component to the desired level of quality and has determined that he has an adequate quality control capability. Once a manufacturer is selected, Bechtel Power Corporation will perform quality assurance surveillance on components and materials procured from such manufacturer to assure compliance with specification requirements.

D.6.3 Procurement Department

The Bechtel Procurement Department has the responsibility to perform a quality assurance surveillance function for Philadelphia Electric on the procurement of purchased items which are outside of General Electric NSSS scope of supply. Bechtel Engineering and Philadelphia Electric have the primary responsibility for vendor evaluation and selection. Some of the contracts for procurement of such components are processed under Philadelphia Electric purchase orders and others are processed under Bechtel purchase orders. Regardless of whether a Philadelphia Electric or Bechtel purchase order is used, Bechtel Procurement still performs the quality assurance surveillance function to assure that equipment manufacture is in compliance with applicable specifications.

REF: 1

Bechtel Procurement Supplier Quality Department carries out the surveillance function utilizing established guidelines and procedures. Check-off lists describing the specific areas which should be monitored will normally be employed. These check-off lists represent the minimum amount of surveillance that must be performed. Depending upon the circumstances, the Bechtel surveillance personnel, at their discretion, may do more and will report on the additional surveillance performed. Where necessary Bechtel Engineering personnel assist Bechtel Procurement in performing the surveillance effort.

D.6.4 Construction Department

Bechtel Construction Department through its Field Construction Manager is responsible for construction of the plant to approved engineering specifications, drawings and procedures. The Field Construction Manager has the prime authority and responsibility for Construction, Field Engineering and Subcontractor activities in the field. Site construction procedures may be prepared to supplement Division Construction and Engineering direction for activities affecting quality for Q-Listed equipment. Such procedures will be reviewed and approved by Bechtel Construction.

The Project Field Engineer is responsible to the Field Construction Manager for supervision of field engineering activities at the jobsite. In performing this function, he assigns qualified Field Engineers through the associated Lead Discipline Field Engineer within each discipline to provide engineering direction and monitor construction activities. The Project Field Engineer is responsible for the accuracy and completeness of engineering documentation, ascertaining that work is properly performed, and that defects are removed and repairs are carried out in accordance with the applicable codes, engineering drawings, project specifications, and quality control procedures. He maintains liaison with project design engineers.

The Discipline Field Engineers report through the Lead Discipline Field Engineers to the Project Field Engineer. They receive technical direction from the respective Lead Discipline Engineers for field engineering functions.

The Chief Construction Quality Control Engineer supervises the Construction Department Quality Control Program and reports to the Manager of Division Construction. He is responsible for technical direction and administration of Field Quality Control Engineers. The Construction Field Quality Control Engineer is assisted by the Quality Control Supervisor(s).

The Project Quality Control Supervisor for Limerick reports directly to the Chief Construction Quality Control Engineer. He coordinates quality control activities with engineering and construction personnel. He also provides technical support and monitors the performance of the Project Field Quality Control Engineer.

The Project Field Quality Control Engineer (PFQCE) reports through the Quality Control Supervisor to the Chief Construction Quality Control Engineer. The PFQCE supervises the quality control and inspection functions and sees that the quality of the work is properly inspected and documented. The PFQCE provides direction and supervision of testing laboratories and is responsible for the maintenance and safeguarding of the field quality files.

REF: 1

The PFQCE has authority to stop work. This authority, exercised through the Project Construction Manager, shall require immediate cessation of work operations or construction activities determined to be improperly controlled and where corrective action would be extensive or may not be fully effective. He shall assign personnel to establish and maintain the system to control measuring and test equipment.

The Quality Control Engineers and Technicians report to the PFQCE. They are responsible for preparing Inspection Plans in accordance with the Field Inspection/QC Notices Manual, performing Quality Control inspections including: final acceptance of the work, initiating and processing of Nonconformance Reports and performing overall construction surveillance including material control. Procedures used to control and perform inspections by Quality Control Engineers and Technicians will be reviewed and approved by Philadelphia Electric Company.

When site construction work is subcontracted the Project Field Quality Control Engineer (PFQCE) performs the quality control surveillance function on such site subcontractor's work.

A quality control file maintained for Bechtel work will be available for Philadelphia Electric review. At the completion of the job it will be turned over to Philadelphia Electric for their quality control history file of the plant.

REF: 1

D.7 DESIGN CONTROL

D.7.1 Philadelphia Electric Company

The basic responsibility for design control has been assigned to Bechtel and General Electric-NEBO for work in their specific areas of responsibility. Design reviews are performed internally with experienced personnel not directly associated with the original design effort.

In additon, Philadelphia Electric will, through its Manager, Quality Assurance audit the design efforts of General Electric-NEBO and Bechtel to assure that they are in fact operating in accordance with an adequate design control system.

The Philadelphia Electric design review effort includes the review and approval of the PSAR to assure it establishes proper design criteria and provides an adequate design description of the plant. The design review performed by Philadelphia Electric also includes the review of specifications and appropriate back-up information to assure that the pertinent codes, standards, PSAR requirements and quality requirements have been incorporated. Specifications will be reviewed by Philadelphia Electric Engineering and Research Department engineers and personnel of the Operating Department, as appropriate, to ensure compatibility between components and systems, adequacy of material selections, acceptability of installation, access and maintenance requirements, and evaluation of special design provisions or requirements. Written comments are returned by Philadelphia Electric to the General Electric -NEBO Project Manager or the Bechtel Project Engineer.

This review will include but not be limited to: the reactor coolant system and its directly associated auxiliary systems, the containment system, the engineered safety features, the fuel handling system, the radioactive waste disposal system and plant accessibility for maintenance and inspection.

Unresolved interface questions between contractors would be resolved by participation of Philadelphia Electric.

D.7.2 General Electric Nuclear Energy Business Operation

The General Electric Nuclear Energy Business Operation (General Electric-NEBO) has contracted for the design, manufacture and delivery of the Nuclear Steam Supply System as defined by contract. As part of this work, General Electric NEBO has an internal design control program covering work within its scope of responsibility. Design review is carried out by individuals not involved directly with the original design work.

For equipment procured by General Electric-NEBO for which it does not have the lead design responsibility, General Electric-NEBO will review and audit its subcontractors' design efforts with a frequency and depth consistent with the application of their equipment.

REF: 1

Among the items included in the General Electric-NEBO design control effort are the following:

a. Determine that the required design bases, PSAR commitments and other regulatory reqirements are incorporated properly into the design drawings, specifications, and pertinent procedures and instructions.

b. Independently review to verify the adequacy of the design of equipment and systems provided by General Electric-NEBO through review of drawings and specifications.

c. Identify required acceptance criteria for test and inspection.

d. Assure that the design and support data for nuclear related portions of the plant under General Electric-NEBO cognizance are accurately described in the PSAR and FSAR submittals.

D.7.3. Bechtel Corporation

The Bechtel Corporation as architect engineer for this project has the responsibility for the design and related procurement effort for components and equipment within its scope of responsibility.

As part of this work, Bechtel Engineering has an internal design control program covering work within its scope of responsibility. Design review is carried out by individuals not involved directly with the original design work.

For equipment procured by Bechtel for which it does not have the lead design responsibility, Bechtel will review and audit its subcontractor's design efforts with a frequency and depth consistent with the application of the equipment.

Among the items included in the Bechtel Engineering design control effort are the following:

a. Determine that the required design bases, PSAR commitments and other regulatory requirements are incorporated properly into the design drawings, specifications, and pertinent procedures and instructions.

b. Independently review to verify the adequacy of Bechtel designed structures and systems through review of associated calculations, drawings, and specifications. This would include such areas as stress and thermal design analyses, material compatibility, seismic analysis and design interfaces.

c. Assure that the equipment systems are accessible for maintenance repair, and in-service inspection.

REF: 1

d. Identify required acceptance criteria for test and inspection.

e. Assure that the design and support data for nuclear related portions of the plant under Bechtel cognizance are accurately described in the PSAR and FSAR submittals.

Bechtel has a formalized program used in the design control activities under its responsibility.

D.7.4 Engineering and Design Consultants

Philadelphia Electric will utilize the capabilities of design and engineering consultants to provide design review in specialized areas.