U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

Report No. 99900521/81-01

Company: Bechtel Power Corporation
Los Angeles Power Division
P.O. Box 60680 Terminal Annex
Los Angeles, California 90060

Inspection Conducted: April 13-17, 1981

Inspectors: R. H. Brickley 5/7/81
R. H. Brickley, Contractor Inspector, RSS, VIB — Date

for R. H. Brickley 5/7/81
D. G. Breaux, Contractor Inspector, RSS, VIB — Date

Approved by: C. J. Hale 5-7-81
C. J. Hale, Chief, RSS, VIB — Date

Summary

Inspection on April 13-17, 1981 (99900521/81-01)

Areas Inspected: 10 CFR Part 50, Appendix B in the areas of control of computer programs, training, design change control, design interfaces, action on previous inspection findings, and background verification of technical employees. The inspection involved 61 inspector hours on site by two NRC inspectors.

Results: Nonconformances were identified in two of the areas.

Nonconformance: Control of computer programs - computer program NE155(JET 2) did not show evidence of review and approval of the Users Manual, Theoretical Manual, and Verification Report as required by procedure (See Notice of Nonconformance enclosure, item A). Training - QA indoctrination training of all employees is not being provided as required (See Notice of Nonconformance enclosure, item B).

DETAILS SECTION I
(Prepared by R. H. Brickley)

A. Persons Contacted

S. H. Freid, Assistant Project Engineer
*M. J. Grothe, Supervisor, Quality Engineering
J. E. Koch, Leader, Nuclear Staff Group
S. A. Lelewer, Leader, Nuclear System Staff Group
D. L. Miller, Nuclear Systems Staff
C. E. Mitchhart, Project Quality Engineer
R. G. Mooradian, Employment Supervisor
J. H. Pi, Civil/Structural Staff
*K. J. Stwertnik, Project Quality Engineer

*Denotes those in attendance at the exit interview.

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Report No. 99900521/80-03) Failure to check a drawing for compliance with applicable codes and standards as required by procedures.

   The inspector verified the corrective actions and preventive measures committed in Bechtel's letter of response dated November 26, 1980, i.e., Drawing Change Notice #52 was issued, and Form 84 (Dwg. 13-P-ZZG-011) was revised with all committed reviews and approvals.

2. (Closed) Deviation (Report No. 99900521/80-03) Failure to require the evaluation of the effect of revised calculations on those calculations that were based on results of the original calculation.

   The inspector verified the corrective actions and preventive measures committed in Bechtel's letter of response dated November 26, 1980, i.e., Engineering Department Procedure 4.37 and Project Internal Procedures Manual Section 14 were revised to assign the responsibility for this evaluation to the Group Supervisor.

3. (Closed) Deviation (Report No. 99900521/80-03) A calculation had not been approved within 60 days following completion as required by procedures.

The inspector verified the corrective actions and preventive measures committed in Bechtel's letter of response dated November 26, 1980, i.e., Project Internal Procedures Manual Section 14 was revised to provide for the Project Engineer to approve exceptions to the 60 day requirement. Calculation M23.1 was approved, and a review of the SONGS 2&3 project calculations was performed with necessary corrective actions initiated.

4. (Closed) Deviation (Report No. 99900521/80-03) Calculation revision numbers identified in the Calculation Control Log and the CEBUS were not consistent.

   The inspector verified the corrective actions and preventive measures committed in Bechtel's letter of response dated November 26, 1980, i.e., Discipline Calculation Control Logs have been checked and Project Internal Procedures Manual Sections 14 and 43 have been revised to indicate the discontinuance of the CEBUS Log and the use of the Discipline Control Logs.

5. (Closed) Deviation (Report No. 99900521/80-03) A specific calculation could not be found.

   Bechtel reevaluated calculation M25.1 and found that the information was contained in calculation M23.1, therefore M25.1 was canceled. The review of the Manual Control Log was completed.

6. (Closed) Follow Up Item (Report No. 99900521/80-02) An inspection of the development, verification, and control of computer codes used in safety-related analysis will be conducted during a future inspection with specific emphasis placed on the code JET 2.

   An inspection of the control of computer programs which included JET 2 has been conducted (see paragraph D below).

C. Background Verification of Technical Personnel

1. Objectives

   The objectives of this area of the inspection were to verify that measures have been established and are being effectively implemented that assure:

   a. The education and work experience information contained in employees' job applications are being verified by the employing organization.

b. There is objective, documented evidence that attest to the employees' education and experience.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of:

a. The background verification records maintained on six permanent employees.

b. The records maintained on six "Job Shop" applicants for temporary employment.

3. Findings

a. There were onconformances, unresolved, or follow up items ident ed.

b. Written verification of education and experience is required for all new Bechtel employees. (Corporate Policy)

c. There are generic staffing service agreements that have been awarded by Bechtel Personnel in San Francisco for the use of all Bechtel Divisions. There are four staffing service agreements that are unique to LAPD.

d. Bechtel's agreement (effective October 1980) with "Job Shop" organizations requires that the organization certify that they have verified the applicant's education and experience. LAPD has scheduled audits of these organizations for compliance with this requirement.

D. Control of Computer Programs

1. Objectives

The objectives of this area of the inspection were to determine that:

a. Computer programs have been developed, verified, qualified, and are being used in accordance with procedures which have been prepared, reviewed, and approved by authorized management.

b. A computer program custodian has been designated and has the responsibility for maintaining the security of the program.

c. Each computer program that has been authorized for use has been qualified, has an appropriate users manual, and this manual (or another manual) provides a detailed description of the mathematical models, empirical data, assumptions used, and applicable references.

d. The computer program has been verified/qualified and that documentation exists which includes:

(1) A description of the program version and options validated,

(2) A detailed description of the test problems, including boundary conditions, mathematical model, and all key parameters.

(3) A listing of the test problem input data checks and a reprint of the program input and output, or reference to the location where this is stored.

(4) The comparison of solutions, evaluation of the program validity, and an analysis of any identified errors.

e. Technically qualified individuals have reviewed and approved the verification/qualification of each computer program prior to its use in safety related applications.

f. Revisions and modifications have been subjected to the same review and approval as the original version of the program.

g. Errors identified in computer programs are promptly corrected and appropriately verified prior to use.

h. Errors which could result in significant deficiencies in nuclear plant design are reported to the NRC under the requirements of 10 CFR Part 21, 10 CFR Part 50.55(e), and 10 CFR Part 50, Appendix K, as appropriate.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of the User's Manual, Theoretical Manual and Verification Report for computer programs NE155, TE608, TE750, CE413, and ME643. In addition the inspector examined applicable procedures from the Engineering Department Procedures Manual.

3. Findings

a. There were no unresolved or follow up items identified.

b. One item of nonconformance was identified with respect to computer program NE155(JET 2). (See Enclosure, Notice of Nonconformance, Item A) It should be noted that a formalized version of the User's Manual, Theoretical Manual, and Verification Report to meet the requirements of Revision 1 of EDP 4.36 (Standard Computer Programs) had been prepared and was in the review process at the time of this inspection.

c. Computer program NE155(JET 2) calculates jet forces, areas and jet shapes for various types of breaks and flows.

d. Computer program TE608(MWAP) calculates the maximum allowable working pressure for piping in accordance with requirements of ANSI B31.1 and ASME Section III. All materials used for this calculation were taken from the TE601(MINWALL) program and all material codes correspond to the codes used in that program.

e. Computer program TE750(NUCLYD) calculates the particle and energy source from the activity concentrations of a set of isotopes. It allows for the decay of the isotopes and accounts for the production of daughter isotopes.

f. Computer program CE413(WELD) is used to size welds for the connection of weld flanges, tubes, pipes, angles, and channels. The program computes weld size based on AISC/AWS, ASME Subsection NF and Appendix XVII.

g. Computer program ME643 is a thermal and stress analysis program consisting of three programs: ME643-1 which is a two dimensional heat transfer program that calculates steady state or transient temperature distributions due to temperature or heat flux inputs. The method used is the finite element technique coupled with a step-by-step time integration procedure. ME643-2 is built on the displacement method of the matrix theory of structures which calculates the displacements and stresses within a solid with orthotopic, temperature dependent nonlinear material properties. ME643-3 is a one dimensional finite element program which calculates transient and steady state temperature distributions across the pipe wall resulting from changes in temperature of the fluid.

E. Exit Interview

An exit interview was held with management representatives on April 17, 1981. In addition to those individuals indicated by an asterisk in paragraph A of each Details Section, those in attendance were:

E. G. Baum, Assistant Personnel Manager
A. G. Coutoumanos, QA Manager, Programs
W. G. Henry, Vice President, Division Construction
J. D. Houchen, Assistant Project Manager
L. R. Oquist, Manager of Engineering
R. L. Patterson, Division QA Manager

The inspector summarized the scope and findings of the inspection. Management comments were generally for clarification only or acknowledgement of the statements by the inspector.

DETAILS SECTION II
(Prepared by D. G. Breaux)

A. Persons Contacted

J. DeWinter, Chief Clerk, Personnel
F. J. Doherty, Project Quality Engineer
R. A. Snyder, Project Quality Assurance Engineer
C. R. Speck, Project Administration
*K. J. Stwertnik, Project Quality Engineer
J. H. Uhrick, Project Administration Group Leader
W. Watson, Nuclear Group Leader
W. Wright, Personnel Representative
C. E. Zimmerman, QA Manager, Audits

*Indicates those present at the exit interview.

B. Design Change Control

1. Objectives

The objectives of this area of the inspection were to verify that:

a. Procedures have been established and implemented for controlling changes to approved design documents.

b. Design changes are:

(1) reviewed for the impact of the change

(2) documented as to the action taken, and

(3) transmitted to all affected persons and organizations.

c. The design changes are justified and subjected to review and approval by the same groups or organizations as for the original design.

d. When responsibility has been changed, the designated organization shall have access to the pertinent information, the competence in the specific area of design, and an understanding of the requirements and intent of the original design.

2. Method of Accomplishment

The preceding objectives were accomplished by review of the following documents:

a. Bechtel Los Angeles, Quality Assurance Department Procedures Manual

b. Bechtel Los Angeles, Engineering Department Procedures Manual

c. Project Reference Manual, Vogtle Nuclear Plant

d. To assure that procedural requirements are being properly and effectively performed, the following documents were reviewed:

(1) Design Manual Change Log, Vogtle Project

(2) Nine design drawings, Vogtle Project

(3) Nine drawing transmittals to field, Vogtle Project

(4) Nine design specifications, Vogtle Project

(5) Drawing, Material Requisition, and Specification Control Log (CEBUS), Vogtle and Palo Verde Project

(6) Three Specification Change Notice (SCN), Vogtle Project

(7) Three Design Change Notices (DCN), Vogtle Project

(8) Six specifications, Palo Verde Project

(9) Six calculations, Palo Verde Project

(10) Three drawing transmittals to field, Palo Verde Project

3. Findings

a. There were no nonconformances, or unresolved items identified.

b. Follow-up item

Due to a shortage of inspector time, a determination of the controlling element for design specification changes to the Palo Verde Nuclear Project could not be reached. A question of whether the Material Requisition and Specification Control Log

(CEBUS) is singly the controlling element needed to be considered. Determination of what other documents control current specification status for the Palo Verde Project, and the procedural commitments that govern these controlling documents will be made during a later inspection.

C. Training

1. Objectives

The objectives of this area of the inspection were to verify that procedures have been established and implemented that provide for:

a. Formal indoctrination and training or retraining programs for new employees and reassigned employees.

b. Training of inspection, examination and testing personnel.

c. Training of audit personnel, including technical specialists.

d. Training programs for other personnel performing quality related activities.

e. Documentation of attendance and retention of other applicable records for all formalized training accomplished.

2. Method of Accomplishment

The preceding objectives were accomplished by review of the following documents:

a. Bechtel Los Angeles, Quality Assurance Department Procedures Manual

b. Bechtel Los Angeles, Engineering Department Procedures Manual

c. Project Reference Manual, Vogtle Project

d. To assure that procedural requirements are being properly and effectively performed, the following documents were reviewed:

(1) Bechtel LAPD Quality Assurance Indoctrination Program attendance rosters.

(2) Ten Engineers Training Summary Sheets, Palo Verde Project

(3) Ten Engineers Training Files, Vogtle Project

3. Findings

a. In this area of the inspection one nonconformance was identified. (See Notice of Nonconformance, Item B)

b. Prior to July 1, 1980, it was the responsibility of the respective department or project to notify QA Staff of the need to indoctrinate newly assigned personnel. Now Quality Assurance Indoctrination is conducted concurrently with the standard Corporate Indoctrination. The Personnel Department is now responsible for notification of employees for indoctrination session attendance. Records of personnel attendance to Bechtel LAPD Quality Assurance Indoctrination is kept by the Personnel Department. If an employee misses this indoctrination session, the Personnel Department schedules them for the next session. Personnel Department procedures do not address further follow-up to assure that there was attendance to this make-up indoctrination session for the employee. Records of indoctrination are in the process of being placed in the computerized personnel training record, referenced as Personnel Data Systems (PDS). This data system should aid in determination of personnel needing QA indoctrination training and serve as a follow-up indicator for those personnel who did not attend the required indoctrination sessions.

D. Design Interfaces

1. Objectives

The objectives of this area of the inspection for both internal and external interfaces were to determine that procedures have been established and implemented that:

a. Require that design organizations identify, in writing, their interfaces for managing the flow of design information.

b. Define and document the responsibilities of each organizational unit for the preparation, review, approval, distribution, and revision of documents involving design interfaces.

c. Establish methods for systematically communicating needed design information, including changes thereto, across design interfaces as work progresses.

d. Require documentation of information transmitted between organizations which identified the status of the design information or documents and incomplete items which require further evaluation, review or approval.

e. Require that design information transmitted orally or by other informal means is promptly documented, and the documentation confirmed and controlled.

f. Identify the external organizations providing criteria, designs, specifications, and technical direction.

g. Identify the positions and titles of key personnel in the communications channel and their responsibilities for decision making, problem resolution, providing and reviewing information.

2. Method of Accomplishment

The preceeding objectives were accomplished by review of the following documents:

a. Bechtel Los Angeles, Quality Assurance Department Procedures Manual

b. Bechtel Los Angeles, Engineering Department Procedures Manual

c. Project Reference Manual, Vogtle Project

d. To assure that procedural requirements are being properly and effectively performed, the following documents were reviewed.

(1) Design Basis Review Control Log, Vogtle Project

(2) Three design criteria revisions, Vogtle Project

(3) Three Document Review Notice (DRN) associated with the three design criteria revisions referenced above.

(4) Reactor Fluid Systems Standard Design Package Four Loop Plant, NSSS Westinghouse

(5) Three external interface documents between Westinghouse and Bechtel LAPD

(6) Ten Document Review Notices (DRN), Vogtle Project

3. Findings

a. In this area of inspection, no nonconformances, unresolved, or follow-up items were identified.