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

Report No. 99900501/81-01

Company: Bechtel Power Corporation
Ann Arbor Power Division
777 East Eisenhower Parkway
Ann Arbor, Michigan 48106

Inspection Conducted: March 31 - April 3, 1981

Inspectors: C J Hale /for — 4-15-81
R. H. Brickley, Contractor Inspector, Date
Reactor Systems Section,
Vendor Inspection Branch

C J Hale /for — 4-15-81
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Reactor Systems Section,
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Approved by: C J Hale — 4-15-81
C. J. Hale, Chief, Date
Reactor Systems Section,
Vendor Inspection Branch

Summary

Inspection conducted March 31 - April 3, 1981 (99900501/81-01)

Areas Inspected: 10 CFR Part 50, Appendix B in the areas of control of computer programs, background verification of technical personnel, design change control, design corrective action, and action on previous inspection findings. The inspection involved 60 inspector-hours on site by two NRC inspectors.

Results: In the five areas inspected, one nonconformance was identified.

Nonconformance: Design change control - Contrary to Engineering Department Procedures, the Drawing Change and Materials Requisition/Specification Logs have not been updated and issued on a monthly basis.

DETAILS SECTION I

(Prepared by R. H. Brickley)

A. Persons Contacted

J. Baranyi, Manager, Project Administration Services Group
R. L. Castleberry, Chief Electrical Engineer
J. Dunne, Mechnical Engineer
*L. Grant, QA Manager, Audits & Program
M. Jackowski, Supervisor, Electrical Engineering
G. Morrison, Personnel Supervisor
*M. G. O'Mara, Supervisor, Quality Engineering
J. Smith, Employment Supervisor
D. Tennow, Division Personnel Manager

*Denotes those in attendance at the Exit Interview

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Report No. 99900501/80-01) Microfilm (QA Record) of two calculations were not legible.

The inspector verified the corrective actions and preventive measures committed in their letter of response dated December 9, 1980, i.e. legible attachments to calculations AFW-1 and AFW-3 were obtained and re-microfilmed, an inspection for other illegible microfilm was conducted, an IOM re-emphasizing the need for legibility of design documents was issued, and a new procedure covering the screening methods and criteria for microfilmed documents was issued.

2. (Closed) Deviation (Report No. 99900501/80-01) The Design Interface Control Log was not being maintained in the Control Systems Design Group as required.

The inspector verified the corrective actions and preventive measures committed in their letters of response dated December 9, 1980, and January 6, 1981, i.e. the specific entries missing from the control log were corrected, a survey was conducted on all projects and identified deficiencies corrected, and an IOM was issued to all projects where deficiencies were found re-emphasizing the requirements for control of design interface control logs.

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 employee's job applications are being verified by the employing organization;

b. There is objective, documented/records that attest to the employee's education and experience.

2. Method of Accomplishment

The preceding objectives were accomplished by an examination of the background verification records maintained on six permanent employees and seven "job shop" employees, applicable employment group procedures, and a "Summary of Actions - Verification of Contract Personnel Qualifications" (Actions re: IE Circular 80-22).

3. Findings

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

b. Written verification of education and experience is required for all new Bechtel employees. If a response to a verification request is not received in 30 days, follow up requests are sent until a response is received.

c. There are generic staffing service agreements that have been awarded by Bechtel Personnel in San Francisco for the use of all Bechtel Divisions. The Midland Project was found to be obtaining personnel under six different generic staffing service agreements. In addition, there are three "job shop" agreements that have been awarded by and for the use of the project.

d. Bechtel's agreement with "job shop" organizations require that the organization certify that they have verified the employees education and experience. Bechtel has conducted audits of these organizations to verify the validity of these certifications.

e. An evaluation of "job shoppers" performance is made after three months of employment. During this period these people are performing tasks under the supervision of permanent Bechtel employees.

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 model(s), empirical data (if any), 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 option(s) validated,

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

(3) A listing of the test (benchmark) 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 and Theoretical Manual and Verificatic ort for computer programs NE 154, ME 499, TE 509, and TE 51[illegible]. In addition, the inspector examined applicable procedures from the Engineering Department Procedures Manual.

3. Findings

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

b. Computer program NE 154 (DECAY) determines the amount of residual heat generated by light water reactors after shutdown. It is used to generate decay heat generation rates for thermal design analysis, performance evaluation, fuel pool sizing, ultimate heat sink analysis, and containment analysis.

c. Computer program ME 499 (LINE DROP) computes the pressure drop for incompressible, single phase flow of liquids and gasses in a given section of pipe line using the Darcy equation. The program also calculates the velocity head and the static head due to a change in elevation.

d. Computer program TE-509 (TAPCHANG) calculates bus voltage magnitudes and line flows in an electric system for a specified set of terminal or bus load conditions. The solution is obtained by the Gauss-Seidel method using the bus admittance matrix.

e. Computer program TE 510 (NEWSHORT) is a short circuit calculation program that can be used to determine the switchgear rating of the auxiliary system. The MVA method of calculation is used.

E. Exit Interview

An exit interview was held with management representatives on April 3, 1981. In addition to those individuals indicated by an asterisk in paragraph A of each Details Section, those in attendance were:

K. Bailey, Engineering Manager
L. M. Christian, Project Manager
L. H. Curtis, Project Engineer
N. H. Eidsmoe, Assistant Project Engineer
J. Milandin, Manager, Division QA
G. L. Richardson, QA Manager, Projects
J. B. Sullivan, Principal Engineer

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

DETAILS SECTION II

(Prepared By D. G. Breaux)

A. Person Contacted

D. R. Anderson, Mechanical Group Supervisor
*M. Bakarich, Project Administrator
W. R. Bird, Manager, MQAD, Consumers Power
*R. C. Hollar, Project Quality Engineer
B. P. Kunonetly, Electrical Group Supervisor
M. Lawson, Quality Engineer
G. Maule, Quality Engineer
S. Sobkowski, Civil Group Supervisor
T. E. Speck, Civil DQE
*C. T. Springer, QA Supervisor
J. L. Wood, QA Services, MQAD, Consumers Power

*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 (resulting from tests, interference problems, failures of structures, systems or components, disposition of nonconformances, changes in requirements, operating experience and design improvements) 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 (see d. below for exceptions).

d. When responsibility has been changed, the designated organization shall have access to the pertinent information, 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 Quality Assurance Program for Nuclear Power Plants, Topical Report BQ-TOP-1, Revision 1A, dated May, 1, 1975.

Section 3 of this Topical Report, entitled, "Design Control," addresses establishment of Engineering Department policies, standards, design guides, procedures, and instructions for control of engineering design work to meet technical and regulatory requirements.

b. Bechtel Power Corporation, San Francisco Power Division, Midland Quality Program Job 7220, Nuclear Quality Assurance Manual.

(1) Section II of this NQAM entitled, "Design Control."

(2) Section II, Number 2 entitled, "Design Control Procedures."

(3) Section II, Number 5 entitled, "Design Process and Change Control."

(4) Section II, Number 10 entitled, "Specialty Group Design Control."

c. Bechtel Associates Professional Corporation Ann Arbor, Engineering Department Procedures. The following EDPs from Section 4.0 entitled, "Design Execution," were reviewed for satisfaction of technical and regulatory requirements:

(1) EDPI 4.23.1 entitled, "Safety Analysis Report Change Control for Midland Project."

(2) EDP 4.28 entitled, "Project Q-List."

(3) EDP 4.43 entitled, "Standard Project Document Numbering System."

(4) EDPI 4.46.3 entitled, "Drawing Control Logs, DCN Logs, Stick Files, Approvals, and Drawing Designators, Midland Project."

(5) EDP 4.47 entitled, "Drawing Change Notice."

(6) EDPI 4.47 entitled, "Design Change Packages/Interim Drawing Change Notice for Midland Project."

(7) EDPI 4.49.1 entitled, "Specification Change Notice."

(8) EDP 4.62.1 entitled, "Project Engineering Review of Field Change Notice, Midland Project."

(9) EDP 5.13 entitled, "Control Logs."

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

(1) Material Requisition/Specification and Drawing Control Log (CEBUS) Midland Project, dated January 31, 1981.

(2) Fifteen Drawings (Electrical, Mechanical, Civil).

(3) Fifteen Specifications (Electrical, Mechanical, Civil).

(4) Ten Design Changes Notices (DCN).

(5) Five Field Change Requests (FCR).

(6) Fifteen Document Transmittal Forms (Electrical, Mechanical Civil).

(7) Deisgn Change Notice (DCN) Log.

3. Findings

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

b. All of the Regulatory Inspection Requirements listed in II.B.1 of this report were addressed in reviewing Bechtel procedures listed in II.B.2.a, II.B.2.b, and II.B.2.c, above. All documents reviewed in II.B.2.d of this report were processed according to Bechtel procedural requirements.

The CEBUS, referred to in the Notice of Nonconformance, was updated and issued for the month of March prior to the end of the inspection.

C. Design Corrective Action

1. Objectives

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

a. Procedures have been established and implemented for identifying deficiencies in the design process of a significant or recurring nature, determining the cause of the deficiencies, and initiating corrective action to prevent recurrence.

b. Deficiencies in the design process and the corrective action are reported to appropriate levels of management.

c. Follow up action is taken to assure timely completion of corrective action of a deficiency in the design process when resolution is not completed immediately.

2. Method of Accomplishment

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

a. Bechtel Quality Assurance Program for Nuclear Power Plants, Topical Report BQ-TOP-1, Rev. 1A dated May 1, 1975.

Section 16 of this Topical, entitled, "Corrective Action."

b. Bechtel Power Corporation, San Francisco Power Division, Midland Quality Program Job 7220, Nuclear Quality Assurance Manual

Section V Number 10 entitled, "Management Corrective Action."

c. Bechtel Associates Professional Corporation, Ann Arbor, Engineering Department Procedures. The following EDP's from Section 4.0 entitled, "Design Execution." were reviewed for satisfaction of regulatory requirements:

(1) EDP 4.61 entitled, "Nonconformance Reports (NCR)."

(2) EDP 4.63 entitled, "Supplier Deviation Disposition Requests (SDDR)."

(3) EDP 4.65 entitled, "Design Deficiency Processing."

(4) EDP 4.60 entitled, "Processing Corrective Action Reports."

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

(1) Supplier Deviation Disposition Request Log (SDDR).

(2) Five Supplier Deviation Disposition Requests (SDDR's).

(3) Nonconformance Report Log (NCR),

(4) Five Nonconformance Reports along with corrective action verifications such as calculations, and Design requirements checklists.

(5) Seven Management Correct Action Reports (MCAR) Midland Project.

3. Findings

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