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

Report No. 99900519/79-03 Program No. 51200

Company: Bechtel Power Corporation
Gaithersburg Power Division
15740 Shady Grove Road
Gaithersburg, Maryland 20760

Inspection Conducted: August 21-24, 1979

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Approved by: C J Hale 9-24-79
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Summary

Inspection on August 21-24, 1979 (99900519/79-03)

Areas Inspected: Implementation of 10 CFR 50, Appendix B, in the areas of design document control, IE Bulletin 79-14 (Seismic Analysis for As-Built Safety-Related Piping Systems), and action on previous inspection findings. The inspection involved eighty-six (86) inspector-hours on-site by four (4) NRC inspectors.

Results: In the three (3) areas inspected there were no unresolved items identified in two (2) of the areas, no deviations identified in one area, and the following identified in the remaining areas:

Deviations: IE Bulletin 79-14 - Failure to have instructions or procedures governing the home office activities (See Notice of Deviation, Item A); Design Document Control - Project instructions do not require that changes to specifications be subjected to design control measures commensurate with those applied to the original design (See Notice of Deviation, Item B); project instructions do not require retention of records of internal interface reviews (See Notice of Deviation, Item C); failure to have reproducible signatures or initials on two (2) engineering documents (See Notice of Deviation, Item D); failure to stamp a supplier drawing with the SNUPPS document review stamp as required by project instructions (See Notice of Deviations, Item E); failure to control the typed originals of a specification and failure to have a registered professional engineer's signature or initials on a revision to two (2) specifications as required by project instructions (See Notice of Deviation, Item F); failure to stamp a superseded drawing "superseded" as required by project instructions (See Notice of Deviation, Item G); five (5) released/issued project drawings and specifications out of thirty-one (31) inspected could not be located in designated files. (See Notice of Deviation, Item H).

Unresolved Items: (1) Design Document Control - Exception No. 4 to R.G.1,64, Revision 2, contained in Topical Report BQ-TOP-1, Revision 2A, appears to allow the discarding of records of internal interface reviews and may be a deviation from the record retention requirements of ANSI N45.2.9. (2) Additional examinations of Engineering Department Project Instructions are needed to determine that the requirements of EDP 1-1.10 (Engineering Department Project Instructions) are being followed.

DETAILS SECTION I
(Prepared by R. H. Brickley and R. M. Compton)

A. Persons Contacted

*P. P. Anas, Chief Engineer, Plant Design
A. J. Ciccone, Group Supervisor, Plant Design
K. K. Chhatwal, Group Leader, Plant Design
*R. A. Glasby, Project Engineer
*J. Mutzberg, Supervisor, QA Programs
G. K. Wang, Plant Design Staff
S. C. Ward, Stress Staff

*Denotes those present at the exit interview.

B. Action on Previous Inspection Findings

1. (Closed) Deviation (Report No. 79-02): A log for unresolved design review issues and a positive closure system had not been established as required by project procedures. The inspector verified the corrective action and preventive measures committed in the letter of response dated May 31, 1979, i.e. the establishment on June 27, 1979, of a Design Verification Review Meeting Log listing all unresolved issues, and the first updated issue thereof dated on August 6, 1979.

2. (Closed) Deviation (Report No. 79-02): Procedures had not been issued governing a key design document (System Description). The inspector verified the corrective action and preventive measures committed in the letters of response dated May 31, 1979 and July 6, 1979, i.e. Revision 4 to EDP 4.46 (Project Drawings) issued on June 29, 1979, now governs the preparation of System Descriptions.

3. (Closed) Deviation (Report No. 79-02): An audit report had not been issued within thirty (30) days as required. The inspector verified the corrective action and preventive measures committed in the letter of response dated May 31, 1979, i.e. the audit report was issued on May 22, 1979.

4. (Closed) Deviation (Report No. 79-02): Procedures governing design verification do not exist on two (2) projects as required by their SARs. The inspector verified the corrective actions and preventive measures committed in the letter of response dated May 31, 1979, i.e. Revision 57 to Section 5.8.12 of the Project (No. 7597) Procedures Manual calls for independent review of project specifications; the procedure for specifications, Section 4.5 in Project (No. 9645) Engineering Procedures Manual has been

revised as committed; a new specification cover page, providing a space for a checker to add his initials of approval; and two (2) recently revised specifications that incorporated the preceding requirements.

5. (Closed) Deviation (Report No. 79-02): Nine (9) drawings had both controlled and non-controlled stampings on them. The inspector verified the corrective actions and preventive measures committed in the letter of response dated May 31, 1979, i.e. the specific drawings were replaced with ones stamped non-controlled and this action verified by QA; Plant Design, Layout, Mechanical, Electrical, Control Systems, Architectural, and Civil disciplines had documented completion of their reviews and disposition of improperly stamped drawings; and Revision 12 to EDPI 4.46-01 (Project Engineering Drawings) was issued on June 28, 1979, which specifies that a non-controlled stamp takes precedence over a controlled stamp.

6. (Closed) Deviation (Report No. 79-02) Two (2) project personnel did not complete the required indoctrination & training (I&T). The inspector verified the corrective actions and preventive measures committed in the letter of response dated May 31, 1979, i.e. the project had reviewed their training records and identified all personnel requiring indoctrination and training, and conducted sessions on May 1, 10, 17, and 24, 1979.

C. Seismic Analysis for As-Built Safety-Related Piping Systems

1. Objectives

This was a special inspection of the Bechtel Power Corporation/ Gaithersburg Power Division (BPC/GPD) activities with respect to IE Bulletin 79-14. The inspection consisted of two (2) phases.

a. Phase 1

The objectives of this phase of the inspection were to determine the following:

(1) The licensees that are inspecting systems to the latest drawings and comparing the results with the seismic analysis input used.

(2) The number of people that will be comparing the marked-up drawings with the seismic analysis input, a general description of their qualifications, and the schedule for these activities.

(3) The guidelines that will be used to identify the nonconformances of the marked-up drawings to the seismic analysis input used.

(4) The identification of units where eccentric masses have been modeled.

(5) The BPC/GPD position regarding checking pin gaps in struts and their reason.

(6) Whether BPC/GPD will recommend that future inspection documentation will specifically identify the measuring technique used.

b. Phase II

The objectives of this phase of the inspection were to select a Hatch Unit 2 system and determine that:

(1) The IE Bulletin 79-14 activities are being conducted in a documented, planned and systematic manner.

(2) The inputs to the seismic analysis for this system can be readily identified.

(3) Identified nonconformances are analyzed and the results properly documented.

(4) Personnel conducting these activities have received indoctrination and training.

2. Method of Accomplishment

a. Phase I

The preceding Phase I objectives were accomplished by discussions between the inspection team and Bechtel representatives and, examination of the following:

(1) A list of Bechtel clients indicating the organization responsible for specific activities i.e. walkdown, evaluation, and reanalysis.

(2) The schedule for conduct of these activities for several licensees.

(3) The position description of the stress analysts that will be doing the evaluation and reanalysis.

(4) Several documents constituting the guidelines for nonconformance evaluation, i.e. home office review logic, items important to piping analysis, requirements of evaluation stress review report, pipe support checklist, and pipe support evaluation.

(5) The BPC/GPD Generic Implementation Program, Revision 1, dated August 7, 1979.

(6) The Quality Assurance Program Plan, draft copy.

b. Phase II

The preceding objectives were accomplished by an examination of:

(1) Georgia Power Company Procedures No. HNP 1-10124 (Surveillance Procedure for Safety Related Seismic Class-I Systems) Revision 1, dated August 1, 1977, MD-T-02 (Field Pipe Restraint Procedure) Revision 1, dated December 13, 1974, and MI-T-02 (Guide to support Devices Inspection) Revision 0, dated March 16, 1978. These procedures covered site activities.

(2) Eighteen (18) Deviation Evaluation Sheets (problems) and their associated Deviation/Disposition Logs.

(3) Stress isometric 2E11-103 (RHR System) Revisions F (input to stress analysis) and N (marked up from surveillance records) and associated valve weight checklists. Note: The RHR System was selected for examination.

(4) Problem 253 analysis and stress summary sheets.

3. Findings

a. There were no unresolved items and one deviation (Notice of Deviations, Enclosure Item A) identified in this area of the inspection.

b. The licensees, that who are inspecting systems to the latest drawings and comparing the results with the seismic analysis input used, were identified as Georgia Power Company (Hatch 1 & 2), Alabama Power Company (Farley 1 & 2), Toledo Edison

Company (Davis - Besse 1), Baltimore Gas and Electric Company (Calvert Cliffs 1 & 2), Florida Power and Light Company (Turkey Point 3 & 4), and Duke Power Company (Oconee 1, 2 and 3). The remaining licensee, Northeast Utilities (Millstone - 2), is using the Area Drawing/Stress Isometric and marking up the Stress Isometric.

c. Approximately sixty (60) stress analysis engineers will do the evaluation of the systems within the scope of IE Bulletin 79-14. These personnel usually have a technical degree and experience in stress analysis of piping systems including locating pipe supports, restraints, and anchors for thermal, weight, and seismic loads. They code piping systems for computer input, summarize computer outputs, and perform stress calculations. Examination of several project schedules indicates the activities would be completed within the established time frame.

d. The documents examined that provided guidelines for nonconformance evaluation (paragraph c.2.a(4) above) were part of the BPC/GPD generic program and appeared to provide acceptable traceability and documentation. It should be noted, however, that most of the projects were well underway when the program was written and therefore have their own project unique methods.

e. The eccentric mass in the piping stress analysis referred to the valves with extended operators. For those valves with extended operators, whose eccentricity was marked on the stress isometrics, the eccentric effects were accounted for in the stress analysis. The orientation of the extended operator is one of the inspection elements for the walkdown, therefore all units identified in paragraph C.3.b above will be reviewed for any nonconformance due to eccentric masses.

f. BPC/GPD had checked with their vendors (ITT Grinnel and Bergen-Paterson) and determined that neither have ever supplied struts or snubbers without close tolerance spherical ball bushings. The BPC/GPD position is that they will not require checking of the clearances of these items during the walkdown.

g. Per a BPC/GPD memo of August 23, 1979, personnel are required to identify on the walkdown drawings whenever visual inspection is performed and clearly identify all inspection elements and inspection boundaries.

h. The examination of the documents identified in paragraphs C.2.b.(2), C.2.b.(3), and C.2.b.(4) above and discussions with engineering representatives revealed that no written instructions or procedures existed for BPC/GPD home office activities. For example, neither the inspectors nor the engineering representatives could determine the significance of the engineer's initials on the Deviation Evaluation Sheets, i.e. did it indicate that an entry was made or that the disposition of the entry was completed? Some of these sheets had an engineer's initials and some did not. (Reference, Notice of Deviation, Enclosure Item A)

i. Item No. 6 on one Deviation Evaluation Sheet (Problem No. 16A issue 02) could not be found on the Deviation/Disposition Log.

j. The inputs to the seismic analysis were identifiable, identified nonconformances were analyzed, and the results documented.

k. A two (2) hour training session was conducted on August 20, 1979, for Plant Design Supervisors and Stress and Pipe Support Supervisors. This session dealt with the generic program and covered the items identified in paragraph C.2.a.(4) above.

l. With approximately 90% of the initial engineering review complete, twenty-six (26) problems in various systems of Hatch Unit 2 have been identified as requiring additional evaluation.

D. Exit Interview

An exit interview was held with management representatives on August 24, 1979. In addition to those individuals indicated by an asterisk in each Details Section, those in attendance were:

L. Bonn, QA Supervisor, Audits
T. I. Gillespie, Project QA Manager
W. M. Mendus, Chief Quality Engineer
B. C. Meyers, Assistant Project Manager
J. H. Smith, Project Engineering Manager
R. H. Stone, Manger, Division Engineering
A. A. Vizzi, Project Engineer

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.

Subsequent to the exit interview: (1) the deviations identified were regrouped, and (2) the concern that project instructions do not meet the requirements of EDP 1-1 10 has been identified as an unresolved item. These two items were discussed with GPD management by telephone on September 24, 1979.

DETAILS SECTION II

(Prepared by D. F. Fox)

A. Persons Contacted

*J. M. Amaral, Manager, Gaithersburg Power Division Quality Assurance
*D. C. Kansal, Manager, SNUPPS Project Quality Assurance
*J. J. Milos, Quality Engineer, SNUPPS Project
*J. Mutzberg, Supervisor, Gaithersburg Power Division QA Program

B. Design Document Control

1. Objectives

To determine that approved procedures have been established and are being implemented for the control and distribution of design documents that provide for:

a. Identification of personnel, positions, or organizations responsible for preparing, reviewing, approving, and issuing design documents.

b. Identification of the proper documents to be used in performing the design.

c. Coordination and control of design interface documents.

d. Ascertaining that proper documents, and revisions thereto, are accessible and are being used.

e. Establishing distribution lists which are updated and maintained current.

2. Methods of Accomplishment

a. Review of the PSAR for the SNUPPS Project, Revision 15 dated January 1979, Sections 17A.0, 17A.1.1, 17A.1.3, 17A.1.5, 17A.1.6 and 17A.1.17, to determine the Bechtel commitments relative to design document control.

b. Review of the Gaithersburg Power Division Nuclear Quality Assurance Manual, Quality Policies No. QG-6.1 Revision 4 dated April 1978, No. QG-6.2, Revision 0 dated February 1976, No. QG-6.3 Revision 0 dated February 1976, and No. QG-17.1 Revision 0 dated February 1976, to determine if the SNUPPS PSAR commitments relative to design document control, were correctly translated into the Gaithersburg Power Division quality assurance program requirements.

c. Review of the SNUPPS Project Nuclear Quality Assurance Manual, Revision 2 dated January 6, 1978, to determine if the SNUPPS PSAR commitments relative to design document control that were unique to the SNUPPS Project were correctly translated into the SNUPPS Project Quality Assurance program requirements.

d. Review of the following Engineering Department Procedures (EDPs) and Engineering Department Project Instructions (EDPIs), to determine that approved procedures have been established for the generation, control, and distribution of design documents, and that each such procedure: (1) identifies the requirements for preparation, review and approval of each type of design document; (2) states the applicability of the procedure to the various design processes; (3) defines the requirements for control of internal and external design interfaces; (4) controls the distribution, accessibility for use, and revision of design documents.

(1) EDP Applicability Index, Revision 6 dated June 29, 1979, which directs implementation of specific EDPs and authorizes specific EDPIs for the SNUPPS project.

(2) EDP-1.7 "Engineering Department Procedures", Revision 2 dated March 31, 1978, which defines the method for preparation, use, and control of EDPs.

(3) EDP-1.10, "Engineering Department Project Instructions" Revision 2 dated March 31, 1978, which defines the method for preparation, use, and control of EDPs.

(4) EDP-4.46 "Project Drawings", Revision 4 dated June 29, 1979, which defines the requirements for the preparation, review, approval, and control of drawings prepared by engineering.

(5) EDP-4.49 "Project Specifications", Revision 3 dated November 11, 1977, which defines the requirements for the preparation, review, approval, and control of specifications prepared by engineering.

(6) EDP-7.5 "Engineering Document Signature and Initials Identification" Revision 0 dated May 31, 1978, which defines the identification and reproducibility requirements for signatures and/or initials on design documents.

(7) EDPI-4.25-01 "Design Interface Control," Revision 1, dated March 9, 1978, which defines the methods for identifying, controlling, and coordinating the responsibilities and functions related to Bechtel design interfaces.

(8) EDPI-4.37-01 "Design Calculations," Revision 6 dated January 15, 1979, which defines the methods used for

preparing, checking, reviewing, controlling, and retaining engineering design calculations for the SNUPPS Project.

(9) EDPI-4.46-01 "Project Engineering Drawings," Revision 12 dated June 28, 1979, which defines the requirements for the preparation, review, approval, and control of Bechtel drawings prepared by engineering for the SNUPPS Project.

(10) EDPI-4.49-01 "Project Specifications," Revision 8 dated March 9, 1978, which defines the requirements for the preparation, review, approval, and control of specifications prepared by project engineering for the SNUPPS project.

(11) EDPI-5.16-01 "Suppliers Document Control Procedure," Revision 6 dated March 9, 1978, which establishes formal control procedures for project receipt, logging, review, comment, transmittal, and filing of supplier documents.

(12) EDPI-5.25-01 "Project Master Distribution Schedule," Revision 2 dated July 21, 1978, which defines the requirements for the preparation, review, and control of the Project Master Distribution Schedule which is utilized by the SNUPPS Project.

(13) EDPI-5.30-01 "Project Release Procedure and Document Release Log," which provides instructions for the release of project documents and maintenance of the SNUPPS Project Engineering Document Release Log.

(14) EDPI-5.31-01 "Project Record Retention Processing," Revision 9 dated May 8, 1978, which provides methods for safeguarding and retrieving essential design documentation.

(15) EDPI-5.32-01 "Nuclear Project Records Management (Design Office)," Revision 7 dated May 8, 1978, which establishes the requirements for, and the prescribed methods of, storage, maintenance, and protection of documents.

e. Review of the following design documents and records to verify that the requirements contained in the procedures and instructions identified in B.2.d were implemented.

(1) The current SNUPPS Project Engineering Document Release Log for August 1979

(2) Four (4) NSSS supplier generated drawings requiring interfacing with Bechtel SNUPPS Project engineering

(3) Eight (8) Bechtel generated design drawings and twenty-four (24) revisions thereto requiring interfacing with the utility (SNUPPS).

(4) One Bechtel generated design specification and six (6) revisions thereto requiring interfacing with the utility (SNUPPS).

(5) Seventeen (17) Bechtel generated design drawings and forty-four (44) revisions thereto relating to the SNUPPS Project.

(6) Fourteen (14) Bechtel generated design specifications and fifty-three (53) revisions thereto relating to the SNUPPS Project.

3. Findings

a. Deviations from Commitment

In this area of the inspection, seven (7) deviations were identified. (See Notice of Deviation items B thru H and the additional information below).

SNNUPS Project implementing instruction EDPI-4.49-01 "Project Specifications" was revised (Revision 9 dated August 24, 1979) to include the requirement for the control and review of design changes, prior to completion of the inspection. However, further information as indicated in our transmittal letter is required.

b. Unresolved Items

In this area of the inspection two (2) unresolved items were identified:

(1) Exception 4 to R.G. 1.64, Revision 2 contained in Topical Report BQ-TOP-1 states, "In-process documentation relating to checking and coordination of drawings (for example, check and coordination prints) or copies of marked-up specifications used to solicit comments shall be retained until the drawing or specification is approved and issued for use outside of Bechtel Engineering. Such in-process documents will be available for review/audit until the document is approved, but may be discarded once the document had been approved."

This exception permits the design groups within Bechtel Power Corporation to discard records that document:

(1) the interfacing organizations/groups that reviewed each original issue or revised design document;

(2) that design interface information/input resulting from such reviews was incorporated into the document to the satisfaction of the reviewer.

This item will be referred to NRR/QAB for resolution.

(2) EDP-1.10 "Engineering Department Project Instructions," Revision 2 dated March 31, 1978, states in part" . . . the parent EDP establishes minimum requirements for the EDPI . . . Modifications to the parent EDP (to generate a Project individualized EDPI) shall be limited to those necessary to achieve the objectives outlined above, utilizing as much as possible of the original format and wording . . . ."

Time did not permit the inspector to determine the extent of the apparent degradation of requirements imposed by the Gaithersburg Power Division Engineering Department Procedures (EDPs) in the project individualized Engineering Department Project Instructions (EDPIs) during this inspection. The inspector will review project EDPIs against the parent EDPs during a future inspection.

Specific examples of less restrictive requirements in EDPIs are as follows:

(a) EDP-4.49 "Project Specifications," Revision 3 dated November 11, 1977 ". . . revisions and addenda shall be reviewed and approved in the same manner as the original project specifications . . . ."

EDPI-4.49-01, "Project Specifications," Revision 8 dated March 9, 1978, contains no such specific requirement.

(b) EDP-4.46 "Project Drawings," Revision 4 dated June 29, 1979, identifies design "key documents" and specifically defines the requirements for their interdisciplinary review and co-signature.

EDPI-4.46-01 "Project Engineering Drawings," Revision 12 dated June 28, 1979 contains no such specific interdisciplinary review and signoff requirement.