

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/82-10

Docket No. 50-354

License No. CPPR-120 Priority -- Category A

Licensee: Public Service Electric and Gas Company

80 Park Plaza - 17C

Newark, New Jersey 07101

Facility Name: Hope Creek Generating Station, Unit 1

Inspection At: Hancock's Bridge, New Jersey

Inspection Conducted: August 30 thru September 3, 1982

Inspectors: A. E. Finkel 09-21-82
A. E. Finkel, Reactor Engineering Inspector date

Approved by: L. H. Bettenhausen 9/23/82
L. H. Bettenhausen, Acting Chief, date
Plant System's Section, DETP

Inspection Summary: Inspection on August 30 thru September 3, 1982
(Report No. 50-354/82-10)

Areas Inspected: Routine unannounced inspection by one region based inspector of safety related on-site design activities in the electrical and instrumentation areas; review of design procedures and the licensees system to implement and control the field design were inspected. The inspection involved 35 hours onsite by one region based inspector.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Public Service Electric and Gas Company (PSE&G)

- * A. Barnabei, Site Quality Assurance Engineer
- * R. Bravo, Principal Construction Engineer
- * A. Giardino, Project Quality Assurance Engineer
- * P. Kudloss, Project Construction Manager

Bechtel Power Corporation (Bechtel)

- * P. Bedford, Staff Assistant
- * A. Davlevc, Quality Control Engineer
- M. Drucker, Lead Site Quality Assurance Engineer
- * M. Henry, Project Field Engineer
- * G. Moulton, Project Quality Assurance Engineer
- * J. Pfeiffer, Quality Control Engineer
- * J. Serafin, Assistant Project Field Engineer
- * D. Stover, Project Superintendent, Contract Administrator

United States Nuclear Regulatory Commission

- * W. Bateman, Senior Resident Inspector

*denotes those present at exit meeting.

Other licensee and construction personnel were also interviewed.

2. Facility Tour

Work in progress, completed work, and plant status were observed during a general inspection of the electrical and instrumentation construction activities. Installations and inspection activities were examined for obvious defects or violations with NRC requirements or licensee commitments. Craft and supervisory personnel encountered in work areas were interviewed.

No violations were identified.

3. On-Site Design Effort

On-site design effort is authorized to be performed as defined in Bechtel Specific Work Plan/Procedures - SWP/P-FS-100, Revision 2 dated July 28, 1982, covering electrical and instrumentation pipe supports of 3½" diameter and smaller. The design effort at the present time authorizes the Field Support Group (FSG) to design (a) supports to assist the field electrical, piping, instrumentation and heating and ventilating design groups; and (b) permanent miscellaneous platforms.

The design data package requires the following data to be part of the documentation. The design has to discuss each area in detail, with supporting data to justify the analysis:

- Specific and generic seismic calculations
- Support sketch, with maximum dimensions and maximum loads
- Specific locations for bracket locations
- Support number

The inspector reviewed the following design calculation requirements that are to be performed for on-site designs and determined that these requirements comply with the intent of 10 CFR 50, Appendix B, Criteria III Design Control.

- The originator shall prepare calculations legibly, with sufficient contrast, to provide a satisfactory record copy by micro-reproduction. Each calculation shall list or reference applicable codes, standards, or design guidelines issued by Project Engineering, including the issue date or particular revision of each, and shall contain clearly-stated design assumptions. The source or derivation of equations not in common usage shall be shown when they are introduced into the calculations. The originator shall obtain a calculation number and assure logging of the calculation.
- Calculations shall be completed, in accordance with this procedure, prior to using calculation results for input to other committed or final calculations, issuing drawings for construction. Exceptions to this requirement shall be approved by the Project Field Engineer.
- Calculations shall be orderly and complete so that the work can be understood by other knowledgeable individuals. Informational diagrams indicating data (such as loads and dimensions) shall be included, as appropriate, along with sketches of important details not considered standard, and shall be identified with appropriate sheet number, calculation number, and their source shall be identified. The calculation cover sheet shall be prepared before calculations are submitted for review.
- Calculations, excepting computer calculations, shall be made on Bechtel standard calculations sheets. In special instances where the Bechtel standard calculation sheets are not appropriate, e.g., graphs, charts, Standard Forms unique to a particular discipline, the information shall be included.
- The calculation package in which a Standard Computer Program (SCP) is used shall consist of a completed cover sheet, an outline of the problem, inputs and outputs, and identification of the SCP by number and/or name and the version of revision, including option, used.
- Calculations shall be checked by an individual who has a level of qualification at least sufficient to originate the calculation. The

checker shall not be the originator of the calculations. Checking may be performed by the originator's supervisor if the supervisor is the only individual competent to perform the checking. If the originator's supervisor is the checker, the next level of supervision shall also initial in the "checked" box to attest that the supervisor is the only individual competent to perform the check.

- The checker has the option of performing a mathematical check or verifying the calculation by an alternate method. Approximation methods may be adequate for checking, depending on the judgement of the approver. Checked calculations by alternate method shall be attached to the original calculations. Alternate calculations by checker will be sheet numbered independent of the calculation being checked, initialed and dated on each sheet by checker as the originator and indicated on cover sheet of the calculation being checked.

The first seismic design was being performed by the field support group in the electrical/instrumentation area, but was not complete enough at this time for a complete review by the inspector. The technical data reviewed by the inspector did follow the above requirements and was in compliance with the requirements of SWP/P-FS-100 and SWP/P-10 procedure entitled "Field Design Approval and Control."

No violations were identified.

4. Design Procedure Review

The licensee's Quality Assurance Manual, Volume 4, Design Review, and Bechtel's Nuclear Quality Assurance Manual comply with the requirements of Regulatory Guide 1.64 and ANSI N45.2.11, Quality Assurance Requirements for the Design of Nuclear Power Plants.

The inspector discussed the requirements of the above documents with both licensee and Bechtel personnel and determined that they were knowledgeable of the requirements of these quality assurance manual procedures. The inspector also verified that the level of design being performed by the on-site personnel was understood and monitored by the licensee. Deviation requests from the Architect-Engineer (Bechtel) are forwarded to the licensee as defined in QAI-6-5, Architect - Engineer's Quality Related Documents for review and approval.

As discussed in paragraph 3 above, the licensee has procedures for defining and controlling the field design effort to conform to the design criteria of the original or home office design task.

No violations were identified.

5. Design Changes

In the area of electrical and instrumentation one design change has been performed by the on-site field support group. The design was not completed during this inspection period, but the inspector did review the following areas of the design change:

- (1) reason/need for the change,
- (2) change does not appear to compromise original design intent,
- (3) change was reviewed and in process of being approved by "other than originator"
- (4) review did consider impact on overall design, and
- (5) design drawings were being prepared to reflect new design.

A new field design will receive a drawing number issued from a controlled block of numbers designated by Bechtel San Francisco Engineering Organization. The issuance and control of field-generated drawings is defined in Field Design Approval and Control Procedure SWP/P-10, Revision 9, dated March 30, 1982. The field support group is responsible for implementing and controlling the JS 1100 and 1300 series of drawing numbers that the field office will be issuing.

No violations were identified.

6. Design Control/Audits

The inspector reviewed the licensee's schedules for design control and audits in the electrical/instrumentation areas for 1982. During the last half of 1982, an audit both by the licensee and Bechtel is scheduled to be performed in the area of design review activities.

At random, the inspector selected an audit performed by the licensee and an audit performed by the Bechtel Corporation in the areas of Installation of Electrical Equipment and Documentation Distribution and FCR/FCN Control, respectively. These audits were:

- (1) Licensee QA Audit No. H-251, Installation of Electrical Equipment, and
- (2) Bechtel Corporation QA Audit No. 9.1-11, Documentation Distribution and FCR/FCN Control.

In both audits, the inspector verified that the following actions took place:

- (1) The audited organizations received a copy of the audit report,
- (2) Measured performance values were established,
- (3) Auditors were selected by the methods in the QA manual,
- (4) Findings were identified, with responsibilities and dates established for answering the findings,
- (5) Re-audit was scheduled to verify findings were completed,
- (6) All findings listed in report were closed in a reasonable length of time.

In addition, the inspector noted that management reviewed findings for reportability according to 10 CFR Part 21 and Part 50.55(e).

No violations were identified.

7. Exit Meeting

The inspector met with licensee and Architect-Engineering/Constructor representatives (See Paragraph 1) at the end of the inspection on September 3, 1982. The inspector summarized the purpose, scope and findings of the inspection.