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

Region I

Report No. 50-354/81-13
50-355/81-13

Docket No. 50-354
50-355

License No. CPPR-120
CPPR-121 Priority -- Category A

Licensee: Public Service Electric & Gas Company

80 Park Plaza - 17C

Newark, New Jersey 07101

Facility Name: Hope Creek, Units 1 and 2

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: August 14, 15, and 18-21, 1981

Inspectors: S.K. Chaudhary, Reactor Inspector — 9/14/81 date signed

_____ — date signed

Approved By: for L.E. Tripp, Chief, Materials and Processes Section, Engineering Inspection Branch — 9/15/81 date signed

Inspection Summary:
Units 1 and 2, (Combined Inspection Report No. 50-354/81-13; 50-355/81-13)

Areas Inspected: Routine announced inspection by a regional based inspector of the licensee activity in the area of safety related concrete placement and associated quality records. The inspection involved 42 hours onsite by one regional based inspector.

Results: No items of noncompliance were identified

Region I Form 12
(Rev. April 77)

DETAILS

1. Persons Contacted

Public Service Electric & Gas Company

*R. Donges, QA Engineer
*A.E. Giardino, Project QA Engineer
*K.M. McJunkin, Senior Construction Engineer
*G.D. Owen, Principal Construction Engineer

Bechtel Power Corporation

R. Barkley, Lead Civil QC Engineer
*B. Cole, QA Engineer
C. Colletto, Civil QC Engineer
*M.A. Drucker, Lead QA Engineer
*M.C. Henry, Project Field Engineer
*R. Hanks, Project Construction QC Engineer
G. Holorman, Engineer
*D. Long,
P.A. Patil, Resident Project Engineer
D. Saker, Assistant Project CQCE
*J. Serafin, APFE
*D. Stover,

Liberty-Wescon

R. Johnson, Site QA Manager

USNRC

*W.H. Bateman, Sr. Resident Inspector

2. Plant Tour

The inspector conducted a walk-through plant tour of Units 1 and 2 safety related structures areas to assess general conformance to work procedures, good practice, and availability of proper work tools, etc. to craftsmen. Special emphasis was placed on the concrete and structural steel operations. A licensee QA Engineer accompanied the inspector on this tour.

No items of noncompliance were identified.

3. Observation of Concrete Placement Operations in Unit 1 Shield Wall

The inspector personally observed the concrete placement operations for the shield wall in Unit 1. The placement as planned involved approximately 100 cubic yards of safety related structural concrete. The inspector made the following observations:

a. Forms were properly secured and clean.

b. Rebar and other embedments appeared to be properly placed, secured, free from excessive rust, and other deleterious material.

c. Concrete cover over the rebar was adequate.

d. Preplacement Inspection was complete prior to a restart of placement.

e. Concrete was pumped inside the forms by concrete pumps located outside the building.

f. Pump lines were not made of and did not contain any aluminum fittings.

g. Crew, equipment, and placing technique appeared adequate.

h. Placement Inspection by QC was adequate.

i. Samples were obtained at the pump discharge for field testing.

Based on the above observations and discussions with cognizant personnel of the licensee and the constructor, the inspector determined that the placement operation was carried out properly.

No items of noncompliance were identified.

4. Review of Quality Assurance Records of the Concrete Placement

The inspector reviewed records and held discussions with the licensee and constructor engineers plus QA/QC personnel to determine the adequacy of quality records associated with the observed concrete placement in the Unit 1 shield wall. The following records were reviewed:

-- Bechtel Specifications C-101(Q), Revision 9, "Technical Specification for Contract for Providing On-site Batch Plant and Furnishing Concrete for the Hope Creek Generating Station."

-- Addenda 1, 2, and 3 to the above specification.

-- Bechtel Specification C-102, Revision 9, "Technical Specification for Identification of Concrete Mix Design for the Hope Creek Generating Station."

-- Addenda 1, 2, 3, and 4 to the above Specification.

-- Bechtel Specification C-103(Q), Revision 7, "Technical Specification for Forming, Placing, Furnishing, and Curing of Concrete for the Hope Creek Generating Station."

-- Addenda 1 and 2 to the above specification.

-- Bechtel Specification C-112(Q), Revision 5, "Technical Specification for Placing Reinforcing Steel for the Hope Creek Generating Station."

-- Bechtel Drawings:

C-301-0-1, Revision 19

C-302-0, Revision 7

C-303-0, Revision 22

C-304-0, Revision 16

C-787-1, Revision 11, Sheet-1

C-787-1, Revision 8, Sheet-2

C-788, Revision 8, Sheet-1

C-788, Revision 11, Sheet-2

-- FSK-C-410, Revision 1, Sheets 1 through 12.

-- Work Plan/Procedure Record: SWP/P-C-4917.

-- Preplacement Inspection Report: IR #1-C-X-W-904-C-1.20 and 1-C-X-W-005-C-1.20.

- Placement Checklist: IR # 1-C-X-W-904-C-1.30.

-- Batch Tickets:

46254 to 46276

49044 to 49104

50700 to 50714

-- Field Change Requests:

C-4795; C-4816; C-4126; C-1422; C-4095; C-4787; C-4002; C-3117

C-4088; C-4313; C-3962; C-3053; C-2424; C-4210; C-3052.

-- Hercules Cement Company, "Mill Laboratory Tests" certificates for Type II Cement, dated 7/27/81, 7/29/81, 7/30/81, 7/31/81.

Based on review of the above records, discussions with licensee and constructor personnel, and personal observations, the inspector determined that the records were legible, complete, easily retrievable and adequately covered the concrete operations. However, during the review of batch tickets, the inspector noticed that the batch plant experienced considerable difficulty in meeting the temperature requirement for the freshly mixed concrete during the entire placement operation. Due to this difficulty, the placement operations were suspended on the afternoon of Saturday, August 15, 1981 at approximately elevation + 117-0" creating an unplanned Construction/Cold joint in the shield wall.

The inspector held extensive discussion with the licensee's QA and constructor's engineering personnel to determine the cause of inconsistent concrete production temperatures and to assess the adequacy of planning for this important safety related concrete placement. The constructor engineers informed the inspector that the difficulty in meeting the temperature requirements was due largely to the breakdown of ice producing equipment in the batch plant. However, the inspector verified that even when the ice was available for batching the concrete and ice was substituted for the water requirement in the mix (100% ice), the concrete temperature at the point of placement was still not within the acceptable limits of between 40^{o} to 55^{o} F. The inspector observed that a set of twenty six (26) temperature readings recorded between 7:45 p.m., August 14, 1981 and 7:38 p.m., August 15, 1981, indicated that only three (3) readings reported a temperature within acceptable limits. These temperatures were measured at the point of placement at the pump discharge line as is required for pumped concrete. Because this concrete placement operation was categorized by construction as "Hot Weather Concreting" as defined by ACI-305 and the construction specification referred this standard, the inspector informed the licensee that it appeared that the planning for the placement did take into account the recommendations of ACI-305. Therefore, the inspector requested the licensee to provide the detailed plan and the basis of the conclusion that the plan was adequate for the inspector's review. The inspector was informed that the records containing such information were still at various locations and in the process of assembly and review, therefore, it would take some time to assemble them for the inspector's review. The inspector informed the licensee that this matter remained unresolved and would be followed up in a subsequent inspection. (50-354/81-13-01)

No items of noncompliance were identified.

5. Follow-up on Previous Inspection Items

(Closed) Unresolved Item (50-354/81-08-01; 50-355/81-08-01): Ommission of .o angle in seated beam connections. The licensee provided information t., show that the seismic over turning moment in the beam in question was 3.6 in. kips, the load per bolt in tension was 2.2 kips, and shear stress was 0.3 kips. The allowable stress in each bolt was 24.05 kips in tension and 9.02 kips in shear. In light of the above information, the items are considered acceptable and are thus resolved.

6. Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this inspection are discussed in Section 4 of this report.

7. Exit Interview

The inspector met with licensee representatives (denoted * in Paragraph 1) at the conclusion of the inspection. The inspector summarized the purpose, scope, and the findings of this inspection.