U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/84-08

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: June 5-8, 1984

Inspectors: A.G. Varela 7/6/84
A.A. Varela, Lead Reactor Engineer date

Approved by: J.P. Durr 7/6/84
J.P. Durr, Chief, Materials and Processes Section, EPB, DETP date

Inspection Summary: Inspection of June 5-8, 1984 (Report No. 50-354/84-08)

Areas Inspected: Routine, unannounced inspection by one region based inspector to review the Hope Creek power block heave/settlement measurement program records, to review documentation of the corrective actions associated with a previously identified significant construction deficiency reported by the licensee as grout intrusion in the drywell air gap, to discuss both items with responsible personnel, and to review licensee quality assurance records relating to these activities. The inspection involved 30 inspector-hours onsite and four in office inspector hours.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Public Service Electric and Gas Company (PSE&G)

* A.D. Barnabei, Principal Site QAE
C. Churchman, Manager, Site Engineering
* R. Donges, Lead QAE
* A.E. Giardino, Manager Site QA, Engineering and Construction
L. Kamath, Construction Engineer
* F.P. Omohundro, Manager Corporate QA
M. Reeser, Engineer

Bechtel Power Corporation (Bechtel)

* A.J. Bryan, Project QC Engineer
* W. Goebel, QA Engineer
* J.L. Gohde, Project Site Construction
* N.D. Griffin, Project Field Engineer
* D.L. Long, Construction Manager
* R. Mackey, Resident Engineer
* G. Moulton, Project QAE
* J.J. Pfeifer, Assistant Project Construction QCE
J. Hoffman, Field Engineer
R. Holloway, Field Engineer
G. Cavallo, Field Engineer

USNRC

* W.H. Bateman, Senior Resident Inspector

* present at exit interview

2. Heave/Settlement Measurement Program - Review of Annual Reports

The heave/settlement measurement program is prescribed by Specification C-007. In accordance with criteria identified in this document optical survey measurements and extensometer data have been obtained semi annually throughout the five power blocks since initial construction in 1977. The concrete mat supporting the power blocks is divided into five sections, each separated by a 2 inch seismic gap in the upper ten feet of the mat. The bottom four feet is solid concrete throughout the entire mat. Settlement markers are located at the upper edges of the individual power block basemats and an extensometer is installed in the Vincentown Formation beneath each of the power blocks. The recorded data from the field is prepared and evaluated by Bechtel San Francisco. The collected semi annual reports contain plots of load and settlement versus time for each power block and for comparison of adjacent mats. The settlement markers originally established on the mats were transferred as construction progressed to other points higher on the structure. The plots reviewed by the inspector were based

on records up to July of 1983. The inspector discussed these records with cognizant licensee and A-E personnel. He was informed the site dewatering operations were progressively reduced starting March 26, 1983 and all pumps were stopped October 5, 1983. Previous NRC inspection reports reviewed annual heave/settlement plots and their evaluation by licensee consultant Dames and Moore. Inspection report number 82-06 related to measurements up to February, 1982. The plots extended up to July 1983 are observed to show a fairly uniform rate of settlement and all differential settlements between basemats continue to appear acceptable. The inspector was informed by the licensee that settlement markers will continue to be monitored to evaluate the observed trend and to evaluate any heave that might result from raising the water table. The inspector's review and evaluation of unplotted optical survey measurements taken July 1983 and again in April 1984 - spanning the period of deactivation of dewatering - indicates that heave did not occur during this period. The licensee's consultant Dames and Moore concluded in their review of settlement plots through October 1983 that in general, the settlement markers are behaving as expected and respond to the applied loads.

The inspector had no further questions.

3. Review of Nonroutine Events Reported by Licensee

(Open) Significant Construction Deficiency (82-00-06)

The reported significant construction deficiency of cement-grout intrusion into the drywell/shield wall air gap has been physically corrected. Nonconformance Report No. 1815 issued September 20, 1982 reported the nonconforming condition as grout intrusion within the air gap of several penetration sleeves. The investigation conducted by field engineering on the extent of the intruded grout, which resulted from the cement grout placement of the lowest portion of the concrete shield wall, disclosed that the grout had also intruded into the nominal 2" air gap between the drywell and concrete shield wall. PSE&G reported this to NRC following their initial 30 day notification required by 10 CFR 50.55(e) in licensee letter of January 18, 1983. The letter states that, in the event of a Loss of Coolant Accident, the presence of the grout in the air gap would affect the thermal expansion capability of the drywell to the point that code allowable stresses for design loads would be exceeded. The licensee committed to correct this condition by removing the intruded grout from the drywell air gap. NCR number 1815 and associated field and project engineering reports, procedures, instructions and drawing were reviewed by the inspector. The engineering and QC documentation presented for disposition of this NCR were evaluated and discussed with cognizant licensee and contractor personnel. This review disclosed that all intruded grout was removed. However, during the investigation and mapping of the grout intruded areas some nonconforming conditions were observed to exist or caused by the effort to provide access for removal of the intruded grout. These are identified in the NCR number 1815 as follows:

--- air gap restrictions below 2" nominal exist where the left-in-place fiberglass form apparently moved and, in localized areas as shown on drawings FSK's C-451 and C-452

--- unreplaced access tunnels that were excavated through the shield wall at four locations beneath each vent pipe and, the two interconnecting tunnels reduce the structural backing to the drywell shell

These nonconforming conditions were reviewed and analyzed by Bechtel project engineering and their consultants. Project engineering concluded for each individual location that the reduced air gap is acceptable, that additional stresses induced in the shell at these locations are less than the allowable and that the as-built dimensions may be used as is. Also, project engineering accepted the excavated tunnels as is, without providing structural backing to the drywell shell. These final dispositions to NCR number 1815 were concurred in by Bechtel's project field and construction QC engineers on December 15, 1983.

Pending licensee revision to the Hope Creek FSAR sections relating to the above as-built and as-is conditions Significant Construction Deficiency 82-00-06 remains open. Licensee committed to provide these FSAR changes in the next revision expected mid July 1984.

The inspector had no further questions.

3.1 Licensee Quality Assurance Activities Relating to Significant Construction Deficiency (82-00-06)

A review was performed of Licensee and Bechtel Quality Assurance activities to determine conformance to their respective QA Manuals of activities relating to Significant Construction Deficiency (82-00-06). PSE&G's QAI 15-1, Handling of Nonconformances and QAI 2-9 Reporting Significant Deficiencies to NRC and, Bechtel's QAM relating to Management Corrective Action were reviewed and were observed to be complementary. The former states that the prime responsibility for the initiation and completion of nonconformance reporting lies with Bechtel. PSE&G's QAM also states that through surveillance and audits of Bechtel, PSE&G shall verify that procedures for handling of nonconformances by Bechtel are approved and being implemented. The NRC inspector's review of Bechtel's QA file on grout intrusion in the drywell, air gap, Construction Deficiency (82-00-06), disclosed that BC's management corrective action report, MCAR No. 38, provided to PSE&G a timely and responsible notification of the nonconformance and its significance in relation to 10 CFR 50.55(e). The BC QA file appears to adequately track the status of events in evaluating the construction deficiency from its' initial potential state September 20, 1982 to January 4, 1983. At this time, BC QA audit letter recommended to PSE&G that the construction deficiency be considered reportable. The followup corrective actions identified in the audit letter would be controlled by BC field engineering and quality control as defined in NCR number 1815. The inspector observed

in his review of the NCR that all activities involved in providing corrective action were prescribed by procedures issued by BC Project Engineering, received prior approval from BC San Francisco and had concurrence of PSE&G field engineering. A review was made of PSE&G construction records. They provide verification of BC's field engineering and quality control activities to correct the construction deficiency as required by the approved dispositions identified in the NCR.

No violations were identified.

4. Exit Interview

The inspector met with licensee and contractor representatives (denoted in paragraph 1) at the Hope Creek Generating Station site at the conclusion of the inspection on June 8, 1984. He summarized the findings of the inspection. The licensee acknowledged the inspector's comments. At no time during this inspection was written material provided to the licensee by the inspector.