

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

Region I

Report No. 50-354/81-01  
50-355/81-01

Docket No. 50-354  
50-355

License No. CPPR-120  
CPPR-121

Priority --

Category A

Licensee: Public Service Electric and Gas Company

80 Park Plaza - 17C

Newark, New Jersey 07101

Facility Name: Hope Creek Generating Station, Units 1 and 2

Inspection at: Hancock's Bridge, New Jersey

Inspection conducted: January 5 - February 1, 1981

Inspectors: W. H. Bateman  
W. H. Bateman, Senior Resident Inspector

2/6/81  
date signed

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date signed

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date signed

Approved: E. E. Lipo  
for: C. Mattia, Chief, Projects Section (Acting)

2/12/81  
date signed

Inspection Summary:

Unit 1 Inspection of January 5 - February 1, 1981 (Report No. 50-354/81-01):

Areas Inspected: Routine announced inspection by the resident inspector of work in progress including attempts to pressure test vent line bellows repair welds; pipe handling, fitup, and welding; concrete preplacement, placement, and post-placement activities; welding preheat during cold weather; structural steel erection; and equipment storage. The inspector also made tours of the site on a regular basis, reviewed GENED FDDR's for technical content, ASME III Code compliance, and reportability per 10 CFR Parts 21 and 50; and evaluated licensee action on previous inspection findings. The inspection involved 53 hours on-site by the resident inspector, 2 of which were spent offshift.

Results: No items of noncompliance were identified.

Unit 2 Inspection of January 5-February 1, 1981 (Report No. 50-355/81-01):

Areas Inspected: Routine announced inspection by the resident inspector of work in progress including grouting and curing of the suppression chamber supports, structural steel erection, and maintenance of equipment. The inspector also made site tours on a regular basis and evaluated licensee action on previous inspection findings. The inspection involved 13 hours onsite by the resident inspector.

Results: No items of noncompliance were identified.

## DETAILS

### 1. Persons Contacted

#### Public Service Electric and Gas Company (PSE&G)

A. Barnabei, Site QA Engineer  
R. Donges, Site QA Engineer  
A. E. Giardino, Project QA Engineer  
P. Kudless, Project Construction Manager  
K. McJunkin, Senior Construction Engineer  
G. Owens, Principal Construction Engineer  
R. Robinson, Site QA Engineer  
D. Skibinski, Site QA Engineer

#### Bechtel Power Corporation (Bechtel)

B. Bain, Lead Field Welding Engineer  
L. Bedford, Contract Administration  
L. Bond, Field Welding Engineer  
L. Fields, Civil QC Engineer  
J. Gatewood, Lead Site QA Engineer  
M. Gill, QC Engineer  
R. Hanks, Project QC Engineer  
M. Henry, Project Field Engineer  
C. Holod, Project QC Engineer  
M. Hopfenspirger, Civil QC Engineer  
P. Hudson, QA Engineer  
G. Moulton, Project QA Engineer  
D. Reel, QC Engineer  
L. E. Rosetta, Field Construction Manager  
D. Sakers, Lead Civil QC Engineer  
R. Seraiva, Field Superintendent  
P. Schuetz, Resident Civil Engineer  
J. A. Young, Contract Superintendent

#### Pittsburgh - Des Moines Steel Company (PDM)

D. Connor, Construction Field Engineer  
M. Stiger, Site QA Manager

#### General Electric Nuclear Engineering Division (GENED)

J. Cockroft, Site Engineer

Schneider, Inc.

G. Falk, Site QA Manager  
W. Goebel, Construction Engineer  
J. Rush, Corporate QA Manager

General Electric Installation and Services Engineering (GEI&SE)

D. George, Welding Engineer  
F. Hatmaker, Site QC Supervisor

## 2. Site Tour

Routine tours of the site were made to observe the status of work and construction activities in progress. The inspector noted the presence of and interviewed QC and construction personnel. Work items were examined for obvious defects or noncompliance with regulatory requirements or license conditions. Areas observed included:

Unit 1: Attempt to pressure test the vent line bellows repair, storage and maintenance of piping, hangers, and equipment; rebar installation; concrete curing; structural steel erection; welding preheat; and pipe handling, fitup and welding.

Unit 2: Concrete placement and curing, equipment storage, structural steel erection, and grouting of suppression chamber supports' base plates.

No items of noncompliance were identified.

## 3. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (354/80-04-04; 355/80-04-01): Definition of shear connectors and testing requirement for "piggybacked" concrete anchors. The inspector reviewed Bechtel Interoffice Memoranda to G. Moulton from H. E. Morris dated June 26 and August 1, 1980, and met with various licensee and contractor personnel to discuss the contents of the memoranda and various specification and drawing changes that resulted from the memoranda. It was established that the term shear connector applies to a headed stud welded to the top flange of a structural steel beam or girder in a composite design to transfer shear. It was also established that various vendors of automatically welded studs use the term shear connector as a means of classifying the size of studs regardless of their eventual use. The discussions of this topic based on the above understandings concluded that because the term shear connector is used somewhat loosely in the industry, it is not logical to impose the more rigorous testing requirements of shear connectors (as required by AWS D1.1) on studs used as concrete anchors. It was agreed that if a stud was to be used as a concrete anchor that it meet the testing and inspection requirements for a concrete anchor as specified in AWS D1.1. It was also agreed that if studs were tested and inspected as though their eventual use was as shear connectors, they would meet or exceed the testing requirements for concrete anchors and, therefore, could be used as concrete anchors.

It was also determined that when "piggybacked" studs are supplied as concrete anchors, they shall meet the testing requirements for concrete anchors. Post production inspection requirements of the AWS code specify that at least one stud in every 100 be bend tested. Stud manufacturers Nelson and KSM agreed that this count must include the "piggybacked" studs but that it is not necessary to bend test the "piggybacked" stud, i.e., restrain the lower stud while bend testing



the "piggybacked" stud. The post production inspection requirements for "piggybacked" studs would, therefore, be satisfied by bend testing the lower stud and the "piggybacked" stud as though they were a single stud.

(Closed) Unresolved Item (354/80-15-01): Weld burn-through in electrical cable tray side rails at tray ring to side rail welds. Cable tray manufacturer P-W Industries, Inc. evaluated the affects of a maximum 1/8" diameter burn-through on structural performance of the cable trays. The results of this evaluation as stated in P-W Industries letter from Charles Miller to L. Rosetta (Bechtel) dated 10/1/80 indicate that the 1/8" burn-through is not critical as to affects on tray structural performance. As a result of this evaluation, acceptable cable tray burn-through will be limited to a maximum of 1/8" diameter.

(Closed) Unresolved Item (354/80-03-02; 355/80-03-01): Lack of a requirement in the GEI&SE Nuclear Quality Assurance Program (NQAP) for prompt identification and correction of conditions adverse to quality. GEI&SE revised their NQAP to include paragraph 17.10 which requires prompt identification and correction of conditions adverse to quality.

(Closed) Noncompliance (354/80-14-03): Failure to control preheat operations when preheating embedments. The inspector verified that action has been taken to instruct craft welders in correct preheating procedures. It was also verified that field engineering and QC personnel have received instructions to observe for correct preheating practices and to take appropriate action when preheating practices are not correct. Bechtel Field Engineers Report entitled "Decon Paint Removal" documented that an inspection conducted 1/12/81 showed no significant damage to the concrete adjacent to the embedments identified by the inspector.

(Closed) Noncompliance (354/80-14-01): Failure of GEI&SE to follow QA procedures governing the issuance of weld filler material. GEI&SE issued Nonconformity Report No. 17 and Corrective Action Request No. 79-1-3, both dated 9/8/80, to identify and track this deficiency. The inspector reviewed the actions taken to close the above documents. In particular training records and Joint Process Control Sheets were reviewed and GEI&SE personnel were interviewed on the use of field copies and original copies and transfer of information from the field copy to the original. The inspector determined that the field copy of the Joint Process Control Sheet will be made part of the original documentation package for each weld.

4. Review of Nonroutine Events Reported by the Licensee

By letter dated April 25, 1980, the licensee reported a potential significant deficiency in accordance with the requirements of 10 CFR 50.55(e) involving a potential design deficiency in GPE controls supplied primary containment vacuum relief valves, model LD 240-447. The potential deficiency specifically related to the structural integrity of the pallet hinge mounting block bolting under design loading conditions. By letter dated 12/3/80 the licensee withdrew the item as not reportable under 10 CFR 50.55(e). This withdrawal was based upon Bechtel review and acceptance of a GPE certified stress/seismic analysis for the mounting block bolting which was not included with the original documentation submitted by GPE controls to Bechtel.

This item was reported as a result of the NRC's notification of the licensee of NRC's receipt of an allegation concerning design deficiencies of the hinge pin mounting block bolting. The original allegation stated that impulse loads on the pallet due to pool swell were ignored in the original calculations and that, if these loads were considered, the hinge pin mounting block bolting would not be adequate to withstand the shear stress induced. Subsequent investigation by the inspector identified the following sequence of events:

- (1) The original stress report sent to Bechtel by GPE for approval was not signed by a professional engineer and was, therefore, rejected by Bechtel. This revision of the stress report did not have any calculations involving the hinge pin mounting block bolting. The allegation had not been made at this time;
- (2) the allegation was made;
- (3) several revisions to the original stress report were made by GPE in an attempt to show that the bolting was adequate for the design conditions;
- (4) Bechtel gave GPE some relief from the design conditions which had been used to make the original calculations that had resulted in the allegation. With the relief, GPE was able to substantiate the integrity of the original bolting under design conditions;
- (5) GPE submitted the final revision of the stress analysis to Bechtel for approval. This stress analysis was approved by Bechtel.

Based on the above sequence of events and subsequent discussions with the allegor, the inspector feels that the hinge pin mounting block bolting was adequate and, therefore, concurs with the licensee that the potential construction deficiency report be withdrawn. (354/80-00-01; 355/80-00-01)

5. Containment Steel Structures and Supports - Observation of Work and Work Activities - Units 1 and 2

The inspector reviewed the 7th edition of the AISC manual and Cooper-Turner technical literature to establish the requirements for load indicating washers used to ensure that correct tension is established in bolts fastening together safety related structural steel joints. Two types of high strength bolts are predominantly used on this project-A325 and A490. Because these bolts differ in the amount of tension that must be established during the tensioning operation, different load indicating washers must be used. The inspector examined A325 and A490 bolted connections to ensure that the correct load indicators were used. The majority of the bolted connections observed were made up with 7/8" diameter bolts but other sizes were also observed. To differentiate between A325 and A490 7/8" diameter load indicators, the manufacturer increases the diameter and modifies the perimeter of the A490 load indicator to include three small ears spaced 120° apart. For other sizes color coding of the perimeter of the A490 load indicator is the site employed method to differentiate them from the uncolored A325 load indicators.

During this inspection, the inspector questioned QC personnel as to their methods of ensuring correct use of load indicators by the crafts. Based on research, observation, and discussions with various personnel, the inspector concluded that a satisfactory system was in use to control load indicators for A325 and A490 bolts.

Additionally, during this inspection activity, the inspector verified that installation personnel were conforming to the requirement to use only A490 bolts and nuts in structural steel bolted connections inside containment.

No items of noncompliance were identified.

6. Safety Related Piping, Including Welding - Observation of Work and Work Activities

During inspection of work in progress on the containment upper spray header, the inspector noted that a portion of a fillet weld between a support member and the outside diameter of the upper spray header was ground out. This ground out area extended into the upper spray header piping  $\frac{1}{4}$ ", which resulted in a pipe minimum wall violation in the area of the grind out. Because the upper spray header is an ASME III Class 2 pipe, the inspector proceeded to investigate the action Schneider, Inc. (SI) had taken to identify and resolve this pipe wall thickness violation. SI, when questioned, showed the inspector N&D 520-F-138 dated 1/20/81 which described the grind out between Mark No. MA-1-H-5 and the upper spray header. The disposition to the N&D had not been made. The inspector cautioned SI personnel that the upper spray header was made of SA-333 Grade 6 steel and not A-106 Grade B steel of which the lower spray header was made. The reason for the caution was because a repair procedure



that had been used to repair defects in the lower spray header was referenced in the suggested disposition to N&D 520-F-138 and this procedure would not be satisfactory to repair the SA-333 material because of the different Code requirements.

The inspector also witnessed Bechtel piping activities. Specifically, implementation of pipe capping for piping internal cleanliness, pipe handling practices, and fitup and welding activities were all verified to be in conformance with jobsite requirements.

No items of noncompliance were identified.

7. Reactor Vessel Installation and Reactor Vessel Internals - Review of Field Deviation Disposition Requests (FDDR's) - Units 1 and 2

The inspector reviewed all of the FDDR's issued by GENED up to the time of this inspection report. The review was conducted to ensure that dispositions were technically adequate and complied with code requirements. Additionally, the problems identified by the FDDR's were reviewed for reportability in accordance with 10 CFR 50.55(e) and 10 CFR 21. The inspector questioned the licensee as to the method used to review FDDR's for 10 CFR 50.55(e) reportability and determined that the licensee was in process of writing a procedure to ensure a timely and comprehensive review of FDDR's for reportability.

The review also determined that no written procedures were available that addressed the affects of FDDR's on as built drawings. Bechtel field personnel stated that procedures were being written to address FDDR's that affected Bechtel design drawings, but stated that they were not aware of procedures that addressed FDDR's that affect either GE drawings or vendor drawings. Bechtel field personnel did state that their home office project staff was involved with GENED in developing procedures that will address FDDR's that affect GE and vendor drawings. The inspector will review this subject at a future time.

No items of noncompliance were identified.

8. Exit Interview

The inspector met with licensee and contractor personnel on each Friday of this inspection report period. At these times the inspector summarized the scope and findings of that week's inspection activities.