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

Region I

Report No. 50-354/81-02
50-355/81-02

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: February 2 - March 1, 1981

Inspectors: W. H. Bateman — 3/13/81
W. H. Bateman, Senior Resident Inspector — date signed

_____ — date signed

_____ — date signed

Approved by: Larry E Briggs for — 4/7/81
E. G. Greenman, Chief, Reactor Projects Section 2A — date signed

Inspection Summary:

Unit 1 Inspection of February 2 - March 1, 1981 (Report No. 50-354/81-02):

Areas Inspected: Routine announced inspection by the resident inspector of work in progress including pressure testing of the containment vent line bellows repair welds, structural steel erection, pipe installation and repair, storage of material and equipment, mechanical splicing of rebar, concrete placement, and upper bioshield installation activities. The inspector also made tours of the site on a regular basis, reviewed licensee action on potentially reportable items and evaluated licensee action on previous inspection findings. The inspection involved 47 hours onsite by the resident inspector, 2 of which were spent offshift.

Results: Noncompliances - none.

Region I Form 12
(Rev. April 77)

Unit 2 Inspection of February 2 - March 1, 1981 (Report No. 50-355/81-02):

Areas Inspected: Routine announced inspection by the resident inspector of work in progress including structural steel erection, containment welding, storage of material and equipment, and concrete preplacement, placement, and post-placement activities. The inspector also made site tours on a regular basis, reviewed licensee action on potentially reportable items, and evaluated licensee action on previous inspection findings. The inspection involved 13 hours onsite by the resident inspector.

Results: Noncompliances - none.

DETAILS

1. Persons Contacted

Public Service Electric and Gas Company (PSE&G)

A. Barnabei, Site QA Engineer
R. Bravo, Senior Construction Engineer
R. Donges, Site QA Engineer
*A. E. Giardi, Project QA Engineer
*P. Kudless, Project Construction Manager
K. McJunkin, Senior Construction Engineer
*A. Nassman, QA Manager, Engineering and Construction
G. Owens, Principal Construction Engineer
R. Robinson, Site QA Engineer
D. Skibinski, Site QA Engineer
*A. Sternberg, Corporate QA Training Supervisor

Bechtel Power Corporation (Bechtel)

B. Bain, Lead Field Welding Engineer
R. Baldwin, QA Engineer
R. Barclay, Assistant Lead Civil QC Engineer
L. Bond, Field Welding Engineer
W. Dorman, Assistant Project Field Engineer
M. Gill, QC Engineer
T. Gohde, Civil Field Engineer
B. Gooch, QA Engineer
*R. Hanks, Project QC Engineer
M. Henry, Project Field Engineer
W. Hindle, Project Superintendent - Services
C. Holod, Project QC Engineer
G. Holoman, Civil Field Engineer
P. Hudson, QA Engineer
*G. Jones, Hope Creek Project Manager
*G. Moulton, Project QA Engineer
R. Perry, Civil Field Engineer
D. Reel, QC Engineer
*L. E. Rosetta, Field Construction Manager
D. Sakers, Lead Civil QC Engineer
J. Serafin, Assistant Project Field Engineer
P. Schuetz, Resident Civil Engineer
R. Tringale, Civil Field Engineer
*Z. Tucker, Corporate QC Manager

Pittsburgh - Des Moines Steel Company (PDM)

F. Anessi, Construction Field Engineer
D. Connor, Construction Field Engineer
P. Coster, Contract Administrator
W. Kimmick, QC Engineer
M. Stiger, Site QA Manager

General Electric Nuclear Engineering Division (GENED)

J. Cockroft, Site Engineer
C. Brinson, Site QA Manager

Schneider, Inc.

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

General Electric Installation and Services Engineering (GEI&SE)

R. Burke, Site Project Manager
D. George, Welding Engineer
F. Hatmaker, Site QC Supervisor

United States Nuclear Regulatory Commission (USNRC)

*S. K. Chaudhary, Reactor Inspector
*L. E. Tripp, Chief, Materials and Processes Section

* Denotes attendees at February 5, 1981 meeting.

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: Storage and maintenance of material and equipment, mechanical splicing of rebar, form removal, concrete curing, pipe handling, fitup and welding, rebar and form erection, and structural steel erection.

Unit 2: Concrete placement and curing, rebar and form erection, material and equipment storage, structural steel erection, and activities relating to the restart of containment erection.

No items of noncompliance were identified.

3 Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (354/80-07-06; 355/80-07-03): Applicability of AWS D1.1 prequalified procedures to skewed partial penetration weld geometries. The inspector reviewed Bechtel Interoffice Memorandum from H. E. Morris to Project QA dated 2/12/81 which states that AWS D1.1 imposes no angular constraints on skewed members providing the groove geometry is maintained to within the prequalified limits. This response appears consistent with standard industry practice.

(Closed) Unresolved Item (354/80-19-02): Determination of design review and acceptance of Schneider, Inc. Nonconformance and Disposition (N&D) F520-57. The inspector reviewed PDM letter CLB-152-2537 from J. A. Mercuri to H. E. Morris (Bechtel) dated 2/17/81 which stated that Nutech (PDM's designer), PDM, and Bechtel reviewed the N&D and that the corrective action included amending the stress report to factor in the excessive gap between the support and the outside diameter of the pipe being supported. The letter also stated that Subsection NC of ASME Section III was used as the basis for the disposition.

(Closed) Unresolved Item (354/80-06-01; 355/80-06-01): In process work at variance with approved design is not considered a nonconformance. The Bechtel system to handle discrepancies on this project is broken down as follows:

a. If the discrepancy is found during in process work activities and can be corrected by rework or by further prescribed processing under authorities granted by contract to the Project Field Engineer (PFE), an FCR/FCN is issued;

b. If the discrepancy cannot be corrected in the above manner or is found during final inspection than a NCR is issued.

Based on the above system it is apparent that all discrepancies undergo design review. This type of system is acceptable to the NRC when correctly implemented. The unresolved item was based on a review of FCR's by the inspector and a resultant disagreement with the choice of using a FCR in lieu of a NCR to identify certain discrepancies. Because the choice of which design review document to use could be "second guessed" in certain instances, this item is being closed based on the fact that the discrepancies did undergo a design review. The question as to whether there is any improper use of FCR's in lieu of NCR's will be investigated in a subsequent inspection.

(Closed) Unresolved Item (354/80-21-01): Indication of void spaces behind the reactor pressure vessel (RPV) pedestal liner plate determined by sounding. The resident NRC inspector, a specialist NRC inspector, and personnel representing the licensee and Bechtel sounded the pedestal liner to determine the areas of greatest concern. Review of Bechtel documentation did not demonstrate that these areas had been adequately explored. Consequently, two ½-inch diameter holes were drilled through the 5/16" thick pedestal liner in the two areas of greatest concern. Assuming a plan view from above, the holes were drilled 6'-8" clockwise from the south edge of the door at an elevation of 92' and 9' clockwise from azimuth 270° at an elevation of 91'-8". Inspection through both holes revealed a gap between the pedestal liner and sound concrete of approximately 3/16". The existence of this gap, caused by shrinkage of the concrete away from the liner during curing and shrinkage of the pedestal liner away from the concrete caused by temperature changes, explains why soundings result in hollow or void indications. Because the results of the investigations made by Bechtel prior to and after the NRC question indicate sound concrete behind the pedestal liner, it appears that hollow soundings do not indicate voids behind the liner but result from a small gap that has formed between the liner and sound concrete for the reasons explained above.

(Open) Unresolved Item (354/80-15-03): Hinged cable tray installation not addressed in cable tray qualification test report. The inspector reviewed Bechtel Interoffice Memorandum from M. Henry to G. Moulton dated 2/23/81. This memo stated that the maximum tray overhang must be limited to 2'-6" unless otherwise shown on design drawings. The memo also stated that hinged connections shall be considered discontinuities. The licensee stated that prior to this unresolved item field engineering was placing hinged connections where needed. As a result of this unresolved item field engineering must now follow the design drawings to the letter regarding location of tray supports and hinges unless modified by a FCR. The licensee is currently reviewing the installed cable trays, to determine what trays are affected, and will modify identified trays to ensure conformance with installation specifications. This item remains open pending subsequent followup inspection.

4. Review of Nonroutine Events Reported by the Licensee

(a) By letter dated October 9, 1980, the licensee reported a potential significant deficiency in accordance with the requirements of 10 CFR 50.55(e) involving two pieces of ASME Section III pipe that had been found lacking radiography (RT) of their longitudinal weld seam. Subsequent investigation by the licensee determined that as a result of a misunderstanding this item was reported unnecessarily. The misunderstanding resulted from an ASME audit team finding that confused ASME Section II Class II material with ASME Section III Class II pipe. Prior to recognition of the misunderstanding, the pipe was returned to the vendor for RT, was RT'd and some minor porosity identified and repaired, and then returned to the project. Subsequent to the return of the pipe to the project, it was determined that ASME II Class II material (which does not require RT of the longitudinal weld seam) was correctly ordered for use as ASME III Class III pipe.

Because the item as originally reported was found in subsequent investigation to be not reportable and because NDE and repairs beyond that required by the ASME Code were performed, the inspector concurs with the licensee that this potential construction deficiency report be withdrawn. (354/80-00-04; 355/80-00-04)

(b) By letter dated January 21, 1980, the licensee reported a potential significant deficiency in accordance with the requirements of 10 CFR 50.55(e) involving a surface indication on the Unit 2 reactor pressure vessel (RPV). In NRC Inspection Report 80-07 an interim report documented investigation of the extent of the surface indication. By letter dated January 27, 1981, the licensee stated they felt, based on information supplied in the letter, that the item was not reportable and withdrew it as a reportable item. The inspector reviewed the documentation associated with this item and concluded that additional questions remain to be answered prior to closeout. These questions are as follows:

(1) Is the stainless steel cladding on the inside of the RPV considered part of the vessel wall thickness for purposes of the design stress analysis?

(2) If the cladding is not considered part of the design RPV wall thickness, does the depth of the groundout area violate RPV design minimum wall?

These questions are raised because the RPV wall thickness remaining under the groundout area was stated by the licensee in their January 27, 1981 letter to be 6.558 inches as measured by ultrasonic (UT) examination methods. This thickness measurement includes the cladding thickness. The letter also stated that the required RPV wall thickness is 6.101 inches. Should the cladding not be part of the design thickness, then additional measurements will have to be taken to determine the remaining thickness of the carbon steel under the groundout area to ensure minimum wall of 6.101 inches has been maintained (355/79-00-02).

5. Qualification of Inspection Personnel

In NRC Inspection Report 80-20 a NRC inspector identified an item of noncompliance involving a Bechtel inspector performing inspection activities he was not qualified to perform on the Hope Creek project. Additional investigation of QC personnel training and experience records combined with a review of Hope Creek enforcement activity for the twelve months prior to the 80-20 inspection, led the inspector to conclude that qualification of inspection personnel was a weak area of the licensee's quality assurance program. As a result of the NRC position, the licensee requested a meeting with the NRC. This meeting was held on February 5, 1981, at the Hope Creek site and was attended by the personnel whose names are preceeded by an asterisk in paragraph 1 of this report. At this meeting the licensee acknowledged the validity of the citation but presented evidence obtained from an extensive review of QC records, that they felt indicated this was an isolated case of a breakdown of their system and did not represent a programmatic problem. They contended that their QC personnel qualification program meets or exceeds the requirements of Regulatory Guide 1.58 and ANSI N45.2.6 - 1973. The NRC questioned the portion of the qualification program that allows an individual to become a Level I discipline inspector based on demonstration of proficiency in only two aspects of that discipline. The licensee's response was that administrative control by the Level II supervisor prevents unqualified personnel from making inspections.

The licensee presented the NRC their official letter of response to 80-20 at this meeting. The response was briefly reviewed and discussed.

The NRC expressed concern over the apparent "stretching" by the licensee of the terms "related" and "equivalent" as pertains to experience and as applied to what was considered by the licensee to be acceptable for Level I qualification. The NRC stated they felt a dilution of the overall capability of the QC department could result because of this "stretching" of the experience requirement combined with the sizeable recent and ongoing augmentation in QC department personnel.

At the conclusion of the meeting the licensee reiterated their feelings that their QC program was effectively implemented by qualified personnel and no programmatic problems existed. The NRC reiterated their concerns and stated that the qualification of QC personnel would receive close attention during subsequent inspections.

No items of noncompliance were identified.

6. Containment - Drywell to Torus Vent Line Bellows Repair - Unit 1

NRC Inspection Reports 80-09 and 80-10 detailed continuing inspection efforts on the repair activities associated with the damaged drywell to torus (suppression chamber) vent line bellows. Each vent line (there are eight total) has a pair of bellows incorporated into its construction and of these eight vent lines, all but one had sustained damage to at least one of its two bellows. The repair activity involved removal of the damaged bellows and replacement with new bellows. This item was not considered reportable under the rules of 10 CFR 50.55(e) by the licensee because of the bellows construction, i.e., it is a double bellows construction and the inner bellows was not damaged. (Note: There are two pairs of bellows per vent line and each of these bellows is of double bellows construction.)

The replacement work was completed and overpressure testing was performed. The inspector reviewed PDM test procedure PTP-3, "Field Test of Replacement Bellows Assemblies" and witnessed pneumatic overpressure testing of repaired bellows assemblies 4A and 8A. The test sequence involved a gross leak test (soap bubble) at 5 psig, an overpressure test at 71.5 psig for one hour, and a leak test (soap bubble) at 62 psig. The inspector noted that the test procedure conformed to ASME Section III Subsection NE requirements and that a weld map was included to accurately record satisfactory completion of testing of each weld. The test equipment, instrumentation, and test procedure performance were all observed to be in conformance with PTP-3. All the repaired bellows were satisfactorily tested.

NRC Inspection Reports 80-04 and 80-14 discuss unresolved item 80-04-02. This item involves a question raised on the appropriate NDE requirements for the weld at the corner joint between the new and old bellows assemblies. Even though the repair and testing of the bellows assemblies is considered complete by PDM, this unresolved item remains an open issue regarding the completeness of the repairs.

No items of noncompliance were identified.

7. Containment (Structural Concrete) - Observation of Work and Work Activities - Unit 2

The inspector observed activities relating to concrete placement number 2C-XF-010. This placement filled the volume bounded by the dished portion of the bottom of the containment drywell, the drywell inner support skirt, and the horizontal concrete construction joint located approximately three feet underneath the dished bottom of the drywell. This placement was especially interesting because accessibility into the placement volume was limited with resultant difficulties in placement, consolidation, and ability to verify complete filling of the volume.

The placement was organized such that two pumps delivered concrete to access ports in the support skirt spaced approximately 180° apart. The concrete slump was maintained as close to 8" as possible to permit the concrete to flow. A vibrator was inserted through one access hole and three ropes were tied to the vibrator and led through access holes spaced approximately 120° apart which provided the capability for adequate consolidation of the concrete. To help assure complete fill grout was used to top off the placement. The uniqueness of filling a closed volume with concrete resulted in several deviations from the concrete placement specification which were identified and resolved by Field Change Request (FCR) C-3962.

Questions asked by the inspector regarding the function of the concrete under the drywell led to an inspector concern as to the means used to verify complete fill. Because the concrete placed in this volume must serve as a bearing surface for the bottom of the drywell to share in carrying the weight of the drywell and its contents, it is critical that complete fill be accomplished. Bechtel engineering personnel stated that as an aid to assure complete filling, grout holes were drilled through the steel support skirt at the top where the skirt joins the bottom of the drywell. Additionally, Chem Comp, a non-shrink cement, was used as part of the concrete mix. The grout holes served to indicate grout reaching the topmost elevation and the non-shrink cement assured normal curing shrinkage would not occur.

The inspector interviewed craft, supervisory, engineering, and QC personnel involved in the pour to ensure that all were aware of the unique problems of placing concrete into a closed volume. All personnel appeared to understand their assigned function.

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.