U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/84-15

Docket No. 50-354

License No. CPPR-120 Category A

Licensee: Public Service Electric and Gas Company
80 Park Plaza
Newark, New Jersey 07101

Facility Name: Hope Creek Generating Station, Unit 1

Inspection At: Hancocks Bridge, New Jersey

Inspection Conducted: September 19-21 and September 26-28, 1984

Inspectors: E. H. Gray, Lead Reactor Engineer — 10/25/84 date

A. J. Kortas, Reactor Engineer — 11/5/84 date

J. H. Raval, Reactor Engineer — 11/5/84 date

Approved by: J. Durr, Chief, Materials and Processes Section, EPB, DETP — 11/9/84 date

Inspection Summary: Inspection on September 19-21, and September 26-28, 1984 (Report No. 50-354/84-15)

Areas Inspected: A special, unannounced facility inspection by three regional based inspectors. The inspection consisted of the "As-built turnover" of the condensate storage transfer system, interface to the HPCI system, HPCI system discharge piping and components and feedwater system piping and components for the HPCI spray into the reactor pressure vessel, welding program for the above involved systems, PSI/ISI program of the plant, and previously identified open-item resolutions. The inspection involved 139 hours onsite and 2 hours of inspection followup at the regional office.

Results: No violations were identified.

DETAILS

1.0 Persons Contacted

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

*A. Barnbei, Principal QAE
*E. Devoy, Site Engineer
*R. Donges, Lead QAE
G. Duncan, Senior ISI Engineer
*J. Fisher, QC Supervisor
C. Fuhrmeister, QAE
*A. Giardino, Manager-QA-E&C
*R. Griffith, Principal Staff QAE
*M. Metcalf, QASE
*J. Nichols, Operations
*G. Owen, PSE-SC
*R. Webster, Staff Director

1.2 Bechtel Power Corporation (BPC)

*W. Cole, Lead Site QAE
*W. Goebel, QAE
*G. Goldsmith, Assistant Resident Project Engineer
*E. Gutrane, Contracts
*D. Lauer, Systems Management
*G. Moulton, PQAE
*B. Mukherjee, Resident Project Engineer
W. Murr, System Lead and Material Control
J. O'Connor, QA
S. Roche, Lead Stress Engineer, Plant Design
A. Sidhy, Supervisor, Plant Design
R. Stone, Deputy Supervisor, Plant Design
*R. Tringale, APFE

1.3 Southwest Research Institute (SwRI)

E. Feige, Project Engineer
R. Fine, Team Supervisor
T. Mayces, Quality Assurance

1.4 U. S. Nuclear Regulatory Commission

*W. Bateman, Senior Resident Inspector

*Denotes personnel present at exit meeting.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (354/84-06-04) Full flow test line design verification for the core spray system. The licensee provided the calculations

for NRC review on May 30, 1984 during the scheduled meeting No. 84-49 at Region I Office. Upon verification of the design adequacy during the above meeting for the stated flow conditions per the FSAR requirements, paragraph 6.3.1.2.3 and 6.3.4.2.3, it was concluded that the core spray full flow test line design was adequate for its intended purpose. The licensee agreed to address these FSAR Commitments in the Technical Specification for the Hope Creek Generating Station.

This item is closed.

(Open) Unresolved Item (354/83-11-04) ISI testing of joints with weld cladding. Cladding has been installed on recirculation pipe joints to prevent corrosion. Standard ultrasonic examinations of this weld configuration are of indeterminant value due to the effects of the weld clad on the ultrasonic beam. The inspector questioned the status of the proposed improvement of ultrasonic examination for this volumetric examination. PSE&G anticipates a demonstration of the ultrasonic examination with formal written procedures in November of this year. This item remains open pending demonstration of an acceptable examination procedure.

3.0 Facility Tour

3.1 The inspectors observed both work in progress and completed work in several areas during a general inspection of the plant. Specific areas of work examined included piping and pipe supports, welding and other associated activities inside the drywell and reactor building. The work was examined for obvious defects or noncompliance with NRC requirements or licensee commitments. Note was taken with regard to NCR No. 2346 for minimum wall violation on pipe spool PS-2-B1 (Main Steam System). This NCR was noted to be satisfactorily resolved during later document review by the inspector.

During walk-down of piping inside the reactor building the following were identified:

a. Safety related spool located above torus, MK-1-GS-004-S01, E3035-1162 (Containment Atmosphere Control System) was uncovered on both ends.

b. Safety related piping spools, BD-001-S02 and BD-001-S02 (Reactor Core Isolation, Cooling System) at Elevation 69, Azimuth 200° were not fit-up properly and were uncovered.

c. Safety related piping, inside HPCI room, FD-LV-F025/F037 (HPCI-Turbine Steam System) was uncovered at one end.

d. Limitorque Stem Mechanism BJ-HV-F004 on Valve BJ-V-005 located in HPCI pump room was only partially covered.

e. Welding fitup on instrument gas header at elevation 132', AZ 315° inside the drywell did not have a dust cover on the day

after fitup was made. Reference QC-IR-1P-KL-219, Line 041 HCC-2".

f. A valve was removed from a piping run but neither was covered; locationed in the main steam vault, elevation 106' on ADA System, FSK B1-AB-614. Work was done on this valve on the day the condition was noted, but the workers involved were not present in the work area.

The above specific occurrences were on a small portion of the total items observed by the inspection staff during this inspection. Each of the individual problems identified above was corrected by the licensee prior to the conclusion of this inspection.

This item is unresolved with the intention that subsequent NRC inspections will determine that effective corrective action has been initiated by the licensee in further minimizing occurrences of exposure of internal components/mechanisms to construction dirt (354/84-15-01).

3.2 In the area of demineralized water trucks by the condensate storage tank, the inspector noted a strong odor similar to chlorine. The program of site water chemistry analysis was reviewed with respect to frequency of analysis of various water sources and the specific elements/ions analyzed. The general flushing and cleaning procedure GTP-1, Revision 1 was reviewed. On the specific day in question no unusual chlorine levels in water were found by analysis. Also, no safety related piping was under test. The inspector and QA startup engineer concluded that the chlorine like odor was not associated with the plant test water and flushing program.

The inspector did determine that water chemistry in numerous plant areas is monitored and analyzed on a regular basis. No violations were identified.

4. Reactor Coolant Pressure Boundary (RCPB) Component and Other Safety Relating Piping and Components - Observation of Work and Record Review

The condensate storage and transfer system loop from the condensate storage tank to HPCI pump suction, the HPCI system loop from HPCI pump discharge to the feedwater system and the feedwater system loop to the reactor pressure vessel (RPV) were selected for review of the installation of piping, equipment and supports. These loops were selected as the representative samples of the safety related piping systems and the reactor coolant pressure boundary piping system. Among the above systems, only the condensate storage and transfer system were turned over to the licensee as complete from their contractor, Bechtel Power Corporation (BPC).

The inspector performed a walk-down inspection for the above system loops and examined the installed piping and equipment, including pipe supports, to verify conformance to the isometric drawings, P&IDs, support system

drawings, vendor valve drawings and field specifications. The inspector also reviewed the design commitments in the FSAR and compared them with the output design specifications and drawings to verify that they were consistent. The examinations involved verifications of selected attributes on the installation drawings for the piping supports and associated welds. Where possible, the relative locations of the piping and supports were verified.

The subsystems, piping isometrics, pipe supports, and components that were examined are listed in Table 4.1.

Various design parameters were selected such as flow rates and pressure and temperature ratings. These values were compared with the nameplate data, procurement specifications and vendor supplied documents. The equipment data gathered during the systems walkdown inspection are listed in Table 4.2.

The inspector concurred that the installed piping and equipment were in compliance with the listed documents.

No violations were identified.

TABLE 4.1
CONDENSATE STORAGE & TRANSFER, HPCI AND FEEDWATER SYSTEMS
WALKDOWN INSPECTION

ISO NO.	FIELD ISO. NO.	LINE SYSTEM	SUPPORT NO.	EQUIPMENT	FINDINGS
1-P-AP-03	1-P-AP-016	Outlet to Cond. Strg. Tank	-	-	None
1-P-AP-01	1-P-AP-002 1-P-AP-003	HPCI Suction Cond.St g.Tank	1-P-AP-021-H02 1-P-AP-021-H03 1-P-AP-021-H04 1-P-AP-021-H05 1-P-AP-021-H06 1-P-AP-021-H07	None	None
1-P-BJ-01	1-P-BJ-002 1-P-BJ-003 1-P-BJ-004 1-P-BJ-005	HPCI Suction Cond.Strg.Tank & HPCI Pump Discharge	-	10P217-HPCI Pump Suction 10P204-HPCI Pump Discharge V005 (HVF004) Mov Gate Valve V003 Check Valve V002(HVF007) Mov Gate Valve V059(HV8278) Mov Gate Valve	None
1-P-AE-01	-	HPCI Discharge to RPV thru Feedwater	-	V006(HVF074) Mov Check Valve(Outboard)	None
1-P-AE-04	1-P-AE-002 1-P-AE-003	Feedwater to RPV	-	V007 Inboard Check Valve V008 (HVF011A) Mov Gate Valve	

TABLE 4.2
EQUIPMENT FOR DESIGN DATA REVIEW

EQUIPMENT	IDENTIFICATION NO.	DATA
10P217-HPCI Pump Primary (Suction Side)	701-S-0836 DVS	12x14x23; 5600 GPM, 40°F-140°F, 1037-2075 RPM; 6.5 PSI Suction
10P204-HPCI Booster Pump	701-S-0837 DVMX	10x12x15; 5600 GPM; °40F-140°F, 2075-4150 RPM; 295 PSI Suction
BJ-V-005-Mov Gate Valve (HVF004)	E6161-33-1	ASME III, Cl. 2 Anchor Darling Valve; 100°F @ 275 PSIG rating (212°F @ 236 PSI)
BJ-V-003-Check Valve	E6162-22-1	ASME III, Cl. 2 Anchor Darling Valve; 100°F @ 2160 PSI
BJ-V-002-Mov Gate Valve (HV F007)	E6162-19-1	ASME III, Cl. 2 Anchor Darling Valve; 100°F @ 2160 PSI (178°F @ 2118 PSI)
BJ-V-059-Mov Gate Valve (HV8278)	E6162-78-1	ASME III, Cl. 2, Anchor Darling Valve; 100°F @ 2160 PSI
1-AE-Y006-Mov Check Valve	E6162-57-1	24"-900#, ASME III, Cl. Anchor Darling Valve
1-AE-V007-Check Valve	E6162-58-2	24"-900#, ASME III, Cl. 1,, Anchor Darling Valve; 100°F @ 2250 PSI rating
1-AE-V008-Mov Gate Valve (HV-F011A)	SN 17 HT 68780 SA 333 GR6	24"-900#, ASME III, Cl.1 Anchor Darling Valve

Installed Piping Clearances

The inspector identified two safety related lines, AP-021 and BE-008 at Elevation 91'-0" (Columns 1GR&R) that were installed in a proximity to each other such that the existing clearance was 1 1/8". The licensee and BPC were requested to review the clearance for the above identified pipes and to describe the program used to identify and resolve questionable safety related installed piping clearances at the HCGS Facility. The licensee stated that they would address the above concern in an "As-Built Reconciliation" program which is being developed to identify, analyze and correct non-conforming clearances.

BPC provided the preliminary analytical analysis for the identified piping AP-021 and BE-008 with their corresponding support movements (Support Nos. 1-P-AP-021-H11 and H12 and 1-P-BE-008-H21 and H23) to indicate that the installed clearance was 5/8" in excess of the absolute maximum vertical critical movement.

The above specific case was shown to not be a concern during this inspection. The program under development will provide for the formal analyses of this and similar conditions if they exist in the HCGS facility. The program will include the identification of the clearance problems during the final walk-down of the installed safety related piping.

No violations were identified.

5.0 Preservice Inspection (PSI) Program

In accordance with the provisions of 10 CFR 50.55a(g), the Hope Creek Unit 1, PSI Program is written to meet the requirements of the 1977 ASME B&PV Code, Section XI, through the Summer 1978 Addenda. Southwest Research Institute (SwRI) performs the PSI examinations in accordance with the PSE&G approved Project Plan for PSI.

The inspection of the project plan requirements included the following:

1) Review of qualifications and certifications of the examiners, material and equipment on site.

2) Observation of magnetic particle testing of Class 2 piping welds.

3) Review of processing of construction completed welds and subsequent documents including records of examination results and dispositions of findings.

4) Review and observation of quality assurance efforts by SwRI, PSE&G and the ANI inspector.

An inspector walk down of piping noted two welds within 1/4" of each other. The welds were identified as weld No. 5 and No. 6 on PSI figure B-45, Rev. 1 on Line 1-BJ-14DBB-003B. The welds are located above the torus at el. 93'9", Az 275°, and are shown on Bechtel System Isometric

Drawing 1-P-BJ-01. PSI examination requirements may not be met due to the proximity of these welds. This unresolved item is open pending PSE&G review of this condition of weld proximity, including determination of the effect on meeting PSI/ISI requirements applicable to welds 5 and 6 and corrective action if required. (354/84-15-02)

The inspector reviewed the PSE&G system of documenting the location and accessibility of welds for use by NDE technicians in locating specific welds for PSI/ISI. These records are organized and concise. Subsequently, this documentation will be effective in reducing radiation exposure time of Inservice Inspection (ISI) workers examining welds. To accurately anticipate PSI/ISI weld accessibility, most PSI volumetric examinations will be performed as close to construction completion as possible. Currently, only PSI surface examinations of welds are being performed.

No violations were identified.

6. Welding Inspection

During the facility tour and while observing completed welds during the pipe walkdown inspection the inspector interviewed welders and fitters performing welding work. During the interviews the inspector determined that welders had at their work station the applicable weld procedure details, QCIR (Quality Control Inspection Report), applicable drawing, current weld rod slip, were using the proper weld materials and were knowledgeable of their work task requirements. Welds in progress included both pipe to pipe welds and pipe hangers or supports.

Each pipe weld on the lines identified on Table 4.1 was examined for conformance to the requirements of the ASME Codes, Section III and Section XI and to the specific work plan/procedure SWP/P-P-114, Preparation of Weld Surfaces for Preservice and Inservice Inspection. Certain welds were found to be complete to the ASME Code Section III requirements but not to the ASME Code Section XI and SWP/P-P-114 requirements. Final weld preparation for the ASME Code Section XI/SWP requirement was determined to be under control of the PSI-PSE&G group and a specially designated Bechtel weld engineering group. The inspector reviewed the controls and interactions between PSE&G and Bechtel in the post ASME III weld preparation area which is documented in SWP/P-P-114. The transition process between the Code Sections III and XI in the area of final weld preparation was noted to be under control.

No violations were identified.

In the area of welder identification, each weld inspected was identified with the welder's symbol. A sample of 14 symbols were reviewed against welder qualification records.

No violations were identified.

7. QA/QC Program

The inspector reviewed the following Quality Control inspection report (QCIRs) and found them satisfactorily addressed and implemented per HCGS QA program requirements.

1. Pipe Support QCIRs:

   a. 1-P-AP-01-4-P-2.10 for P-AP-021-H02(Q) Support
   b. 1-P-AP-01-16-P-2.10 for P-AP-021-H04(Q) Support
   c. 1-P-AP-01-5A-P-2.10 for P-AP-021-H05(Q) Support
   d. 1-P-AP-01-26-P-2.10 for P-AP-021-H06(Q) Support
   e. 1-P-AP-01-5-P-2.10 for P-AP-021-H07(Q) Support

2. Field weld QCIRs:

   a. 1-P-AP-01-8-P-1.10 for FW-2 on Fab. ISO 1-P-AP-003
   b. 1-P-AP-03-1-P-1.10 for FW-103 on Fab. ISO 1-P-AP-016

3. Equipment QCIRs:

   a. P-302-R-40967 for 1-BJ-V002 (HV-F007) on ISO 1-P-BJ-01
   b. 1-P-BJ-01-36-P-1.10 for pipe spool 1-BJ-003-S37
   c. P-301-R-30802 for 1-BJ-V005(HV-F004) on ISO 1-P-BJ-01

The inspector also reviewed QC Maintenance Action Cards (MACs) for the valves including 1-BJ-V005 (HV-F004) and found them in compliance with the facility specification requirements.

No violations were identified.

The inspector reviewed the September 7, 1984 PSE&G QA reports to the Project Manager and the Vice-president of Engineering and Construction. Items covered include NRC inspections, and reportable events, current and monitored items, non-conformance reports, QC inspection records, weld reject rate, QA audit reports and Correction Action Requests. The QA reports are a direct indication of the QA function being an active part of project management.

No violations were identified.

8.0 Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable, violations or deviations. Unresolved items are discussed in paragraphs 2, 3 and 5.

9.0 Exit Meetings

The inspectors met with licensee representatives, listed in paragraph 1, at the conclusion of the inspection to summarize the scope and findings of the inspection. At no time during this inspection was written material

provided to the licensee by the inspectors; however, the proprietary reference ISO drawings listed in Table 4.1 of this report will be returned, along with field notes thereon, to the licensee in accordance with the document receipt dated 9/27/84 after issuance of this inspection report.