

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/83-11

Docket No. 50-354

License No. CPPR-120

Priority --

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: July 11 - 15, and 21, 1983

Inspectors: L. Narrow

L. Narrow, Lead Reactor Engineer

E. H. Gray

E. H. Gray, Lead Reactor Engineer

A. A. Varela

A. A. Varela, Lead Reactor Engineer

Approved by: P. Durr

P. Durr, Chief, Materials & Processes
Section, EPB, DETP

8/17/83

date signed

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Inspection Summary:

Inspection on July 11 - 15, and 21 1983 (Report No. 50-354/83-11)

Areas Inspected: Routine, unannounced inspection by three region based inspectors of work observation and document review of activities related to piping, pipe support and anchor bolt installation, QA/QC activities in connection with such installations and review of documentation concerning construction deficiencies reported by the licensee. The inspection involved 109 hours of direct inspection time on site and eight hours in the regional office.

Results: No violations were identified.

Details

1.0 Persons Contacted

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

- * C. Fuhrmeister, QA Engineer
- A. Giardino, QA Manager, Engineering and Construction
- * R. T. Griffith, Sr., Principal Staff, QA Engineer
- * J. J. Jelinak, Senior Construction Engineer
- * W. Mussel, Construction Engineer
- * G. D. Owen, Principal Construction Engineer
- * A. Sternberg, Acting Manager, QA Audits
- D. Whitmer, Lead QA Engineer

1.2 Bechtel Power Corporation (BPC)

- A. Albrechtsen, Lead Piping Engineer
- * W. Cole, QA Engineer
- F. Dykstra, Assistant Lead Piping Engineer
- * R. Hanselman, Lead Welding Engineer
- P. Hassler, Field QC Engineer
- * M. Henry, Project Field Engineer
- J. Janda, Training Coordinator
- A. Landi, Lead Hanger QC Engineer
- * D. Long, Project Superintendent
- R. McCloud, Welding QC Engineer
- * R. Mackey, Resident Project Engineer
- W. Marshall, Piping Engineer
- J. Matthews, Field QC Engineer
- H. Montizaan, Small Pipe, Lead Engineer
- * G. Moulton, Project QA Engineer
- A. Petrokovich, Lead Large Pipe Superintendent
- J. Phelps, Radiographer
- D. Ragoli, Piping Engineer
- W. Randazzo, Radiographer
- * D. K. Sakers, Assistant Project QA Engineer
- * R. A. Simanek, QC - San Francisco Office
- * F. Thesing, Contracts Superintendent
- H. Tucker, Weld Test Shop Supervisor
- * C. Turnbow, Construction Manager
- * S. Vezendy, Assistant Project QC Engineer
- N. Wypych, Lead Piping QC Engineer

1.3 General Electric Company (GE)

- * C. T. Brinson, QA Engineer
- * J. M. Cockroft, Site Engineer
- * R. McKenna, Resident Site Manager

1.4 U.S. Nuclear Regulatory Commission

* W. Bateman, Senior Resident Inspector

* denotes personnel present at exit meeting

2.0 Facility Tour

2.1 The inspectors observed work activities in progress, completed work and plant status in several areas during a general inspection of the plant. The inspectors examined work items for obvious defects or noncompliance with NRC requirements or licensee commitments. Particular note was taken regarding the presence of quality control inspectors and indications of quality control activities through visual evidence such as inspection records, material identifications, nonconformance and acceptance tags. In addition, the inspector interviewed craft and supervisory personnel encountered in the work area.

Specific work activities observed included drywell/shield wall repairs, concrete construction, compaction of backfill and piping installation.

No violations were identified.

3. Pipe Support Installation

The inspector discussed installation and inspection of pipe supports with Bechtel Field Engineering and Field QC personnel and observed the as-installed condition of the pipe supports listed below:

a. Spring Supports

- BC-013-H02 - Variable Spring Support, 16-inch pipe
- BC-004-H77 - Variable Spring Support, 18-inch pipe

b. Other Large Pipe Supports

- BC-004-H26 - Vertical Restraint, 4-inch pipe
- BC-019-H21 - Lateral Restraint, 4-inch pipe
- BD-001-H06 - Lateral Restraint, 4-inch pipe
- BD-001-H15 - Lateral Restraint, 6-inch pipe
- BE-008-H27 - Lateral Restraint, 14-inch pipe
- BJ-001-H02 - Lateral Restraint, 16-inch pipe
- BJ-001-H04 - Support Stanchion, 16-inch pipe

c. Small Pipe Supports

- BC-217-H1 and H3
- BC-245-H1 and H6
- BC-248-H3 and H5
- BD-204-H6

Drawings for large pipe supports are provided by Bechtel Home Office Engineering and are installed in accordance with:

- Specification P-410(Q), "Installation, Inspection and Documentation of Pipe Supports in Nuclear Service," and
- Work Procedure SWP/P-132, "Installation and Checkout of Pipe Supports."

Inspection was in accordance with QC1 P-2.10, "Pipe Hanger, Support Restraint and Shock Suppressor Installation, Fabrication, and Rework - Initial."

The inspector noted that shims on support BJ-001-H4 had not been installed and that pipe clamp bolts on support BC-004-H26 were not tightened. He was informed by the QC inspector that the initial inspection was an in-process inspection and that these items would be inspected during the final inspection. This was confirmed by review of QC1 P-2.00, "Pipe Hanger, Support, Restraint, and Shock Suppressor Installation - Final."

The inspector discussed their experience and training with QC personnel assigned to pipe support inspection. He was informed that training was primarily on-the-job by assignment with experienced inspectors. The extent of such training was dependent upon the individual's prior experience. An inspection of a pipe joint fit-up by one of the inspectors was also observed.

Small pipe supports are installed in accordance with standard details selected by Field Engineering (FE) and Specification P-412(Q), "Design and Documentation of Pipe Supports in Nuclear Service for Pipe 2 inches and smaller." If necessary, special details are provided by FE. The supports examined were installed in accordance with the standard detail HPS, D thru H "Field Alternate Strap Design" and standard or special details for structural supports.

Hanger BC-217-H1 called for installation using Details HPS 601F for the strap and SPS-108B, a cantilever beam for the structural support. SPS-108B shows the support attached by welding to both flanges of an existing structural "beam". It also shows, as an alternate connection, the support attached to one flange of an existing structural "column". The inspector noted that the support had been attached to an existing structural "beam" in a manner similar to that shown as the alternate connection to an existing "column". During a later review of records, the inspector observed that they identified the detail for attachment to an existing beam. This item is unresolved pending clarification by the licensee and review by an NRC inspector (354/83-11-01).

4. Pipe Support Records

The inspector reviewed QC records for the hangers identified above. The records were complete, readily available and conformed to the requirements of QC1 P-2.10 and except as noted in Paragraph 3 above, were accurate.

They included welding inspection reports in accordance with QCI W-1.00, "Welding, Heat Treating, and Non-destructive Examination of Q-List and ASME Section III Items." Where applicable, they included a report of expansion anchor installation in accordance with QCI-1.50, "Installation of Expansion Anchors."

The inspector reviewed the schedule and records of pipe support audits performed by Bechtel and discussed the audit organization and program with the Project QA Engineer. Audits had been performed as scheduled. Three audits of "Pipe Supports In-Process Control," were reviewed; No. 24.4-5, February 1982, No. 24.4-6, November 1982, and No. 24.4-7, February 1983. Audit findings are followed by the auditors for corrective action.

No violations were identified.

5. Training

The inspector discussed training of construction and FE personnel with the responsible supervisors and with the Training Coordinator. Training records were audited and training of selected personnel was reviewed.

Training of FE personnel is primarily self-reading, although, classroom instruction is provided in certain areas. For piping and pipe-support personnel, this has included the installation section of Specification P-410, welding, anchor bolt installation and where applicable, instruction on small bore pipe design based on use of standard details. Reading consists primarily of changes to existing documents. A matrix, showing status of reading required and completed, is maintained. Records of classroom attendance are maintained in each persons file. A central record of classroom requirements and attendance is not maintained. Personnel training records are reviewed every six months by the supervisors primarily to determine if additional training is required due to a change in position or duties.

Training is provided to construction personnel down to foreman level. In the piping discipline training is primarily in weld symbols, drawings and hanger installation. Controls to assure that make-up sessions are attended and records of such attendance were not available. Based on interviews with the Training Coordinator and piping supervisor, and review of training schedules and course outlines, improvements of the training program for construction personnel is in progress.

No violations were identified.

6. Review of Construction Deficiency Reports

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

The reported significant deficiency identified as cement-grout intrusion into the drywell-shield wall air gap was inspected to determine the status of the corrective actions. Discussions were held with responsible Bechtel

project and field engineers during the inspection. The inspector ascertained from the above that all the intruded grout had been completely removed and verified by QC. Damage resulting from chipping-out of the grout to the drywell steel has been repaired in accordance with code requirements. The need to replace sections of the concrete shield wall that provided access for grout removal has not yet been determined. Determination of shield wall restraint to the drywell and method of shielding is being analyzed by PDM and their consultants, NUTECH. QC records of all activities undertaken to provide the corrective actions and to disposition NCR No. 1815 were reviewed and discussed with cognizant QC personnel. The records were observed to be complete except that final sign-off of the NCR is pending the final analysis referred to above.

This item remains open pending a completion of the final analysis and review by the NRC.

(Closed) Potential Significant Deficiency (81-00-08):

The licensee reported this item in accordance with 10 CFR 50.55e on November 25, 1981. Initially, it questioned the effect of recent seismic reanalysis data upon the seismic qualification of certain equipment within the Auxiliary Building. A licensee letter of June 11, 1982, states that their seismic consultant and the A-E reanalyzed all affected structures, equipment and components within the auxiliary building. Additionally, the original seismic analysis of other Category I buildings/structures at Hope Creek was reviewed. They conclude that there is a reasonable confidence level that the design based on the original seismic analysis would not have adversely affected the safe operation of the plant. A report entitled, "Evaluation of Seismic Analysis for the Auxiliary Building," dated June 10, 1982, prepared by Bechtel Power Corporation (BPC) was reviewed. This report substantiates the licensee's conclusion.

This item is closed.

7. Quality Control Procedures for Grouted-In Concrete Anchors

A review was performed of BPC's technical specifications for installation of Grouted-In Concrete Anchors and QC implementing procedures. Specification C-140, Revision 1, Section 6.2, "Installation Procedures for Tightness of the Anchor Nuts", states that nuts shall be brought to a "snug tight" condition. Snug tight is defined as the tightness attained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. The QC implementing instruction for this activity states that nuts shall be brought to a "snug-tight" condition. Resulting from discussions by the inspector with QC and resident project engineers on the lack of specific torque value for nut tightness as related to bolt diameter, BPC agreed to refer this to San Francisco. This is unresolved item No. 83-11-02.

8. Quality Assurance (QA) Review

The inspector reviewed the QA audit schedule, procedures and completed audits of both PSE&G and BPC for compliance with the PSAR and ASME Code requirements. The areas covered by this review included:

- Installation of Electrical Penetrations
- Field Design Control
- Document Control
- Filler Metal
- Large Bore Pipe and Valves
- Welding, NDE and PWHT Control
- Reactor Coolant Pressure Boundary piping

No violations were identified.

9. Quality Control (QC) Inspection Activities

The inspector observed QC inspection activities and documentation of completed examinations including liquid penetrant testing on pipe component welds inside the containment vessel. This inspection included observations of work including joint fitup, welding, defect repair and material handling on process piping, reactor coolant pressure boundary piping and main steam pressure piping. Conformance to site procedures, ASME Code and documentation requirements were verified.

While no violations were identified, the inspector did note that the Quality Control Inspection Record (QCIR), Form W1.00A for recirculation loop (RS-N-A1) welding showed the pipe material to be SA403TP304 stainless steel material. The program to provide conformance to NUREG 0313 as outlined in the letter of September 28, 1979, of R. Mittl, to the USNRC stated that recirculatory system pipe sections field weld joint ends were being clad with corrosion resistant weld and solution treated. Review of GE Drawing #795E472 indicated that the field pipe ends including RS-N-A1 that were weld clad and solution heat treated. Examination of QCIR forms for ten other completed field weld joints in the recirculation loop revealed that the material being welded was identified as 304 stainless steel rather than stainless steel weld clad. The QCIR and its referenced drawing #761E350 are the primary documents for each field recirculation system weld, although neither reference the prior clad condition in the weld joint area or drawing #795E472.

In summary, the weld clad deposit on recirculation system pipe weld ends is not documented or referenced on the QCIR for the respective pipe weld joint. Also, no stamping or identification of the clad exists on or near the pipe ends observed by the inspector. The concern is that the weld joint records do not clearly indicate the metallurgical condition of the weld joint area for later purposes including preservice and in service inspection (ISI).

This item is unresolved pending verification that the record system is capable of integrating this kind of information and demonstrating retrievability. (354/83-11-03)

With respect to the pipe end clad weld deposit, it is known that weld clad buildup on the pipe inside and outside diameter causes difficulty in Ultrasonic Testing (UT) of recirculation pipe stainless steel material as required in the area of pipe welds for preservice and in service inspection (ISI).

This item is unresolved pending demonstration that the piping is inspectable as required by 10 CFR 50.55(a)(g). (354/83-11-04)

10. Documentation/Records

The inspector observed the steps of documentation including initiation of QCIR forms for piping by the Welding Department, review and signoff of the form by the Quality Control Department, use of the form during construction and storage of completed records. During the inspection, specific records were requested for review and found to be readily available and complete with the exception of the previously presented problem of weld clad. The QCIR preparation, use and record storage appeared to be in conformance with applicable procedures.

No violations were identified.

11. Welder Qualification

The inspector discussed welding skill and qualification with site welders and the supervisor of welder qualification. The welder qualification program includes identification of the welder by social security number, badge number and a unique welder stamp number. Control of welders taking tests includes a one man, one weld booth rule with close observation by supervision. Welder qualifications, where checked against weld work performed, indicated that welders are qualified per ASME Section IX, as required.

No violations were identified.

12. Pipe Elbow Acceptability

On pipe spool IBJ-003-537, identified as mark 3035-3038, located just above the torus, the inspector noted an irregular distorted area approximately 4" x 12" x 1/2" deep on the side of one of three 14" elbows manufactured to SA234WPB. The measured ovality at the worst location was slightly over 5%, which is less than the 8% maximum permitted by ASME NC4223.2. The inspector inquired as to what other criteria applied and specifically, if the workmanship criteria of SA234 had been considered after completion of manufacturing of the elbow.

This item is unresolved pending completion of the BPC examination of the elbow, records and measurements of wall thickness to assure the elbow is acceptable. (354/83-11-05)

14. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 3, 7, 9 and 13.

15. Exit Interview

An exit interview was held on July 15, 1983, with members of the licensees staff and contractors as denoted in Paragraph 1. The inspector discussed the scope and findings of the inspection. At no time during this inspection was written material provided to the licensee by the inspectors.