U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-354/84-18 Docket 50-354 License CPPR-120

Licensee: Public Service Electric and Gas Company

Facility: Hope Creek Generating Station

Inspection At: Hancock's Bridge, New Jersey

Conducted: September 17 - November 4, 1984

Inspector: W. H. Bateman 11/28/84
W. H. Bateman, Senior Resident Inspector Date

H. H. Nicholas 12/20/84
H. H. Nicholas, Lead Reactor Engineer Date

Approved: Jack Strosnider 12/20/84
J. Strosnider, Chief, Project Section 1C Date

Summary: September 17 - November 4, 1984 (Report No. 50-354/84-18):

Routine resident safety inspections (64 hours) of work in progress, including mechanical and piping walkdowns, instrumentation, torus painting, and housekeeping were conducted. The inspector also made tours of the site, reviewed licensee action on previous inspection findings, evaluated licensee responses to Construction Deficiency Reports, investigated the discharge of an employee for alleged falsification of soils testing records, reviewed the Safeteam program, discussed licensee audits of Bechtel turnover packages, and reviewed action to address potentially generic issues.

No violations were identified, and five outstanding items were closed. Investigation into an alleged falsification of soils test records was concluded, and appropriate corrective action was taken by the licensee. The outstanding item involving questionable MT of welds in pipe spools supplied by Dravo was under follow-up investigation by the Office of Investigations. No conclusions have been reached towards resolving this issue as a result of the investigation to date.

DETAILS

1. Persons Contacted

Public Service Electric and Gas Company (PSE&G)

A. Barnabei, Principal QA Engineer
J. Ciccone, Manager Startup and Test
G. C. Conner, Operations Manager
J. T. Cox, Principal Startup Engineer
E. Devoy, Principal Engineer
A. E. Giardino, Manager, QA Engineering and Construction
R. Griffith, Principal Staff QA Engineer
S. LaBruna, Assistant General Manager
M. Metcalf, Principal Startup QA Engineer
A. Sternberg, Principal QA Engineer

Bechtel Construction, Inc. (Bechtel)

I. Booher, Subcontracts
W. Cole, Lead Site QA Engineer
J. Dahnert, Lead Pipe & Hanger QC Engineer
G. Goldsmith, Resident Engineering
N. Griffin, Project Field Engineer
C. Headrick, Project QC Engineer
D. Little, Project Superintendent
D. Long, Field Construction Manager
G. Moulton, Project QA Engineer
B. Mukherjee, Resident Project Engineer
D. Sakers, Assistant Project QC Engineer
J. Serafin, Assistant Project Field Engineer
R. Tringale, Assistant Project Field Engineer
C. Turnbow, Manager of Construction
S. Vezendy, Assistant Project QC Engineer

General Electric Nuclear Energy Business Operations (GENEBO)

J. Cockroft, Site Engineer
R. McKenna, Chief Site Engineer
C. Brinson, Site QA Manager

O. B. Cannon & Son, Inc. (O. B. Cannon)

J. Lipinsky, Quality Assurance Director

2. Site Tour

Routine inspections 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. Inspection personnel were observed performing required inspections and those interviewed were knowledgeable in their work activities. Work items were examined for obvious defects or noncompliance with regulatory requirements or license conditions. Areas inspected included housekeeping, storage of materials and equipment, weld rod control, condition and location of fire fighting equipment, and posting of NRC-3 forms. No unacceptable conditions were identified.

3. Licensee Action on Previous Inspection Findings

(Open) Part 21 (354/81-SB-01): Questionable magnetic particle testing (MT) of weld joints contained in piping spool pieces supplied by Dravo. In Inspection Report 84-05, it was stated this item would remain open pending NRC corroboration of the Dravo inspectors statement involving the extent of improper MT. During this report period, the NRC Office of Investigations interviewed the subject Dravo inspector, but the results of the interview were inconclusive regarding closure of this item. In particular, the Dravo inspector stated he never improperly performed NDE and that there was confusion regarding the correct MT procedure to be used. This statement conflicts with the information supplied by Dravo in their original Part 21 report, wherein it was stated the inspector was improperly performing MT examination and reinspection of his work had identified rejectable indications. This item will remain open until there is reasonable assurance that all piping welds inspected by the subject Dravo inspector meet ASME III Code requirements for NDE.

(Closed) Unresolved Item (354/83-10-01): The effect of pipe fitting excess stiffness and weight on the flexibility and seismic analyses of safety-related piping systems. In Inspection Report 84-10, it was stated that this item would remain open pending a final GENEBO position on this issue and acceptance of both Bechtel's and GENEBO's positions by NRC licensing. During this report period, GENEBO clarified that all pipe and fittings supplied under their scope were manufactured from plate and were not forged. Review of thickness data for the plate used indicated that deviations from nominal plate thickness were insignificant. The resident inspector also performed independent thickness measurements that confirmed the pipe and fitting thicknesses were within the specified limits. Based on the above, it was concluded that GENEBO supplied pipe and fittings were not part of this concern. Also, during this report period, the Bechtel data was reviewed by NRC licensing and found to acceptably resolve the issue.

(Closed) Noncompliance (354/83-14-03): QC inspections of electrical raceway supports failed to identify nonconforming conditions. Subsequent QC inspections of supports to verify conformance to eccentricity requirements identified other nonconformances. NCR's 2644 and 2695 were issued to document and track the nonconforming supports. A review of the closed NCR's indicated a portion of the discrepant supports were accepted-as-is based on an engineering evaluation and a portion were reworked. Plant tours have not identified any additional electrical raceway support eccentricity problems.

As regards the improperly installed spring nut in a raceway support, QC performed additional inspections of bolted strut type supports. Based on the low number of additional bolting discrepancies identified and project engineering's analyses of the cases identified, it was concluded there was no potential for support failure due to the bolting discrepancies because of the conservative support design. The inspector had no additional questions.

(Closed) Unresolved Item (354/84-04-01): Tracking of SDDR specified work/rework and clarification of the use of the "Construction Action Required" block. Bechtel QA reviewed 299 of a total of 511 SDDR's covering the period from the beginning of the Hope Creek project until 7/27/82 and determined that only one had required work/rework. This work/rework was completed prior to shipment of the time and was verified by a Supplier Quality Representative. Bechtel also stated that in 1978, a Specific Work Plan/Procedure (SWP/P-118) was issued that required field engineering to generate a Field Change Order (FCO) each time field work/rework of a vendor supplied item was required and that a copy of the FCO be sent to QC. Based on the Bechtel QA determination that no work/rework of vendor supplied equipment was done prior to 7/27/82 when the decision was made to use the NCR to document and track the work/rework, no FCO's were available for review.

Project engineering clarified the use of the "Construction Action Required" block. The inspector had no further questions regarding this issue.

(Closed) Noncompliance (354/84-05-04): Failure to perform work on the Control Room Console (CRC) as prescribed and failure to execute the QC inspection program so as to verify conformance with the governing documents. The missing CRC shims were installed and the undersized fillet weld was evaluated by project engineering and determined to be acceptable as-is. Training was conducted to emphasize the importance of constructing to meet design drawing requirements and performing thorough inspections. The inspector had no further questions.

4. Review of Nonroutine Events Reported by the Licensee

A. By letters dated July 17, 1981, November 19, 1981, October 21, 1982, and March 21, 1983, the licensee reported and discussed a significant construction deficiency in accordance with the requirements of 10 CFR 50.55(e) involving manufacturing and material deficiencies associated with Limitorque valve operators used on safety-related valves. During this report period, the inspector witnessed rework of a Limitorque valve operator on valve 1BGHVF004 to help gain an understanding of the problem and to review the procedures and inspections controlling resolution of this issue. The following documents applied:

-- Bechtel SWP/P-E-18, Appendix A, Rev. 5

-- Bechtel FCR's E-6428 and E-6290

-- Bechtel Drawings P-301Q-142 and P-302Q-142 (Anchor-Darling and Limitorque vendor drawings)

It was determined from a review of these documents and discussions with the Bechtel QC Engineer that:

(1) 273 installed valve operators in the field and 37 in storage require rework.

(2) The particular types of problems encountered during the repairs have included:

-- Cracked finger bases, rotors, torque switches, and terminal blocks

-- Use of incorrect material

-- Incorrect vendor wiring

-- Use of unqualified wire

-- Improper crimping

-- Double drilled rotors

-- Lack of calibration charts on limit switches

-- Disagreement between calibration chart and actual torque switch maximum setting

A QC checklist has been generated for inspection of all components to ensure all problems are identified and corrected. The NRC inspector witnessed QC inspection of the parts removed, the replacement of defective parts, and reinstallation of the operator. During this inspection it was observed that the rotor positions were not set to agree with actual valve position upon reassembly of the operator. The inspector questioned this and was informed the switch settings would be made during the pre-operational test program. The inspector concluded that the re-work activities were adequately controlled by procedures and QC inspections. This item will remain open pending NRC observation of rework of a type SMB-00 or 000 operator and an operator associated with a valve inside containment. (354/81-00-04)

B. By letters dated May 23 and June 29, 1984, the licensee reported and discussed a significant construction deficiency in accordance with the requirements of 10 CFR 50.55(e) involving missing seismic bracing in safety-related motor control centers (MCC's) supplied by Eaton Corporation. The inspector reviewed NCR 3731 written to identify the missing bracing in MCC's 10B212, 10B222, 10B242, 10B252, 10B253, 10B262, 10B263, 10B264, 10B272, 10B282, 10B313, and 10B323. This NCR required that the missing 17"x60" structural support panels be installed per Culter-Hammer Contract Change Notice F125860. The inspector verified that QC inspection records existed that documented the installation of the bracing. Additionally, Bechtel QA performed a Verification Plan to ensure QC records existed that documented installation of the supports. The inspector had no further questions and considers this item closed. (354/84-00-03)

5. Alleged Falsification of Soils Test Records

During this report period, an employee of GEO Construction Testing, Inc. (GEO) was discharged for alleged falsification of soils test records. In an attempt to determine the validity and scope of this charge, the inspector interviewed the discharged employee and GEO onsite management. It was determined that the charge was based on test data arrived at as part of a sand cone test to determine soil density. Discussions with the involved parties were inconclusive as to substantiating the charge because of insufficient data and conflicting stories from eye witnesses. One important fact was agreed to by GEO, however, and that was that there was no attempt to change test results from unacceptable to acceptable. The particular sand cone test in question was reperformed, and the density result was similar to that obtained by the discharged employee.

An investigation of all of the employee's past work was performed by GEO and Bechtel to determine if there were grounds for suspecting the validity of the employee's past work performance. This review did not disclose any suspect data. Based on this review and the results of the backup sand cone test, there was no reason to suspect the employee's previous work performance. As the result of separate negotiations between the employee's union and site management, the employee was reinstated. To dispel any safety concerns regarding involvement of this individual with future soils tests, the licensee directed GEO to perform total surveillance of the individual while performing any safety-related soils testing. The inspector had no further concerns regarding this issue.

6. Potentially Generic Issue

A potentially generic issue involving General Electric Steam Leak Detection systems was investigated to determine it's applicability to Hope Creek. In particular, the GE Steam Leak Detection System (SLDS) (GE System Designation B21) is designed to monitor area temperatures and process parameters and to initiate automatic isolations of various systems upon detection of steam leaks from these systems. The systems involved include: HPCI, RCIC, the main steam isolation valves and reactor water cleanup. In each of these systems, the temperature of the area in which they are located is monitored and a high temperature system isolation is initiated by the SLDS. To detect high temperature conditions. GE uses modules supplied by the Riley Company of Skokie, Illinois.

As demonstrated at Shoreham and Limerick, if power to these Riley modules is lost then restored, the modules simulate momentary high temperature conditions which could cause spurious isolations of the associated systems. In fact, during a recent loss of offsite power test at Shoreham, inadvertent HPCI and RCIC high area temperature isolations occurred as a result of a spurious trip of the SLDS.

It was determined that this issue did pertain to Hope Creek, but that GE had notified the licensee of this potential problem and had issued GE Field Deviation Disposition Report (FDDR) KTI-1179, Rev. 0 in June 1984. The FDDR required that 86 units used in panels H11-P609, P611, P620, P621, P640, and P641 be sent back to Riley for appropriate modifications. There were no further questions on this issue.

7. QA Audits of Turnover Packages

In Inspection Report 84-12, it was stated that the licensee had an audit plan under development to help assure the Bechtel signatures on turnover packages were meaningful. During this report period, the audit plan was implemented and preliminary results obtained. The NRC inspector reviewed the preliminary results of licensee audit H-333 covering component/system turnover packages, and no findings were identified. The auditor's comments suggested that the Bechtel preparation of turnover packages has been thorough. The inspector stated that he felt this audit plan should be performed on a frequency commensuraty with the pace of the turnover effort to help assure continuance of quality turnover packages.

8. Safeteam

The licensee has initiated a Safeteam program at Hope Creek. Safeteam is the trademark name for an independent onsite organization whose function is to receive and evaluate quality concerns of who works or have worked at Hope Creek.

The inspector interviewed the individual responsible for managing the effort at Hope Creek to determine how the program works and to ensure he was aware of the licensee's obligation under 10 CFR 50.55(e). It was determined that all Bechtel and PSE&G non-manual personnel must exit with Safeteam as part of their checking out process when leaving Hope Creek. As regards manual craft personnel, an exit with Safeteam is optional. The exit provides these individuals with an opportunity to discuss any quality concerns they may have. Employees are encouraged, however, not to wait until they depart Hope Creek to express their quality concerns, but to express them as soon as they arise. It was also determined that the Safeteam program does require that the NRC be notified if a safety-related issue is being investigated.

Major efforts are under way in the form of newsletters, writeups in site publications, posters, letters to past employees, and demonstrations of the program to supervision, foremen, general foremen, and union stewards to communicate the existence and purpose of Safeteam.

9. Torus Coating

The inspector toured the torus during sandblasting and coating activities to ensure that controlling procedures were effectively implemented and that O. B. Cannon QC and Bechtel QC surveillance personnel were involved in observing work activities. Additionally, discussions were held with the O. B. Cannon QA manager and site manager to discuss problem areas involving the coating system and painter qualifications. Results of these discussions indicated O. B. Cannon management was involved in resolving problems and that concerns for quality were an integral part of their problem solving process. No concerns were identified by the inspector.

10. Turnover Walkdowns

The inspector accompanied Bechtel and licensee personnel on the mechanical and piping eight week walkdown of the RHR system. The eight week walkdown is conducted eight weeks before scheduled system turnover and is followed up with a two week

10. Turnover Walkdowns (Cont'd.)

walkdown. The stated purpose of the eight week walkdown is to assure that the system is 80% complete and that the turnover date can be realistically met. The eight week and two week walkdowns were determined not to be hand-over-hand walkdowns, but somewhat cursory walkthroughs. The inspector was concerned about these superficial walkdowns and discussed the matter with Bechtel and licensee personnel. In these discussions, it was stated that both Bechtel and various departments within PSE&G perform more detailed inspections prior to the official eight and two week walkdowns. Each of the individual walkdowns by Bechtel and PSE&G result in identification of items which are formally punchlisted at the official walkdown times. The inspector concluded that Bechtel walkdowns prior to the eight week and two week walkdowns are sufficiently detailed to identify discrepancies and incomplete work and to establish a realistic punchlist. The inspector will continue to follow up the licensee's involvement in walkdowns prior to turnover. No discrepancies were identified.

11. Preoperational Test Inspection Program

At the request of the licensee and with the formal opening of the preoperational test inspection program on October 22, the region-based NRC preoperational test inspector presented an introduction of the preoperational test inspection program for the Hope Creek Generating Station Unit 1. Discussion items included preoperational test program requirements and implementation, preoperational testing to include test procedure administrative and technical reviews, test procedure verifications, test witnessing, test results evaluation, and possible trouble areas which might be encountered throughout the preoperational and startup test program.

The licensee and his representatives acknowledged the NRC inspector's comments and concerns. The areas presented by the NRC inspector will be covered in detail on subsequent inspections.

At a later date, the inspector briefed the licensee on expected Region I inspections to verify TMI Action Plan (TAP) commitments. The inspector also provided lists of those items which normally are verified through inspection: (1) prior to initial fuel load, and (2) prior to full power licensing.

12. Exit interview

The inspector met with licensee and contractor personnel at periodic intervals during this inspection report period. At these times, the inspector summarized the scope and findings of his inspection activities.