U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-354/85-30

Docket No. 50-354

License No. CPPR-120 Priority -- Category B

Licensee: Public Service Electric and Gas Company

80 Park Plaza - 71C

Newark, New Jersey 07101

Facility Name: Hope Creek Generating Station

Inspection At: Hancock's Bridge, New Jersey

Inspection Conducted: June 24 - 28, 1985

Inspectors: L E Briggs 8/2/85
L. Briggs, Lead Reactor Engineer date

for M. Dev, Reactor Engineer 8/2/85 date

Approved by: P. Eselgroth 8/2/85
P. Eselgroth, Chief date
Test Programs Section, DRS

Inspection Summary: Inspection on June 24 - 28, 1985 (Report No. 50-354/85-30)

Areas Inspected: Routine, unannounced inspection (70 hours) by two region-based inspectors of preoperational test program implementation, QA/QC overview, preoperational test procedure review and verification and plant tours.

Results: No violations were identified.

DETAILS

1.0 Persons Contacted

*A. Barnabei, Principal Quality Assurance (QA) Engineer
R. Bravo, Principal Startup Engineer, Construction Completion
*J. Carter, Startup Manager
J. Cox, Principal Startup Engineer, Methods/Administration
*E. Dalton, Supervising Engineer
*R. Donges, QA Engineer
C. Fresh, Lead Control, Methods/Administration Document Control
*A. Giardino, Manager QA, Engineering and Construction
*R. Griffith, Principal QA Engineer
*C. Jaffee, Startup Engineer
R. Johnson, Site Engineer
T. Johnson, Mechanical Resident Engineer (Bechtel)
*C. Lambert, Supervising Engineer
*E. Logan, Site Manager, Construction
*M. Metcalf, Principal QA Startup Engineer

Other NRC Personnel

*R. Blough, Senior Resident Inspector
*J. Lyash, Resident Inspector

*Denotes those present at the exit meeting conducted on June 28, 1985.

The inspector also contacted other personnel of the licensee's operating and QA/QC staff.

2.0 Preoperational Test Program Implementation

2.1 Test Organization and Personnel Training

2.1.1 Requirements/References

-- Hope Creek Generating Station (HCGS) FSAR Chapters 14 and 17

-- Quality Assurance Instruction (QAI)-2-11, Hope Creek Quality Assurance Program for Phase I and II Startup, Rev. 3.

-- Startup Administrative Procedure (SAP)-2, Organization and responsibilities, Rev. 3.

-- SAP-3, Bechtel/Public Service Startup Interface Activities, Rev. 4.

-- SAP-6, Startup Quality Assurance Program, Rev. 0

-- SAP-15, Personnel Certification, Rev. 3.

-- ANSI N45.2.6-1973, Qualification of Inspection, Examination and Testing Personnel for the Construction of Nuclear Power Plants.

-- Regulatory Guide 1.8, Personnel Selection and Training.

2.1.2 Program Review

The inspector reviewed the licensee's Test and Startup Organization relative to the programs listed in paragraph 2.1.1 to verify that:

-- The personnel performing test and startup quality control activities meet the specified qualification requirements;

-- The responsibilities of key test personnel are defined;

-- The method and responsibility for appointing test personnel is comprehensive and understood by management;

-- The lines of authority and responsibility are defined;

-- The organizational interfaces for organizations involved in the test program are adequate; and,

-- The training records and the Test and Startup personnel interviewed reflect adequacy of their training, QA/QC indoctrination, and understanding of administrative controls for testing.

2.1.3 Program Implementation

The licensee Startup Administrative Procedure No. 2 identifies the Public Service Startup Group (PSSUP) organization and defines its responsibilities. The organization is at a fully staffed status, as delineated in the Project Startup Division Organization - Support chart, dated June 13, 1985. The PSSUG is comprised of a Startup Manager (Public Service) and a Startup Director (Bechtel), assisted by Principal Startup Engineer-Methods/Administration, Principal Startup Engineer-Construction Compliance and Principal Startup Engineer-Testing with additional support by Public Service and Bechtel on-site engineering, technical and administrative personnel. The QA Startup Engineer and his staff perform a staff function to PSSUG, and identify to the Startup Manager or his designee all quality related problems associated with Q/F listed activities. The General Electric Operations Manager and his staff at the site interface and

support the Startup Manager for the NSSS Test and Startup Program at the Hope Creek Generating Station. SAP-2 also delineates PSSUG interfaces with different groups or entities essential to the test and startup program as described in SAP-2, Paragraph 3.2.

The Startup Manager interfaces with the Principal Construction Engineer - site construction on the matters related to monitoring of construction quality, cost and schedule, and Bechtel startup procurement activities. He also interfaces with the General Manager Hope Creek Operations on matters relating to utilization of operations personnel, facility, and development and review of test and startup programs and procedures and their implementation for all quality control test and startup activities which include Component and System Turnover (C/ST) packages, spare parts program, and Phase II Preventive Maintenance Program. The Operations/Startup Coordinator interfaces with the Integrated Test Engineer, the Principal Startup Engineer-Testing, and the Site Engineering Construction Scheduling Group to establish job priorities, coordination, review, and completion of Test and Startup activities. The Startup Manager also interfaces with the Manager - QA Engineering and Construction for all matters related to review and evaluation of Administrative programs, procedures, corrective actions, significant deficiencies, C/ST turnover packages, and audit of Test and Startup activities, including NRC inspections. He also interfaces with the Bechtel Construction Manager for interorganizational support for Phase I and II test programs and component/system and facility turnover activities. On the matters related to problems involving engineering evaluation of system or facility turnover, the Startup Manager interfaces with the Site Engineering Manager - Hope Creek for timely resolution. He additionally interfaces with the Managers - Research and Testing Laboratories for specialized laboratory support to the Test and Startup Program and with the Substation Supervisor -Camden Relay Division for ascertaining availability of specialized training and procedures in the areas of power distribution protective relay and protective circuit calibration during the Test and Startup Program.

The inspector discussed the Test and Startup Organization with the Principal Startup Engineer - Methods/Administration regarding responsibility, authority and qualification and training of personnel performing Test and Startup activities. The inspector also reviewed the qualification/certification and training records of three randomly selected individuals - Level I (1), Level II (1) and Level III (1).

A typical training package contained a Medical Certificate, a list of required reading materials, topics of discussion, performance evaluation, Certificate of Qualification (Levels I, II and III), personal resume (update) and completion of the QA training course. The Methods/Administration document control administrative support group maintains the training schedule, course outlines, training meeting attendance sheets, and training makeup session documentation for Test and Startup personnel.

Based on the above sampling review the inspector determined that for those reviewed the qualification and training of the individuals performing quality control test and startup activities is adequate and the lines of authority and their responsibilities are comprehensive, defined and implemented and that interorganizational interfaces relative to Test and Startup Phase I and II are adequate.

No violations were identified.

2.2 Design Changes and Modifications

2.2.1 References/Requirements

-- Final Safety Analysis Report (FSAR) Sections 13 and 17.

-- Technical Specification (draft), Section 6.

-- ANSI N45.2.11-1974, Qaulity Assurance Requirements for the Design of Nuclear Power Plants.

-- 10 CFR 50 Appendix B, Quality Assurance Criteria for Nuclear Power Plants.

-- 10 CFR 50.59, Changes, Tests and Experiments

-- ANSI N18.7-1976, Administrative Controls and Operational Quality Assurance for the Operational Phase of Nuclear Power Plants.

-- SAP-6, Startup Quality Assurance Program, Rev. 0.

-- SAP-7, System Turnover Test Plan, Rev. 1.

-- SAP-9, Corrective and Preventive Maintenance, Rev. 0.

-- SAP-10, Startup Deviation Report Program, Rev. 9.

-- SAP-12, Design Change and Retest Control, Rev. 2.

-- SAP-15, Personnel Certification, Rev. 3.

-- SAP-18, Temporary Modification Control, Rev. 2

-- SAP-23, Startup Design Information Request, Rev. 0.

2.2.2 Program Review

The inspector reviewed the licensee's Test and Startup Program for design changes and modifications to determine that:

-- The review, processing and implementation of design changes and modifications are conducted according to the procedural controls.

-- The cognizant engineer is aware of the design changes and modifications.

-- The testing and retesting of the system/component has been conducted, as required, prior to work completion.

-- QA/QC involvement for review and approval of the design changes and modifications is adequate.

2.2.3 Program Implementation

The licensee has developed the Startup Deviation Report (SDR) Program through which all design, construction and test/startup deviations for Q and F listed components/systems or balance of plant items are identified during the Phase I and Phase II Test Program. The SDR is assigned a unique identification number and associated Design Change Package (DCP) number. It indicates system/subsystem identification, deficiency description, disposition, verification, QA certification, and Startup Manager approval for closure. Revisions to any SDR receives the same level of review and approval as the original. The inspector reviewed the following design change packages:

1. Reactor Protection System

DCP-59, SDR-SB-0057, Q, RPS, "Repair Protection System H11P609/611".

Dwg. Nos. 10855-N1-C71-1020-6, SH 9 & 11 Rev. BR 0.
10855-E-2187-0(Q), Rev. 0
10855-E-1664-1(Q), SH6, Rev. 6
10855-N1-H11-P609-78, SH5, and 6, Rev. BR 4 and SH21, Rev. BR 1
10855-N1-H11-P611-82 SH 6, 10 and 20 Rev. BR 0

2. Condensate Storage and Transfer System

DCP-62, SDR-AP-0005, Q, "CRC Panel 10C621"

Dwg. Nos. 10855-N1-H11-P621-32(5) Rev. BR 4
10855-N1-H11-P621-32(8) Rev. BR 4

3. Nuclear Boiler and Reactor Recirculation System

DCP-81 SDR-BB-0029, Q, "Bailey Logic Correction"

Dwg. Nos. 10855-J200(Q)-1441, SH1, Rev. 3/c
10855-J200(Q)-1447, SH2, Rev. 3/c
10855-J200(Q)-3085, SH1
10855-J4042-0(Q), SH9, Rev. 1

4. 480 VAC (Class 1E) Substation Power

DCP-233, SDR-PG-0073, Q, "Add Seam Weld..."

Dwg. Nos. 10855-E 117 (Q)-54, Rev. BR 1
10855-E 117 (Q)-55, Rev. BR 1
10855-E 117 (Q)-56, Rev. BR 1
10855-E 117 (Q)-57, Rev. BR 1
10855-E 117 (Q)-58, Rev. BR 1
10855-E 117 (Q)-59, Rev. BR 1
10855-E 117 (Q)-60, Rev. BR 1
10855-E 117 (Q)-61, Rev. BR 1

5. Condensate Storage and Transfer System

DCP-7400, SDR AP-0088, Q, "Addition of Pipe Support"

Dwg. Nos. 10855-1-P-AP-017-H65 (Q) Rev. 0
10855-1-P-AP-017-H66 (Q) Rev. 0
10855-1-P-AP-017-H67 (Q) Rev. 0

6. Nuclear Boiler and Reactor Recirculation System

DCP-60, SDR-BB-0026, (Q), "CRC Panel 10C631"

Dwg. No. 10855-N-H11-P631-30(1), BR 2

7. Liquid Radwaste System

DCP-Voided SDR-HB-0199, Non-Q, "Level Element Cable Installation".

DCP-60, Item No. 6 above, was cancelled because the work had already been completed. Item No. 7 was voided because the deficiency was identified in SDR No. HB-0100, and consequently, no DCP identification number was assigned. The inspector determined that the design change packages examined were complete, and reflected the implementation of procedural controls for review, processing, and final disposition and approval to close-out of the startup deficiency report for design changes and modifications. The information provided in the packages was adequate to verify the program implementation. The Startup QA Engineer and his staff have reviewed, concurred and approved design changes, and performed surveillance and monitoring as well as witness the mandatory witness points of work completion.

No violations were identified.

3.0 QA/QC Overview

The inspector reviewed the Startup QA Program and associated activities/documentation to determine the adequacy of QA/QC involvement in the preoperational test program - test organization, design changes and modifications, and training of personnel performing quality control test and startup activities. The QA Startup Engineer performs a staff function to PSSUG. He performs liaison with the startup management on all quality matters. His staff performs surveillance of startup activities, review of startup deficiency reports, technical procedures, turn over documents, and reviews test results for compliance, completeness and legibility, and performs surveillance at mandatory witness points (MWPs) as required.

The QA Startup Engineering staff validates, initiates and reviews all Q/F listed SDRs, concurs with and verifies their disposition; evaluates potential reportability as required by 10 CFR 50.55(e), and 10 CFR 21; monitors repetitive conditions; and performs surveillance of SDRs to ascertain completion of prerequisites for preoperational testing.

The qualification/certification of the personnel performing quality control test and startup activities at Hope Creek is conducted according to ANSI N45.2.6, and Regulatory Guide 1.8. QA-Engineering and Construction conducts a mandatory QA Training course outlined in QA Manual-40, for all individuals participating in Q/F testing activities.

Based on the above observations and review the inspector determined that the QA involvement in the Preoperational Test Program in the areas of test organization, design changes and modifications, and personnel training is adequate.

No violations were identified.

4.0 Preoperational Test Procedure Review and Verification

4.1 PTP Review and Verification

The PTPs listed below were reviewed in preparation for test witnessing, for technical and administrative adequacy and for verification that testing is planned to adequately satisfy regulatory guidance and licensee commitments. They were also reviewed to verify licensee review and approval, proper format, test objectives, prerequisites, initial conditions, test data recording requirements and system return to normal.

-- PTP-BE-1, Reactor Core Spray, Revision 0, June 25, 1985; and,

-- PTP-SF-1C, Rod Worth Minimizer System, Revision 0, June 14, 1985

4.2 Findings

During review of PTP-BE-1 the inspector had several questions concerning core spray injection valve stroking with maximum differential pressure. GE Preoperational Test Specification, GE 22A2271 AZ, GE 12, Low Pressure Core Spray, Revision 2, states that the injection valves should start to open with 730 psid or the maximum psid practicable. The licensee intends to stroke the injection valves with full core spray pump shutoff head on one side of the valve and atmospheric pressure on the opposite side. This was discussed with the senior site GE representative and determined to be acceptable.

The inspector had no further questions.

Review of PTP-SF-1C (a non-Q procedure) indicated that one prerequisite was overlooked. The Rod Sequence Control System (RSCS) was not bypassed. Failure to bypass the RSCS as stated in the GE preoperational test specification could cause erroneous test results due to RSCS interaction with the Rod Worth Minimizer system. The licensee reviewed PTP-SF-1C and subsequently agreed that RSCS should be bypassed. PTP-SF-1C will be revised to ensure bypassing of the RSCS is incorporated into the test prerequisites. This item will be reviewed during a subsequent routine inspection. This item was also discussed at length with the startup manager subsequent to the exit meeting on June 28, 1985.

No violations were identified.

One additional item identified in Inspection Report 50-354/85-13, Paragraph 2.3, concerning attachment of GTP-25, Final Air Balance and GTP-24, Filter Testing to PTP-GT-1, Drywell Ventilation, was reviewed. PTP-GT-1 has been revised by on-the-spot (OTS) change No.-5 to require GTP-24 and 25 to be attached to PTP-GT-1 to ensure they are PORC reviewed for test results as part of the PTP-GT-1 test package.

The inspector had no further questions.

5.0 Plant Tours

The inspector made several tours of the various areas of the facility to observe work in progress, housekeeping, cleanliness controls and status of construction and preoperational test activities.

5.1 Findings

During one of the plant tours the inspector noted water coming out of a floor drain in the 'A' RHR pump room. Approximately one to two inches of water had accumulated on the floor. A portable welder was sitting near the floor drain in the water. This was reported to site safety department by the inspector and subsequently removed.

Floor drains and equipment drains in Emergency Core Cooling System (ECCS) vaults are required to be connected in a manner that will not allow back flow into an ECCS vault. The inspector questioned the possibility of common mode flooding between ECCS Vaults since many of the drains were exposed to vault atmosphere. A review of P&ID M-97-1 Sheet 2 of 3, Revision 4 indicated that the system was divided into a dirty radwaste (DRW) and a clean radwaste (CRW) system. The DRW system was separate and independent for each ECCS vault with check valves at the DRW sump to prevent backflooding. The CRW however, indicated several connections between the ECCS vaults. The CRW system consists of numerous four inch equipment drains in each ECCS Vault. A review of FSAR Section 9.3.3, Equipment and Floor Drainage Systems, indicated that system design was such that backflooding could not occur. The inspector questioned the licensee concerning the above. The licensee produced several plumbing and draining drawings that identified each drain in each ECCS vault. The licensee and the inspector using the appropriate drawing located each drain in three ECCS Vaults. The drains that were open to atmosphere were all part of the DRW system. With the exception of several drains that had temporary fittings to allow drain system testing, all CRW drains were covered with a plate welded to the equipment drain pipe and the drain funnel or with a blank welded plate if they were designated as not to be used, in accordance with Bechtel drawing P-8000-0 Revision 10. Closure of CRW drains in accordance with design drawings will eliminate the possibility of backflooding through the CRW system. The inspector also noted that drain clean-out connection cover plates were to

be screw in plugs which could easily be removed and present a possible common mode flooding path. The inspector stated that this item is unresolved pending removal of temporary fittings and final drain closure and development of approved administrative controls to prevent unauthorized removal of clean out connection plugs (354/85-30-01).

6.0 Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable, an item of noncompliance or a deviation. An unresolved item is identified in paragraph 5.2.

7.0 Exit Interview

A management meeting was held at the conclusion of the inspection on June 28, 1985, to discuss the scope and findings as detailed in this report (see Paragraph 1 for attendees). No written information was provided to the licensee at any time during the inspection.