

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-354/85-55

Docket No. 50-354

License No. CPPR-120

Priority --

Category B

Licensee: Public Service Electric & Gas Company

80 Park Plaza - 17C

Newark, New Jersey 07101

Facility Name: Hope Creek Generating Station

Inspection At: Hancock's Bridge, New Jersey

Inspection Conducted: November 4-15, 1985

Inspectors:

L. Briggs, Lead Reactor Engineer

12/9/85  
date

L. Wink, Reactor Engineer

12/9/85  
date

Approved by:

P. Eselgroth, Chief, Test Programs Section,  
OB, DRS

12/9/85  
date

Inspection Summary:

Inspection on November 4-15, 1985 (Report No. 50-354/85-55)

Areas Inspected: Routine, unannounced inspection (40 hours) by two region-based inspectors including followup of a previous inspection finding, pre-operational test procedure review and verification, preoperational test witnessing, witnessing of miscellaneous tests and maintenance, startup test program, QA/QC interface with preoperational test program, plant tours, and independent verification.

Results: No violations were identified.

## DETAILS

### 1.0 Persons Contacted

C. Adkinson, Colt Diesel Engine Representative  
\*A. Barnabei, Principal Quality Assurance (QA) Engineer  
\*V. Blenx, Construction Manager/Assistant Project Manager  
W. Brigman, System Test Engineer, Nuclear Instrumentation  
R. Donges, Lead QA Engineer  
M. Farschon, Power Ascension Manager  
\*A. Giardino, Manager, Station QA  
\*W. Goebel, QA Engineer  
\*R. Griffith, Principal QA Engineer  
\*A. Indico, Project Startup (SU) Director  
C. Jaffee, Startup Engineer  
D. Moon, Power Ascension Test Coordinator  
C. Moore, System Test Engineer (STE), Residual Heat Removal  
\*L. Piccirelli, QA Engineer  
W. Schell, Power Ascension Test Director  
D. Smith, STE, Station Service Water  
C. Sullivan, Startup Test Design and Analysis (STD&A) Engineer  
D. Wood, Startup Engineer  
L. Zull, Lead STD&A Engineer

#### Other NRC Personnel

\*J. Lyash, Resident Inspector

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

\* Indicates those present at exit meeting on November 15, 1985.

### 2.0 Followup of Previously Identified Item

(Closed) Unresolved Item 354/85-36-01, Licensee to determine where and how all rod blocks are tested. The inspector determined by review of preoperational test procedures (PTP) and discussions with the STE that all rod blocks except the shutdown rod block were incorporated (to be tested) in several PTP's. The licensee issued change notice No. CN-1 to PTP-SF-1A, Reactor Manual Control System, on November 12, 1985, to test the shutdown rod block circuitry. This item is closed.

### 3.0 Preoperational Test Procedure Review

#### 3.1 Scope

The PTP's listed below were reviewed in preparation for test witnessing, for technical and administrative adequacy and to assure that planned testing is adequate to 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 restoration.

-- EA-1 Station Service Water System, Revision 0, October 18, 1985

### 3.2 Discussion

#### 3.2.1 PTP-EA-1

The procedure was reviewed by the inspector using the references and P and ID's listed in Attachment A. The inspector had several questions concerning the procedure and the method and intent of the test which were discussed with the system test engineer (STE) and resolved with one exception. The exception involved the proper criterion to verify adequate net positive suction head (NPSH) for the station service water pumps. As written, the test demonstrates that the available NPSH under normal operating conditions exceeds the pump's requirement of 20 ft. In accordance with FSAR Section 9.2.1.5, the test must demonstrate that the available NPSH is at least 35 ft. at the design low low water level for the pump suction. Discussions with the STE did not resolve this concern. The licensee, during a subsequent discussion, agreed to revise the procedure to document acceptable pump NPSH values.

Portions of the station service water system will be tested during other preoperational tests. PTP-SV-1, Remote Shutdown Panel, checks the ability to operate portions of the system from the remote shutdown panel. This procedure was reviewed during inspection 85-35. System operation during LOCA and loss of power conditions will be verified in PTP-BB-3, Integrated ECCS LOP, while operation during Reactor Building high radiation will be tested in PTP-SM-2. These procedures have not yet been approved. DTP-EA-001 and DTP-EA-002, which are still being written, will confirm design flow rates through the heat exchangers and the ability of the station service water system to supply water to various other systems.

### 3.3 Findings

The result of the procedure review discussed in Paragraph 3.2.1 remains unresolved (354/85-55-01) pending licensee action to modify the procedure to demonstrate adequate NPSH under design conditions and subsequent NRC review.

#### 4.0 Preoperational Test Witnessing

##### 4.1 Scope

Testing witnessed by the inspector included the observations of overall crew performance stated in Paragraph 3.0 of Inspection Report 50-354/85-18.

##### 4.2 PTP-BC-1

The inspector observed portions of the jockey pump testing for the Residual Heat Removal System conducted as part of PTP-BC-1. Testing was conducted in accordance with the criteria of Paragraph 4.1 above with full QA coverage during the portions witnessed by the inspector.

##### 4.3 PTP-SE-3

The inspector witnessed a portion of the Nuclear Instrument Flow Comparator Channel A testing being conducted under PTP-SE-3, Power Range Monitoring. All testing observed satisfied the criteria of Paragraph 4.1 above.

##### 4.4 Findings

No violations were identified.

#### 5.0 Witnessing of Miscellaneous Testing and Corrective Maintenance

##### 5.1 Recalibration of High Pressure Coolant Injection (HPCI) Discharge Pressure Instrument

The inspector witnessed the final data taken on PT 4772, HPCI discharge header pressure instrument. Testing was being conducted under Test Package Release (TPR) BJC-0139. Instrument calibration data met established acceptance criteria.

##### 5.2 Corrective Maintenance on Robertshaw Valve

The inspector observed the examination and cleaning of a six inch Robertshaw valve used to control jacket cooling water flow which stuck in the maximum cooling position during the performance of DTP-KJ0003, Preliminary and Initial Loaded Testing of 'C' Emergency Diesel Generator (EDG). Testing was being conducted under vendor guidance. The valve was disassembled and visually inspected under Startup Deficiency Report (SDR) KJ-1200. There were no visual defects. The valve was cleaned and reinspected and was being reassembled at the completion of this inspection on November 15, 1985.

Proper valve function will be verified during a subsequent NRC review of EDG test results and observation of EDG preoperational testing.

### 5.3 Preliminary Electrical Checks of 'A' EDG Voltage Regulator

The inspector observed a portion of DG1AG400 Static Exciter Voltage Regulator testing being conducted under TPR KJE-0276 and GTP-15, Revision 3, Digital Control Circuit Checkout. Testing was being conducted to ensure proper electrical circuit connection and operation prior to performance of vendor testing. Vendor testing of 'A' EDG will be conducted under DPT KJ-0004.

5.4 No unacceptable conditions were identified.

## 6.0 Startup Test Program

### 6.1 Scope

The inspector met with the Power Ascension Manager to discuss the status of procedural development to support the startup program, the administrative controls to be employed to govern testing, compliance with the FSAR and regulatory guides and the qualifications and training of test personnel. In addition, the station administrative procedures listed below were reviewed to verify the licensee has developed administrative controls which will assure that the startup test program will be prepared, performed and evaluated in accordance with regulatory requirements.

- SA-AP.ZZ-022, Control of Calibrated Measuring and Test Equipment, Revision 1, April 26, 1985.
- SA-AP.ZZ-032, Revisions and Changes to Station Procedures, Revision 2, October 2, 1985.

### 6.2 Discussion

#### 6.2.1 Procedure Status

The Power Ascension Manager provided the inspector with a complete listing of all procedures developed for startup testing. The listing includes a total of 124 procedures, 111 startup procedures and 13 tuneup procedures. As of November 5, 1985, 71 (64%) of the startup procedures and 13 (100%) of the tuneup procedures had been formally approved. The remaining 40 startup procedures have completed the initial review process and are awaiting formal approval.

#### 6.2.2 Compliance With the FSAR and Regulatory Guides

The Power Ascension Manager stated that a review was being made of Regulatory Guides 1.68, 1.68.1 and 1.68.2 to insure compliance. The inspector requested that the licensee provide a listing to identify which startup tests would satisfy particular items of regulatory guidance. The Power Ascension Manager stated that a listing would be available shortly and would be made available for NRC review.

#### 6.2.3 Qualification and Training of Testing Personnel

The inspector discussed with the Power Ascension Manager the administrative controls that would be used to insure that testing personnel have a combination of education, training and experience commensurate with their functional level of responsibility. The Power Ascension Manager stated that a draft administrative procedure had been developed to govern the qualifications and training of testing personnel but that a final decision had not been made whether to use that procedure or to qualify personnel using the Station Administrative Procedure, SA-AP.ZZ-014, Qualification and Training of Station Personnel. The Power Ascension Manager stated that, whichever method was employed, testing personnel would be qualified to ANS-3.1 as stated in the FSAR.

#### 6.2.4 SA-AP.ZZ-022

The inspector reviewed the procedure to verify that controls had been established for special test equipment including: listing of controlled equipment, calibration requirements, calibration history, controls for storage and issuance and requirements for recording test equipment used in particular tests. This will permit identification of affected tests if test equipment is found to be out of calibration.

#### 6.2.5 SA-AP.ZZ-032

The inspector reviewed the procedure to verify that controls had been established governing revisions of approved procedures and that measures had been established to govern changes (both major and minor) to test procedures during the conduct of testing.

### 6.3 Findings

No unacceptable conditions were identified.



## 7.0 QA/QC Interface with Preoperational Test Program

The inspector reviewed recent QA surveillance report (QASR) regarding different activities of the licensee's startup group. The following QASR's were reviewed:

- QASR-5375, Witnessing of retest for test exception No. 25 of PTP-BH-1, Standby Liquid Control System. Surveillance conducted on November 1, 1985. Retest was performed to verify correct operation of green stop light on HS-4100B after the logic module was replaced. Retest was satisfactory.
- QASR-5486, Witnessing of portions of Detailed Test Procedure (DTP) KJ-0004, completed on November 10, 1985. The QA inspector witnessed eight QA mandatory witness points. All results were satisfactory.
- QASR-5487, Witnessing of torquing of 'B' EDG silencer inspection cover, completed on November 10, 1985. The QA inspector noted the torque wrench serial number and calibration due date. Work was conducted under SDR KJ-1194 and General Work Procedure MDZZ-042. Results were satisfactory.
- QASR-5446, Witnessing of loss of air/power to four RHR system valves, completed on November 7, 1985. All valves failed to their correct position.

### 7.1 Findings

No unacceptable conditions were noted.

## 8.0 Plant Tours

### 8.1 Discussion

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

### 8.2 Findings

No violations were observed.

## 9.0 Independent Verification

The inspector performed an independent visual inspection of the six inch Robertshaw valve disk and body as discussed in Paragraph 5.2 of this report.

#### 10.0 Unresolved Items

Unresolved items are matters which require additional information in order to determine if they are acceptable, violations or deviations. The unresolved item identified during this inspection is discussed in Paragraph 3.2.1 of this report.

#### 11.0 Exit Interview

A management meeting was held at the conclusion of the inspection on November 15, 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. The licensee indicated that no proprietary information was contained within the scope of this inspection.



ATTACHMENT A

- Hope Creek Generating Station FSAR 14.2.12.1.12 EA - Station Service Water
- Hope Creek Generating Station FSAR 9.2.1 - Station Service Water System
- P&ID Service Water  
Drawing No. M-10-1, Sh. 1 of 3, Rev. 9
- P&ID Service Water  
Drawing No. M-10-1, Sh. 2 of 3, Rev. 10
- P&ID Service Water  
Drawing No. M-10-1, Sh. 3 of 3, Rev. 7
- P&ID Circulating Water  
Drawing No. M-09-1, Sh. 1 of 2, Rev. 9
- P&ID Safety Auxiliaries Cooling Reactor Building  
Drawing No. M-11-1, Sh. 1 of 3, Rev. 10
- P&ID Circulating Water Hypochlorination  
Drawing No. M-24-0, Sh. 3 of 3, Rev. 6
- P&ID Plant Leak Detection  
Drawing No. M-25-1, Sh. 1 of 3, Rev. 4