

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

50-277/84-38
Docket/Report: 50-278/84-31

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Facility Name: Peach Bottom Atomic Power Station

Inspection at: Delta, Pennsylvania

Inspection conducted: November 20-28, 1984

Inspector: T. P. Johnson 12-19-84
T. P. Johnson, Project Engineer date signed

Approved: E. C. McCabe 12/20/84
E. C. McCabe, Chief, Reactor Projects date signed
Section 3B

Summary:

Routine, onsite regular and backshift inspection by a region-based inspector (19 hours Unit 2; 33 hours Unit 3) of accessible portions of Unit 2 and Unit 3, operational safety, radiation protection, physical security, control room activities, surveillance testing, refueling and outage activities, and outstanding items. No unacceptable conditions were identified.

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DETAILS

1. Persons Contacted

*R. S. Fleischmann, Station Superintendent
N. Gazda, Applied Health Physicist
R. MacAllester, Health Physicist
F. Pfender, Shift Superintendent
S. R. Roberts, Operations Engineer
A. Wargo, Shift Supervisor
J. Webster, Shift Supervisor
W. Widener, Shift Superintendent

Other licensee employees were also contacted.

NRC

*J. H. Williams, Resident Inspector

*Present at exit interview and for preliminary summation of findings.

2. Plant Startup

Unit 2

During this inspection period the unit remained shutdown and defueled while undergoing the sixth refueling outage. The major work item remaining is the recirculation system and related piping replacement in the drywell.

Unit 3

During this inspection period the unit operated at or near 80% capacity (as limited by offgas activity) except for power reductions to 65% on November 24, 1984 to leak test condenser water boxes. On November 26, 1984 at 2:30 a.m., HPCI was declared inoperable due to a failed turbine exhaust diaphragm (see Paragraph 4.2.1).

3. Previous Inspection Item Update

(Closed) Inspector Follow Item (277/84-31-02): Review of the emergency diesel generator checkoff list (COL). The COL was acceptably revised by the licensee. The inspector had no further questions in this area.

4. Review of Plant Operations

4.1 Station Tours

The inspector observed plant operations during daily facility tours. The following areas were inspected:

- Control Room
- Cable Spreading Room
- Reactor Buildings
- Turbine Buildings
- Radwaste Building
- Pump House
- Diesel Generator Building
- Protected and Vital Areas
- Security Facilities (CAS, SAS, Access Control)
- High Radiation and Contamination Control Areas

- 4.1.1 Control room and facility shift staffing was frequently checked for compliance with Technical Specifications and 10 CFR 50.54.
- 4.1.2 Shift relief and turnover was monitored daily, including backshift observations, to ensure compliance with administrative procedures and regulatory guidance.
- 4.1.3 Selected control room off-normal alarms (annunciators) were discussed with control room operators and shift supervision to ensure they were knowledgeable of alarm conditions, plant conditions, and required actions. Example alarms discussed included control rod block, APRM high, moisture monitoring system trouble, and HPSW radiation monitor high. In addition, the specific alarm cards were checked for adequacy. The operators were knowledgeable of alarm status and plant conditions. Actions observed for the HPSW radiation monitor high alarms are detailed in Paragraph 4.2.2 of this report.
- 4.1.4 Frequent observations of selected control room instrumentation confirmed that instruments were operable and indicated values were within Technical Specification requirements and normal operating limits.

A detailed review of the daily and shift instrument surveillances and checks was performed. The following surveillance procedures were reviewed for adequacy and Technical Specification implementation:

- ST 9.1-2X, The Surveillance Log, Revision 3, 9/12/84
- ST 9.1-2Y, The Surveillance Log, Revision 2, 3/21/84
- ST 9.1-2Z, The Surveillance Log, Revision 3, 7/11/84
- ST 9.1-3X, The Surveillance Log, Revision 3, 9/13/84
- ST 9.1-3Y, The Surveillance Log, Revision 3, 7/20/84
- ST 9.1-3Z, The Surveillance Log, Revision 2, 3/21/84

The following comments with respect to the above procedures were discussed with the licensee:

- SBLC tank has 2 different normal levels for similar instruments.
- IRM readings should be % full scale, not % full power.
- RBM high setpoint on log is incorrect.
- Note #37 is missing on the page referencing all of the notes.
- River level is missing an asterisk denoting that it is a Technical Specification requirement.

These items were evaluated as having minimal significance. Appropriate procedure changes were initiated by the licensee to resolve the above comments. The item will be reviewed in a future inspection (IFI 277/34-38-01).

In addition, the inspector reviewed the following completed tests: ST 9.1-3X, ST 9.1-3Y, and ST 9.1-3Z completed during the week of November 18, 1984. No inadequacies were identified.

- 4.1.5 The inspector observed main stack and ventilation stack radiation monitors and recorders, and periodically reviewed traces from backshift periods, to verify that radioactive gas release rates were within limits. No inadequacies were identified.
- 4.1.6 The inspector observed control room indications of fire detection instrumentation and fire suppression systems, monitored for proper use of fire watches and ignition source controls, checked a sampling of fire barriers for integrity, and observed fire fighting equipment stations. No inadequacies were identified.
- 4.1.7 The inspector observed overall facility housekeeping conditions, including control of combustibles, loose trash and debris, and observed cleanup during and after maintenance. No unacceptable conditions were identified.
- 4.1.8 The inspector verified operability of selected safety equipment by in-plant checks of valve positioning, control of locked valves, power supply availability, operating procedures, plant drawings, instrumentation and breaker positioning. Selected major components were visually inspected for leakage, proper lubrication, cooling water supply, operating air supply, and general conditions. Systems checked included the High Pressure Coolant Injection (HPCI) System and Reactor Core Isolation Cooling (RCIC) System.

HPCI system documentation was reviewed and is listed in the Attachment.

The following discrepancies were noted during the HPCI procedural review:

- Procedure S.3.3.H, Step 1 has incorrect setpoint for HPCI automatic initiation.
- Procedure ST 6.5-B, Prerequisites 10 and 11 are in error (incorrect wording).

The above discrepancies with HPCI procedures were discussed with the licensee and appropriate procedure changes were initiated. The items were evaluated by the inspector as having minimal safety significance, but will be reviewed in a future inspection (IFI 277/84-38-02).

4.2 Followup on Events Occurring During the Inspection

4.2.1 HPCI Inoperability

On November 26, 1984 at 2:30 a.m., the licensee declared the Unit 3 HPCI system inoperable due to failure of the HPCI turbine exhaust rupture diaphragm (disc). The plant was at 80% power and HPCI monthly surveillance (ST 6.5, HPCI Pump, Valve, Flow, Cooler) was in progress. A four hour report was made in accordance with 10 CFR 50.72 via the NRC ENS phone. The licensee entered a 7 day action statement due to HPCI inoperability. All low pressure ECCS (LPCI and Core Spray), RCIC, and ADS were tested immediately as required. In addition, RCIC and ADS were tested daily thereafter, as required. HPCI remained inoperable at the time the inspection was completed, however repairs were completed and final testing was in progress.

The inspector reviewed the HPCI system inoperable occurrence with the licensee. All licensee actions were monitored and the results of the operability tests required for LPCI, Core Spray, RCIC, and ADS were reviewed. In addition, the conduct of the LPCI and RCIC system surveillance tests were observed from the control room.

No unacceptable conditions were identified.

4.2.2 HPSW Activity

At 11:30 a.m. on 11/26/84 a high radiation alarm occurred on the B loop of High Pressure Service Water (HPSW). Testing of RHR B loop was in progress due to HPCI inoperability. Testing was suspended and the B HPSW loop was sampled, with resultant indicated activity. The B loop of HPSW was not started and apparently no activity was released to the discharge pond. The B and D HPSW cooling subsystem loops (B loop of HPSW) were

isolated and both containment cooling subsystem loops were declared inoperable. (The D HPSW pump was previously inoperable.) The licensee was not required to be in any action statement other than for the 7 day HPCI inoperability. Sampling on 11/27/84 indicated the leak to be from the D RHR heat exchanger, with an activity level of $2.06 \text{ E-04 } \mu\text{Ci/ml}$. The B and D RHR heat exchangers remained isolated (HPSW side).

The inspector was in the control room at the time the alarm (HPSW high radiation) was received. Operator response and actions were monitored. The sample results of indicated activity were reviewed. Also, the inspector reviewed Technical Specification LCO requirements for concurrent inoperable equipment (HPSW pump, containment cooling subsystem loops, and HPCI). The licensee is currently reviewing this occurrence to determine failure mechanism, repair schedule, radiation monitor response to activity level, and whether HPSW activity was released to the discharge pond. This item is unresolved (UNR 84-38-03) pending completion of licensee evaluation of the event.

4.3 Logs and Records

The inspector reviewed logs and records for accuracy, completeness, abnormal conditions, significant operating changes and trends, required entries, operating and night order propriety, correct equipment and lock-out status, jumper-log validity, conformance to Limiting Conditions for Operations and proper reporting. The following logs and records were reviewed: Shift Supervision Log, Reactor Engineering Log (Unit 3), Reactor Operators Log (Unit 2), Reactor Operators Log (Unit 3), CO Log Book, STA Log Book, Night Orders (current entries), and the Daily Surveillance Log (Units 2 and 3).

Control room logs were compared against Administrative Procedure A-7, "Shift Operations." Frequent initialing of entries by licensed operators, shift supervision, and licensee onsite management constituted evidence of licensee review.

No unacceptable conditions were identified.

5. Surveillance Testing

The inspector observed surveillance activities to verify that testing had been properly scheduled, approved by shift supervision, control room operators were knowledgeable regarding testing in progress, approved procedures were utilized, redundant systems or components were available for service as required, test instrumentation was calibrated, work was performed by qualified personnel, and test acceptance criteria were met. Portions of the following tests were observed:

- ST 6.8.1, Daily RHR "A" System and Unit Cooler Operability, Revision 12, 7/11/84, performed for Unit 3 on November 26, 1984.
- ST 6.9.1, Daily RHR "B" System and Unit Cooler Operability, Revision 13, 7/25/84, performed for Unit 3 on November 26, 1984.
- ST 6.11, RCIC Pump, Valve, Flow, and Cooler, Revision 22, 10/5/84, performed on Unit 3 on November 27, 1984.

No unacceptable conditions were identified.

6. Radiation Protection

During the period, the inspector monitored work in progress in radiological controlled areas with specific observations directed towards health physics controls, Radiation Work Permit (RWP) adherence, surveys, anti-contamination clothing utilization, personnel dosimetry, and contamination equipment control.

6.1 The following RWPs were reviewed in detail:

- RWP 3-94-0436, dated 9/18/84 (HPCI, RCIC rooms)
- RWP 3-I-023A, dated 6/22/84
- RWP 8-I-022E, dated 10/18/84

The following errors were noted with the RWP Access and Exposure Control sheets for the above RWPs:

- Illegible name and social security number - 1 case.
- Entry logged in, but no entry and dose logged out - 1 case.
- Names not printed as required by plant procedure - several cases.

These items were discussed with the licensee and immediate action was taken to determine the missing dose and illegible name. The inspector verified these actions to be complete. Additional RWPs were reviewed to determine if a widespread problem exists. Several hundred additional entries were examined. No other errors were noted and this appears to be an isolated case. However, this item will be routinely checked in inspections.

6.2 The inspector observed a health physics technician performing a contaminated area entry, a radiation survey and an atmosphere sample. Radiation levels were consistent with the survey results documented on the RWP. Upon completion of the entry, sampling and survey, the inspector observed area exit techniques and procedures including anti-contamination clothing removal, frisking, equipment survey, and logout procedures on the RWP.

No unacceptable conditions were identified.

7. Physical Security

The inspector monitored for compliance with the security plan and implementing procedures, including: operations of the CAS and SAS, checks of vehicles on-site to verify proper control, observation of protected area access control and badging procedures on each shift, inspection of physical barriers, checks on control of vital area access and escort procedures.

No unacceptable conditions were identified.

8. In-Office Review of Periodic Reports

Peach Bottom Atomic Power Station Monthly Operating Report for October 1984, dated 11/16/84, was reviewed pursuant to Technical Specification and verified to determine that operating statistics had been accurately reported and that narrative summaries of the month's operating experiences were contained therein.

9. Exit Interview

The inspector met with the licensee representatives (denoted in Paragraph 1) throughout the inspection period, and on November 28, 1984, summarized the findings of the inspection activities.

ATTACHMENT TO REPORT 50-277/84-38; 50-278/84-31

HPCI SYSTEM DOCUMENTATION

FSAR Section 6.4.1, HPCI System

Technical Specifications 3.5.C and 4.5.C, HPCI System

P&ID M-365 (Sheet 1 of 2), Revision 22, 9/26/83

P&ID M-365 (Sheet 2 of 2), Revision 21, no date

P&ID M-366, Revision 18, 9/17/82

HPCI System Alarm Cards

ST 1.1, HPCI Logic System Functional Test, Revision 19, 10/9/84

ST 6.5, HPCI Pump, Valve, Flow, Cooler, Revision 33, 7/12/84

ST 6.5-B, HPCI Torus Suction Check Valve Operability (ISI), Revision 2, 7/19/84

ST 6.5.1, HPCI Auxiliary Oil Pump Surveillance, Revision 3, 9/20/83

ST 12.15.3-2, HPCI Pump Contaminated Piping (Unit 2), Revision 1, 10/2/84

ST 12.15.3-3, HPCI Pump Contaminated Piping (Unit 3), Revision 1, 10/2/84

ST 12.15.4-2, HPCI Turbine Contaminated Piping (Unit 2), Revision 1, 10/2/84

ST 12.15.4-3, HPCI Turbine Contaminated Piping (Unit 3), Revision 1, 10/2/84

GEK-9584, Volume V and IX, HPCI System

GE Drawings M-1-CC-14, Revision 7

GE Drawings M-1-CC-15, Revision 6

GE Drawings M-1-CC-15, Revision 8

Vendor Drawings 6280-M-1-S-36, Sheet 1, Revision 46

Vendor Drawings 6280-M-1-S-36, Sheet 2, Revision 42

Vendor Drawings 6280-M-1-S-36, Sheet 4, Revision 35

Vendor Drawings 6280-M-1-S-36, Sheet 5, Revision 36

Vendor Drawings 6280-M-1-S-36, Sheet 6, Revision 32

- Vendor Drawings 6280-M-1-S-36, Sheet 7, Revision 46
- Vendor Drawings 6280-M-1-S-36, Sheet 8, Revision 45
- S.3.3.A, Normal HPCI Setup for Automatic Operation, Revision 8, 5/18/84
- S.3.3.A.2, COL, High Pressure Coolant Injection System, Revision 0, 8/21/84
- S.3.3.A.3, COL, High Pressure Coolant Injection System, Revision 0, 8/21/84
- S.3.3.B, HPCI Shutdown for Automatic Initiation, Revision 4, 5/18/79
- S.3.3.C, HPCI Pump Operability Test, Revision 13, 5/18/84
- S.3.3.D, Recovery from System Isolation or Turbine Trip, Revision 9, 2/10/83
- S.3.3.E, Routine Inspection of HPCI System, Revision 1, 8/25/75
- S.3.3.F, HPCI Test Operation Using Auxiliary Steam, Revision 4, 8/25/75
- S.3.3.G, Setup of the HPCI System for Taking Suction from the Torus, Revision 7, 10/27/83
- S.3.3.H, HPCI System Automatic Initiation Response, Revision 4, 7/16/82
- S.3.3.I, Removal of Water from the HPCI Oil System, Revision 0, 10/1/82
- S.3.3.J, Defeat of HPCI Turbine Trip During Shutdown Conditions, Revision 0, 4/5/84
- S.3.3.K, HPCI Overspeed Trip Test, Revision 1, 10/2/84
- S.3.3.K, COL, HPCI Overspeed Trip Reset, Revision 0, 8/2/84