

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-277/84-20 & 50-278/84-16

Docket No. 50-277 & 50-278

License No. DPR-44 & DPR-56

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, Pennsylvania 19101

Facility Name: Peach Bottom Atomic Power Station Units 2 and 3

Inspection Conducted: June 8 - July 15, 1984

Inspection at: Delta, Pennsylvania.

Inspected by:

*J. E. Tripp*  
for A. R. Blough  
Senior Resident Inspector

7/25/84  
date

*J. E. Tripp*  
for J. H. Williams  
Resident Inspector

7/25/84  
date

*J. E. Tripp*  
for G. W. Meyer  
Project Engineer

7/25/84  
date

Approved by:

*J. E. Tripp*  
Lowell E. Tripp, Chief  
Reactor Projects Section 3A

7/25/84  
date

Inspection Summary:

Inspection on June 8 - July 15, 1984 (Combined Inspection Report 50-277/84-20 and 50-278/84-16)

Areas Inspected: Routine, on-site regular and backshift resident inspection (66 hours Unit 2; 81 hours Unit 3) of: accessible portions of Unit 2 and Unit 3, operational safety, radiation protection, physical security, control room activities, licensee events, surveillance testing, refueling activities, Unit 2 pipe replacement, maintenance, and outstanding items.

Results: Except as follows, activities appeared to be conducted safely and in accordance with regulations: (1) failure to maintain access to fire extinguisher is a Violation, Detail 3.1.7; (2) failure to maintain up-to-date controlled drawings is a Violation, Detail 3.2.3; (3) failure to maintain up-to-date procedures in the Technical Support Center is a Violation, Detail 3.3.3; (4) availability of check-off list S11.2.BB (Offgas Radiation Monitors) is unresolved, Detail 3.1.10; and (5) the acceptability of long term operation of the E3 diesel generator with only 2 of the 3 cables (per phase) is unresolved, Detail 3.2.2

## DETAILS

### 1. Persons Contacted

J. K. Davenport, Maintenance Engineer  
G. F. Dawson, I&C Engineer  
A. Hilsmeier, Senior Health Physicist  
F. W. Polaski, Outage Manager  
S. R. Roberts, Operations Engineer  
\*D. C. Smith, Assistant Station Superintendent  
S. A. Spitko, Site Q. A. Engineer  
S. Q. Tharpe, Security Supervisor  
J. E. Winzenried, Technical Engineer

Other licensee employees were also contacted.

\*Present at exit interviews on site and for summation of preliminary inspection findings.

### 2. Previous Inspection Item Update

2.1 (Closed) Unresolved Item (277/84-07-03, 278/84-07-03), quality team report referenced in response to violation 277/83-05-04. The report was completed and issued in February 1984 and has been reviewed by licensee management. (The inspector discussed the report and its disposition with the licensee.) The inspector noted several cases where recommendations were implemented. The inspector had no further questions. This item is closed.

### 3. Plant Operations Review

#### 3.1 Facility Tours

Daily tours and observations included the Control Room, Turbine Building (all levels), Reactor Buildings (accessible areas), Radwaste Building, Diesel Generator Building, yard perimeter outside the power block (including Emergency Cooling Tower and torus dewatering tank), Security Building (including CAS, Aux SAS, and control point monitoring), vehicular control, the SAS and power block control points, security fencing, portal monitoring, personnel and badging, control of Radiation and High radiation areas (including locked door checks), TV monitoring capabilities, and shift turnover.

3.1.1 Control Room staffing frequently was checked against 10 CFR 50.54(k), 10 CFR 50.54(m), Technical Specifications, and the NRR letter of July 31, 1980. Presence of a senior licensed operator in the control room was verified frequently.

- 3.1.2 Monitoring Instrumentation. The inspector frequently confirmed that selected instruments were operating and indicated values were within Technical Specification requirements. ECCS switch positioning and valve lineups were verified based on control room indicators and plant observations. Observations included flow setpoints, breaker positioning, PCIS status, and radiation monitoring instruments.
- 3.1.3 Off-Normal Alarms. Selected annunciators were discussed with control room operators and supervision to assure they were knowledgeable of plant conditions and that corrective action, if required, was being taken. Examples of specific alarms discussed during the report period were Moisture Monitoring System Trouble, and RBM inoperable. The operators were knowledgeable of alarm status and plant conditions.
- 3.1.4 Fluid Leaks. The inspector observed sump status, alarms, and pump-out rates, and discussed leakage with licensee personnel. During the inspection numerous sensors of the Moisture Monitoring System (MMS) were inoperable at Unit 3. The inspector verified that hourly pump-out calculations were being performed.
- 3.1.5 No significant or unusual piping vibration was found.
- 3.1.6 Environmental Controls. The inspector observed visible main stack and ventilation stack radiation recorders and periodically reviewed traces from backshift periods to verify that radioactive gas release rates were within limits and that unplanned releases had not occurred.
- 3.1.7 Fire Protection. The inspector observed control room indications of fire detection and fire suppression systems, spot-checked for proper use of fire watches and ignition source controls, checked a sampling of fire barriers for integrity, and observed fire-fighting equipment stations. About 8:20 a.m. June 27, the inspector noted that access to fire extinguisher station 234-5 on the Unit 2 Fuel Floor was blocked by numerous large storage containers stacked in front of and around the extinguisher. Technical Specification 6.8 and Regulatory Guide 1.33 (November 1972) require implementation of written procedures for fire protection equipment. Administrative Procedure A-30, Revision 4, June 10, 1981, Plant Housekeeping Controls, states in paragraph 9, Maintenance of Fire Fighting Capabilities, that the storage of equipment and materials shall not impede access to fire-fighting equipment. Failure to maintain clear access to fire-fighting equipment is an apparent Violation (277/84-20-01).

After being informed, the licensee moved the obstructions later that day.

- 3.1.8 Housekeeping. The inspector observed housekeeping conditions, including control of combustibles, loose trash and debris; and spot-checked on cleanup during and after maintenance. The licensee's QC group has been given responsibility for on-going housekeeping evaluations and appeared to be effective in early identification and resolution of housekeeping discrepancies.
- 3.1.9 Equipment Conditions. The inspector verified operability of selected safety equipment by in-plant checks of valve positioning, control of locked valves, power supply availability and breaker positioning. Selected major components were visually inspected for leakage, proper lubrication, cooling water supply, operating air supply, and general conditions.

The inspector reviewed selected blocking permits (tagouts) for conformance to licensee procedures. Breaker, switch and valve positioning was verified. Included were:

<u>Permit No.</u>	<u>Equipment</u>
2-1379	RHR-to-Fuel Pool Diffusers

No violations were identified.

- 3.1.10 Reactor Startup Operations. The inspector observed portions of Unit 3 reactor startup on June 21, including rod withdrawal for startup, portions of plant heatup, and lineup of the HPCI and RCIC systems for automatic operation. The inspector toured the control room and plant to check selected equipment lineups. At 11:20 a.m., June 21, the inspector found that the seismic restraint was not secured at the ADS Back-up Nitrogen Supply bottles. When informed, the licensee fastened the restraint and began an investigation into the cause. Since the reactor was not pressurized at the time, this particular event was not of safety significance. However, the inspector expressed concern, in that similar deficiencies had been noted in the past. The licensee is considering methods of reinforcing to plant operators the importance of seismic restraints. Seismic restraints are routinely observed by the resident inspectors during plant tours.

After the startup, the inspector reviewed the completed startup check-off list, as well as a sampling of completed valve line-up check-off lists and surveillance tests. Among those reviewed, no inadequacies were noted. However, one check-off list requested, C.O.L. S11.2.BB (Offgas Radiation Monitors) was not available for review. The licensee believes the check-off was completed. Pending inspector receipt and review of the document, this item is unresolved (278/84-16-01). The inspector observed off-gas radiation monitor readouts and annunciators in-plant; the monitors appeared to be indicating properly.

3.1.11 At about 7:20 p.m. on July 11, lightning struck the transmission system near the plant, causing loss of the #3 Startup Bus. Transfer of the 4KV busses to the #2 SU Bus occurred. However, during the power transient, the process computer went out of service and the power demand vs power generated mismatch caused the turbine control valves to close. This gave a pressure spike which caused a scram, apparently due to hi hi APRM flux, on Unit 3. The unit was operating at 100% power at the time of the scram. Group II (auxiliary systems) and III (vent systems) isolation occurred as a result of the scram induced low reactor water level. An Unusual Event was declared at 7:20 p.m. and terminated at 9:00 p.m., with the reactor stabilized. No abnormal radioactive gas release occurred. The inspector reviewed recorder traces, logs, GP-18 and Upset Report 3-82-1, which was a similar occurrence. Because of the loss of the process computer, much of the data on the scram was not available. The inspector discussed this event with the licensee. The unit was restarted on July 14 and on line in the morning of July 15. The inspector will review the startup documentation at a later date.

### 3.2 Followup on Events

- 3.2.1 On May 28, during a functional test (ST1.2) on the RCIC system, valve MO-15 (inboard isolation valve) failed to close and the RCIC system was declared inoperable. Unit 3 entered a Technical Specification (3.5.D.2) seven day action statement. A maintenance request was initiated for the valve and on June 1, the unit shutdown for various repairs including repair of MO-15. The valve was repaired, tested and returned to service. It was determined that the valve failure was caused by grease in the valve gears becoming hard due to moisture. Previous packing leaks allowed water to enter the grease, causing it to harden. The licensee examined all similar isolation valves inside the drywell for a possible generic problem. All other valves were satisfactory. In the future, the licensee plans to check the grease for moisture whenever there is a packing leak in the valve. The inspector reviewed the MRF and supporting documentation, including Procedures M-9.1 and M-9.3, and discussed the event with licensee management with respect to cause and corrective action. The inspector had no further questions.
- 3.2.2 On January 11, 1984 the E3 diesel generator tripped on a ground fault while being tested. The diesel was declared inoperable and the licensee entered a technical specification seven (7) day action statement. Upon investigation, it was determined that a hole drilled the previous week had damaged the cable, but at that time, the cable damage was believed to be associated with another system. The licensee performed a safety evaluation which concluded the diesel generator could operate with only 2 of the 3 cables (per phase). The licensee initiated work (MOD 1407) to replace the damaged cable; however, in view of the safety evaluation the MOD

was cancelled. The licensee indicated plans to replace the cable during the annual diesel generator outage. The inspector reviewed the safety evaluation, the PORC minutes, and the MOD package, and requested a regional specialist review of the change. The specialist concluded that operation with 2 cables was an acceptable short term solution (1 year); however more thorough review was required to conclude that long term operation was acceptable. The E3 diesel was taken out of service for annual maintenance on July 9, 1984. The licensee indicated that he does not plan to replace the cable. The acceptability of long-term operation with 2 cables and the possible reduced safety margin in the design is an unresolved item (277/84-20-02, 278/84-16-02).

- 3.2.3 On June 25, the inspector noted that MSRVR-VR-POS-9096A indicated open in the control room. This is the 8" vacuum breaker on the safety relief valve discharge line. The inspector investigated the consequences of having this vacuum breaker open. No safety problems were identified, however, upon review of controlled drawing M-351 on June 27 in the control room and shift supervisor's office, it was noted that the valves were not shown on the drawing in the control room and the copy in the shift supervisor's office was not marked "controlled" as required by Procedure A-6. The inspector reviewed Procedure A-6, Revision 9, dated 12/2/83, Procedure for Control of Drawings and Drawing Logs, and selected drawings controlled by the procedure. The inspector noted that Table A-6 of the procedure was out of date in that numerous drawings had been updated and not listed in the table. Upon examination of selected controlled drawings on June 28, 29 and July 2, it was determined that M-329 was missing from all three locations where controlled copies are maintained, M-351 was out of date (previously discussed), and M-363, M-372, M-386 and M-394 were all out of date. Technical Specification section 6.8.1 states that written procedures and administrative policies shall be established, implemented and maintained. Administrative Procedure A-6 prescribes the method used to control drawings and assure that up to date drawings are used in operation activities. Failure to follow Procedure A-6 in maintaining up-to-date drawings and failure to maintain Procedure A-6 up-to-date is a violation of Technical Specification 6.8.1 and Procedure A-6 (277/84-20-03 & 278/84-16-03).

### 3.3.3 Logs and Records

The inspector spot-checked 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, Night Orders (current

entries), Radiation Work Permits (RWP's), Maintenance Request Forms (sampling), Ignition Source Control Checklists (sampling), and Operation Work & Information Data, all June 8 - July 15, 1984.

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

On July 2, the inspector checked selected controlled copies of drawings and procedures in the Technical Support Center to determine if up-to-date copies were being maintained as required. Two out-of-date procedures were noted. GP-2, Rev. 35 dated 4/10/84, Normal Plant Startup, should have been GP-2, Rev. 36 dated 5/18/84 and GP-18, Rev. 2, dated 10/14/83, Scram Review Procedure, should have been GP-18, Rev. 3, dated 12/27/83. Administrative Procedure A-2 prescribes the method for control, issuance, and use of documents and revisions. Paragraph 7.5.1 states that controlled copies of documents shall be distributed in accordance with the Controlled Copy Distribution Table. Changes to controlled copies shall be placed in the notebooks by the office staff unless requested otherwise by the notebook holder. Failure to maintain the controlled notebook with GP procedures up-to-date is a violation (277/84-20-04, 278/84-16-04).

#### 4. IE Bulletin Followup

##### 4.1 IE Bulletin 83-03--Check Valve Failures In Raw Water Cooling Systems Of Diesel Generators

Some licensees experienced loss of diesel generator operability due to loose check valve discs blocking cooling flow. Bulletin 83-03 requested licensees to identify applicable check valves, and to verify the integrity of the valve internals. The licensee presented their actions and results in letters dated June 10, 1983 and November 4, 1983.

The diesel generators are cooled by raw cooling water from either the Emergency Service Water (EWS) or the Emergency Cooling Water (ECW) systems. The only check valves in these systems associated with the diesel generators are located in the pump discharge headers. The valves near the individual diesel generators are manual valves, locked open. The raw cooling water cools the closed cooling system of each diesel generator via a heat exchanger.

The inspector reviewed surveillance test procedures, revised to verify proper check valve operation, including the following:

- ST6.3, Revision 9, October 12, 1983, ESW Pump, Valve, Flow and Cooler, (performed June 1, 1984); and

- ST13.21, Revision 7, November 2, 1983, ECW Pump, Emergency Cooling Tower Fans, and ESW Booster Pump Operability, (performed November 3, 1983).

Also, the inspector reviewed P&ID drawings M-315 (ESW) and M-330 (ECW) to verify that no other applicable check valves existed.

For the closed cooling system of the diesel generators, the inspector reviewed the preventive maintenance entries for annual disassembly and inspection of the three check valves in the cooling system. The licensee states that these disassemblies have been performed for the last two years. Also, the inspector reviewed the Fairbanks-Morse Service Manual and the cooling system drawing (11865632) to verify that no other applicable check valves existed. Further, the inspector inspected the cooling system of Diesel Generator E-I to verify that the actual configuration matched the drawing, that the check valves were inspectable and that the exterior appearance was consistent with the previous disassemblies. The inspector reviewed MRFs 2-52-M-3-185, -187, -189, and -191 related to the disassembly and inspection work during February and March, 1983.

The inspector noted that the diesel cooling system check valves are "duo-check" valves; i.e., the valve "disc" is composed of two semi-circular discs hinged at the diametrical axis. This design appears to be different from the check valve design described in the bulletin.

The inspector concluded that the licensee's response to Bulletin 83-03 was accurate and acceptable. This bulletin is closed.

#### 4.2 IE Bulletin 80-06, ESF Reset Control

This bulletin was reviewed in inspection 277/83-34, but during that inspection the licensee did not show how all his commitments were met. Also, minor clarifications to procedures for resetting containment isolations were needed.

The inspector reviewed Special Procedure 340, Preoperational Test for Mod 577A, completed December 10, 1979 at Unit 3 and January 7, 1980 at Unit 2. This test, which was not provided in the original inspection, satisfied the test commitment the inspector had questioned. Also, the inspector reviewed procedure GP-8, Revision 16, February 17, 1984, Primary Containment Isolation, and found that references to ancillary procedures needed for reset of Group II isolations are now included. The inspector had no further questions; this bulletin is closed.

### 5. Maintenance

For the following maintenance activities, the inspector spot-checked administrative controls, reviewed documentation, and interviewed cognizant engineers and supervisors:



<u>Maintenance Request No.</u>	<u>Equipment</u>	<u>Date</u>
2-18-M87 2863	Fuel Pool Gates	6/2/84

Documents reviewed included maintenance requests, material certifications and receipt inspections, welder qualifications, weld information data sheets, and field inspection reports. Regarding welder qualification data, the inspector was unable to verify qualification renewal dates based on the data in the work package. The licensee will provide the needed information; this item will be reinspected (277/84-20-05).

#### 6. Surveillance Testing

The inspector observed surveillance to verify that testing had been properly approved by shift supervision, control room operators were knowledgeable regarding testing in progress, approved procedures were being used, 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. Parts of the following tests were observed:

- GP10-2A, Revision 3, June 18, 1984, Hydrostatic Test Procedure, performed at Unit 3 on June 19 following clad overlay repairs to jet pump instrument seal lines. For the hydrostatic test, the inspector reviewed completed valve and instrument check-off lists, pressure gauge calibration data, and jumper log entries. The inspector verified that jumpers were properly installed, checked selected prerequisites, and observed portions of the test. After the test the inspector verified that jumpers had been properly removed. No unacceptable conditions were noted.
- SP701, Revision 0, May 18, 1984, Manual Rod Withdraw Block Initiation started June 27 on Unit 3 and completed July 2.

The inspector reviewed completed documentation for the following test:

- ST6.15, Revision 6, May 24, 1983, Recirculation Pump Valve Operability, completed at Unit 3 on June 5, 1984.

No violations were identified.

#### 7. Radiation Protection

During this report period, the inspector examined work in progress in both units, including the following:

- a. Health Physics (HP) controls
- b. Badging
- c. Protective clothing use
- d. Adherence to RWP requirements
- e. Surveys
- f. Handling of potentially contaminated equipment and materials

More than 50 people observed met frisking requirements of Health Physics procedures. A sampling of high radiation doors was verified to be locked as required.

Compliance with RWP requirements was verified during each tour; special emphasis was placed on RWP adherence in work associated with the Unit 2 outage. About 15 RWPs were checked during the month. Line entries were reviewed to verify that personnel had provided the required information and about 30 people working in RWP areas were observed to be meeting the applicable requirements.

On June 15 while touring the plant it was noted that a door on elevation 165 of the Unit 3 Reactor Building opened to a contaminated area, but was not properly marked. The inspector observed a contractor employee entering the area and being surprised by the contaminated area. The inspector informed the HP and plant management and the proper markings were applied. Later the area was cleaned up and is no longer contaminated.

#### 8. Physical Security

The inspector spot-checked compliance with the accepted Security Plan and implementing procedures, including: operations of the CAS and SAS, over 10 spot-checks of vehicles onsite 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 violations were identified.

#### 9. Refueling Activities

The inspector reviewed administrative controls associated with special reactor level instrumentation and control associated with the Unit 2 recirculation piping replacement. Procedures reviewed included SP710, Temporary Reactor Level Instrumentation, and SP706, Revision 1, Pipe Replacement Overall Coordination. The inspector observed reactor shroud and annulus level instruments and spot-checked on various activities associated with vessel draining prior to recirculation nozzle cutting. Within the scope of the above review, one deficiency was noted. After vessel draining on July 3, shift operators were not provided with written guidance, either as a procedure or as shift turnover information, on the allowable shroud level band and actions to be taken in event of abnormal level. (The reactor shroud level is an important parameter in radiation protection because of its shielding effect.) ANSI18.1-1972 Section 5.3, Operating and Maintenance Procedures, states that limitations on parameters being controlled and appropriate corrective measures for off-normal values should be specified. When informed of this procedural inadequacy on July 5, the licensee issued a change to SP706 to specify the level band and control measures.

The inspector also discussed with the licensee his decision to lower shroud level to the jet pump slip joints for cutting of recirculation outlet nozzles. Original plans had been to maintain shroud level higher for better shielding, but jet pump plugs installed for this purpose leaked. The decision to lower the shroud level was made with the knowledge of contractor ALARA engineers. The dose rate increase in work areas was calculated to be about 5 milli-roentgens per hour (mr/hr). Because general radiation levels were much higher, the increase was not distinguishable in radiation surveys. The outlet nozzles were cut and capped, and vessel level was raised for the remainder of pipe cutting, decontamination and removal.

No violations were identified.

#### 10. In-Office Review of Monthly Operating Report

Peach Bottom Atomic Power Station Monthly Operating Report for May 1984 dated June 14, 1984, was reviewed pursuant to Technical Specifications and verified to determine that operation statistics had been accurately reported and that narrative summaries of the month's operating experience were contained therein.

No violations were identified.

#### 11. Inspector Follow Items

Inspector follow items are items for which the current inspection findings are acceptable, but due to on-going licensee work or special inspector interest in an area, are specifically noted for future follow-up. Follow-up is at the discretion of the inspector and regional management. An Inspector follow item is discussed in Detail 5.

#### 12. Unresolved Items

Unresolved items are items about which more information is required to ascertain whether they are acceptable, violations, or deviations. Unresolved items are discussed in Details 3.1.10 and 3.2.2.

#### 13. Management Meetings

##### 13.1 Preliminary Inspection Findings

A verbal summary of preliminary findings was provided to the Assistant Station Superintendent at the conclusion of the inspection. During the inspection, licensee management was periodically notified verbally of the preliminary findings by the resident inspectors. No written material was provided to the licensee during the inspection.

### 13.2 Attendance at Management Meetings Conducted by Region-Based Inspectors

The resident inspectors attended entrance and exit interviews by region-based inspectors as follows:

<u>Inspection Reporting Date</u>	<u>Subject</u>	<u>Report No.</u>	<u>Inspector</u>
June 18 (Entrance)	Health Physics	277/84-18	Bicehouse
June 22 (Exit)			
June 25 (Entrance)	Physical Security	277/84-19	Bailey
June 29 (Exit)		278/84-10	Dunlap Smith
July 1 (Entrance)	Welding and Mat-	277/84-21	Reynolds
July 6 (Exit)	erial for Unit 2 Pipe Replacement and Unit 3 Overlay	278/84-17	