October 19, 1999

Mr. G. Rainey, President
PECO Nuclear
Nuclear Group Headquarters
Correspondence Control Desk
P.O. Box 195
Wayne, Pennsylvania 19087-0195

SUBJECT: NRC INSPECTION REPORT 50-277/99-07, 50-278/99-07

Dear Mr. Rainey:

On September 20, 1999, the NRC completed an inspection at the Peach Bottom Atomic Power Station. The enclosed report presents the results of that inspection. We concluded that your staff continued to operate both units safely.

We noted that main control room personnel continued to perform well during plant maneuvers and transients, including the response to the 3A reactor feedwater pump trip and the challenges encountered during Tropical Storm Floyd.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC Public Document Room (PDR).

We appreciate your cooperation.

Sincerely,

**Original Signed By:**

Curtis J. Cowgill, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos.: 50-277, 50-278,
License Nos.: DPR-44, DPR-56

Enclosure: NRC Inspection Report No. 50-277/99-07, 50-278/99-07

cc w/encls:
J. Hagan, Senior Vice President, Nuclear Operations
J. Doering, Vice President, Peach Bottom Atomic Power Station
M. Warner, Plant Manager, Peach Bottom Atomic Power Station
J.A. Hutton, Director, Licensing, PECO Nuclear
G. D. Edwards, Chairman, Nuclear Review Board
R. Boyce, Director, Nuclear Quality Assurance
A. F. Kirby, III, External Operations - Delmarva Power & Light Co.
A. A. Winter, Manager, Experience Assessment
J. W. Durham, Sr., Senior Vice President and General Counsel
H. C. Kresge, Manager, External Operations, Connectiv
N. J. Sproul, Manager, Financial Control & Co-owner Affairs, Connectiv
R. McLean, Power Plant Siting, Nuclear Evaluations
D. Levin, Acting Secretary of Harford County Council
R. Ochs, Maryland Safe Energy Coalition
J. H. Walter, Chief Engineer, Public Service Commission of Maryland
Mr. & Mrs. Dennis Hiebert, Peach Bottom Alliance
Mr. & Mrs. Kip Adams
Commonwealth of Pennsylvania
State of Maryland
TMI - Alert (TMIA)

Distribution w/encls:
Region I Docket Room (with concurrences)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
PUBLIC
H. Miller, RA/J. Wiggins, DRA (1)
C. Cowgill, DRP
D. Florek, DRP
D. Cullison, DRP
C. O'Daniell, DRP

Distribution w/encls: (Via E-Mail)
M. Tschiltz, RI EDO Coordinator
E. Adensam, PDI-2, NRR
J. Clifford, NRR
M. Thadani, NRR
B. Buckley, NRR
R. Correia, NRR
Inspection Program Branch, NRR (IPAS)
DOCDESK

DOCUMENT NAME: G:\BRANCH4\PB\PB990707.wpd
**To receive a copy of this document, indicate in the box:** "**C**" = Copy without attachment/enclosure "**E**" = Copy with attachment/enclosure "**N**" = No copy

| OFFICE | RI/DRP | | RI/DRP |
|---|---|---|---|
| NAME | DFlorek | | CCowgill |
| DATE | 10/19/99 | | 10/19/99 |
| | | | |

OFFICIAL RECORD COPY
U. S. NUCLEAR REGULATORY COMMISSION

REGION I

| | |
|---|---|
| License Nos. | DPR-44<br>DPR-56 |
| Report Nos. | 99-07<br>99-07 |
| Docket Nos. | 50-277<br>50-278 |
| Licensee: | PECO Energy Company<br>Correspondence Control Desk<br>P.O. Box 195<br>Wayne, PA 19087-0195 |
| Facility: | Peach Bottom Atomic Power Station Units 2 and 3 |
| Inspection Period: | August 10, 1999 through September 20, 1999 |
| Inspectors: | A. McMurtray, Senior Resident Inspector<br>M. Buckley, Resident Inspector<br>B. Welling, Resident Inspector |
| Approved by: | Curtis J. Cowgill, Chief<br>Projects Branch 4<br>Division of Reactor Projects |

## EXECUTIVE SUMMARY

Peach Bottom Atomic Power Station
NRC Inspection Report 50-277/99-07, 50-278/99-07

This inspection report included aspects of PECO operations; surveillances and maintenance; engineering and technical support; and plant support areas.

Operations:

- Main control room personnel performed well while responding to the plant transient that resulted from the trip of the 3A reactor feedwater pump. Site engineering personnel took reasonable actions to recover and restore the reactor feed pump governor uninterruptible power supply (UPS). (Section O2.1)

Maintenance:

- The nuclear maintenance technicians effectively inspected new fuel for the upcoming Unit 3 outage. They identified a bent lower tie plate spacer and several pieces of foreign material. PECO took appropriate corrective actions. (Section M1.2)

- During a planned replacement of the Unit 3B reactor water cleanup system pump discharge check valve, the radiation dose received by workers exceeded the initial estimate due to poor initial planning and poor communication between work groups. (Section M1.3)

- A contract cleaning worker inadvertently bumped a jacket water coolant drain valve for the E2 emergency diesel generator, resulting in a partial drain down of the coolant expansion tank and an alarm in the control room. The emergency diesel generator was not rendered inoperable. Poor awareness by contract cleaning personnel of the potential for repositioning valves on the emergency diesel generator skid during cleaning operations contributed to this problem. (Section M4.1)

Engineering:

- During preparations for Tropical Storm Floyd, engineering personnel did not highlight to the station the degraded conditions that existed on the Unit 2 recirculation pump motor generator lube oil coolers or the need for contingency plans should their performance further degrade. Further degradation in the Unit 2 recirculation pumps motor generator lube oil coolers occurred in the aftermath of the storm, which resulted in significant challenges for station personnel, especially Operations. (Section E2.1)

- During routine surveillance testing on August 14, 1999, the Unit 3 high pressure coolant injection system exhibited oscillations in discharge pressure, speed, and flow rate. Although the oscillations did not affect system operability, site engineering personnel determined that the oscillations were due to the hydraulic governor needle valve for the

high pressure coolant injection turbine being set too far open, allowing potential system instability. PECO took appropriate corrective action. (Section E3.1)

- Engineering personnel did not recognize the importance of maintaining the instrumentation constant during inservice testing for the 'A' emergency service water (ESW) pump. This resulted in the repeat performance of a surveillance test which causes long term, pump degradation due to low flow testing conditions. (Section E4.1)

Plant Support:

- During Tropical Storm Floyd, most of the station emergency sirens were rendered inoperable, mainly due to loss of power. PECO made a timely 10 CFR 50.72 notification to the NRC for significant loss of the offsite notification system. The station's response to the loss of emergency sirens was adequate. (Section P2.1)

- Around sunset on September 5, 1999, a site security guard noticed that some of the perimeter security lighting near the warehouse building was off. Site security personnel immediately implemented compensatory actions for the loss of lighting until the lighting was restored. The security guard exhibited excellent questioning attitude and awareness of security equipment conditions by identifying the perimeter lighting that was off at dusk. (Section S2.1)

TABLE OF CONTENTS

## Report Details

### Summary of Plant Status

PECO operated both units safely over the period of this report.

Unit 2 began this inspection period at 100% power. On August 21, 1999, Unit 2 load was reduced to approximately 63% for condenser waterbox cleaning. Unit 2 returned to 100% power on August 22. On August 24, Unit 2 load was reduced to approximately 73% to allow repair of a main steam isolation valve DC solenoid. Unit 2 returned to 100% power on August 25. On September 6, Unit 2 load was reduced to approximately 94% for a rod pattern adjustment. Unit 2 returned to 100% a couple of hours later. On September 17, Unit 2 load was reduced to approximately 37% after securing the 2B recirculation pump because of increasing lube oil temperatures in the motor generator lube oil cooler due to increased service water side fouling after Tropical Storm Floyd. Unit 2 power was reduced to approximately 30% on September 19 when the 2B recirculation pump was restored to service and the 2A recirculation pump removed from service for motor generator lube oil cooler cleaning. Unit 2 returned to 100% power on September 20 following restoration of the 2A recirculation pump and rod pattern adjustment.

Unit 3 began this inspection period at 97% power, in end-of-cycle coastdown. On August 25, 1999, Unit 3 load was reduced to approximately 58% power as a result of the trip of the 3A reactor feed pump and subsequent recirculation system runback. Unit 3 was returned to 91% power later on August 25. At the end of the inspection period, Unit 3 was at 82%, in end-of-cycle coastdown.

## I. Operations

### O1 Conduct of Operations[1]

O1.1 General Comments (71707)

Control room personnel performed well during plant maneuvers and transients during the inspection period, including the response to the 3A reactor feedwater pump trip, two Unit 2 load swings, and the challenges encountered during Tropical Storm Floyd. Most notable was identification by the Unit 2 reactor operator of increasing recirculation pump motor generator lube oil temperature approximately two hours prior to receiving the control room annunciator alarm. This allowed removal of the recirculation pumps separately from service and prevented a potential Unit 2 manual scram due to no recirculation flow.

[1] Topical headings such as O1, M8, etc., are used in accordance with the NRC standardized reactor inspection report outline. Individual reports are not expected to address all outline topics.

## O2 Operational Status of Facilities and Equipment

### O2.1 Trip of the 3A Reactor Feedwater Pump Due to a Failed Uninterruptible Power Supply Battery

a. Inspection Scope (71707 & 37551)

The inspectors reviewed the actions taken to recover from and restore the 3A reactor feedwater pump (RFP) after failure of the uninterruptible power supply (UPS). The generic implications for the other feedwater UPS systems were also discussed with the system manager and operations manager.

b. Observations and Findings

On August 25, 1999, the 3A RFP tripped due to a failure of the UPS coincident with a 3A drywell chiller start. When the UPS detected a low voltage during the chiller start, it attempted to shift power to the installed battery. Although this shift had occurred previously without a problem, the battery failed and the system shut down which resulted in a trip of the 3A RFP.

To address this issue, station personnel replaced the UPS for the 3A RFP and reviewed the records for the other RFPs UPSs for an extent of condition. The UPS battery for the 3A RFP was replaced almost two years ago. The UPS batteries were replaced on all the other RFP UPSs within the last year. The vendor expected batteries to last approximately three and a half years in the UPS, but Peach Bottom was replacing these batteries every two years based on previous battery failures. The system manager decided after this transient that battery replacement would be changed to yearly.

Based on reviews of the performance of the other reactor feedwater UPS supplies and the conditions under which the batteries operated, plant personnel determined that failures of the other RFP UPS batteries were not probable. The inspectors had no concerns with this determination.

The inspectors noted that main control room personnel performed well while responding to this plant transient. The inspectors also noted that the instrumentation and control technicians changed the system self-check frequency from weekly to daily. This change was considered reasonable to reduce the possible time that a fault would go undetected.

Engineering planned to evaluate the design of the RFP UPS and the effect of large load starts, such as the 3A drywell chiller. Action request A1225444 was initiated to investigate the problem with the reactor feed pump trip.

c. Conclusions

Main control room personnel performed well while responding to the plant transient that resulted from the trip of the 3A reactor feedwater pump. The reactor feedwater pump tripped when the uninterruptible power supply to the reactor feed pump governor failed.

Site engineering personnel took reasonable actions to recover and restore the reactor feed pump governor uninterruptible power supply.

## II. Maintenance

### M1 Conduct of Maintenance

M1.1 General Comments

NRC Inspection Procedures 62707 and 61726 were used in the inspection of plant maintenance and surveillance activities. The inspectors observed and reviewed selected portions of the following maintenance and surveillance test activities:

| Maintenance Observations: | | Observed On: |
|---|---|---|
| C18991503 | 3A RHR Room Cooler Cleaning | August 10, 1999 |
| M018003 | New Fuel Receipt and Inspection | August 18-20, 1999 |
| M1224602 | Unit 3 Reactor Building Bridge Crane Breaker | August 19, 1999 |

| Surveillance Observations: | | Observed On: |
|---|---|---|
| RT-X-023-210-3 | HPCI Flow Control Stability Test | August 17, 1999 |
| ST-O-033-300-2 | ESW, Valve, Unit Cooler, and Emergency Cooling Tower (ECT) Fans Functional Inservice Test | August 18, 1999 |
| ST-O-052-413-2 | E3 Diesel Generator Fast Start and Full Load Test | August 20, 1999 |
| ST-O-010-611-2 | RHR Loop A Piping Pressure Test Inspection | August 20, 1999 |
| RT-X-023-210-3 | HPCI Flow Control Stability Test | August 23, 1999 |
| ST-I-01`3-100-3 | RCIC Logic System Functional Test | September 16, 1999 |

The work and testing performed during these activities was professional and thorough. Technicians were experienced and knowledgeable of their assigned tasks. The work and testing procedures were present at the job site and were effectively used. Good pre-job briefs were observed prior to the performance of the maintenance and surveillance activities observed.

M1.2 Unit 3 New Fuel Receipt Inspection Activities

a. Inspection Scope (60710 & 62707)

The inspectors observed portions of the work activities associated with the receipt inspection of new fuel for the Unit 3 outage.

b. Observations and Findings

During inspection of new fuel on August 20, 1999, nuclear maintenance personnel identified several small paint and metal chips in the fuel bundle and transport boxes. The chips were carefully removed from the fuel and thereafter each transport box was cleaned prior to opening the plastic fuels covers. Also, during the inspection the technicians found a piece of tape inside a fuel bundle just above the third fuel spacer. PECO initiated PEP I0010123 for these issues.

Nuclear maintenance personnel also identified a minor abnormality on fuel assembly YJT622, on the second spacer, above the lower tie plate. The new fuel bundle, received by PECO, had the lower tie plate spacer bent so that it rubbed against a fuel rod. Believing this had the potential to cause fuel damage during operation, PECO personnel returned this bundle to the fuel vendor. The bundle has subsequently been repaired by the vendor, returned to PECO, satisfactorily receipt inspected and stored in the fuel pool. PECO expected an evaluation of this problem from the fuel vendor. PECO initiated PEP I0010175 to track this issue.

The inspectors noted that nuclear maintenance personnel were meticulous with inspection criteria and practices and considered the activity effective at identifying abnormalities with the new fuel for the upcoming Unit 3 outage.

c. Conclusions

The nuclear maintenance technicians effectively inspected new fuel for the upcoming Unit 3 outage. They identified a bent lower tie plate spacer and several pieces of foreign material. PECO took appropriate corrective actions.

M1.3 Unit 3 Reactor Water Cleanup (RWCU) Maintenance Outage

a. Inspection Scope (62707 & 71750)

The inspectors reviewed the activities that contributed to the extended outage of the Unit 3 RWCU system and doses that exceeded the radiation dose estimates for the job. The inspectors also discussed these occurrences with the radiological management and the system manager.

b. Observations and Findings

During a planned maintenance outage during the week of August 16, PECO replaced the Unit 3A RWCU pump discharge check valve (CHK-3-12-28B). This work activity took 150 hours longer than initially planned due to welding problems. The extra time resulted in an actual radiation exposure that was 9 person-rem higher than initially planned. The welding problems were caused by misalignment and slight pipe diameter differences, high heat stress, and required welding positions.

The inspectors determined through discussions with the system manager and radiation protection personnel that initial planning did not consider the welding problems. Also, poor communication between work groups and work planning contributed to the delays

and increased exposure. The welding problems did not get effectively communicated to the radiation protection engineer so that additional actions to reduce radiation dose could be used early in the process. Although the actual doses were higher than initially expected, no violation of NRC requirements occurred.

The inspectors also noted that PECO identified possible future actions to reduce the dose for this type of work, such as, removal and replacement of radioactive piping in the area, more aggressive flushing of the system to reduce the overall dose, work stoppage criteria when problems are encountered, and use of an automatic tool that cuts and preps the piping for welding in one step. Rad protection initiated PEP I0010173 to provide for a multi-organizational review of the activities associated with the RWCU check valve replacement and track the cause analysis and corrective actions for this activity. Corrective actions for this issue have been scheduled to be in place during similar work planned for early next year.

c. Conclusions

During a planned replacement of the Unit 3B reactor water cleanup system pump discharge check valve, the radiation dose received by workers exceeded the initial estimate due to poor initial planning and poor communication between work groups.

## M4 Maintenance Staff Knowledge and Performance

### M4.1 E2 Emergency Diesel Generator (EDG) Coolant Expansion Tank Partially Drained After Contract Worker Inadvertently Bumps a Coolant Drain Valve

a. Inspection Scope (62707)

On September 1, 1999, the plant reactor operator received the “E2 Diesel Generator Trouble” alarm in the control room. An equipment operator (EO), dispatched to the E2 emergency diesel generator (EDG), identified that a jacket coolant outlet drain valve had inadvertently been bumped open resulting in the partial drain down of the coolant expansion tank. The inspectors reviewed the corrective action documentation and EDG operability determination for this issue. The inspectors also discussed this issue with Maintenance management and the system manger.

b. Observations and Findings

Immediately after the E2 EDG alarm was received, the contract cleaning worker notified the control room that the “Coolant Low Level” annunciator was alarming locally. When the EO arrived in the E2 EDG room, the worker showed the operator where that worker had been cleaning and the EO noticed that the jacket coolant outlet drain valve was open. The EO closed the valve and immediately commenced filling the coolant expansion tank. The EO then vented the jacket coolant and air coolant heat exchangers and noted that water issued from the vents immediately. The system manager determined that the emergency diesel generator remained operable based on the heat exchangers remaining filled and the location in the system of the open drain valve.

PEP I0010204 was issued for this problem. Site personnel determined that the jacket coolant outlet drain valve was accidently opened when the contract cleaning worker bumped the valve handle which repositioned the valve. This issue was reviewed with all contract cleaning personnel with special emphasis on the importance of being aware of the surroundings where cleaning is being performed. Temporary positive control devices were installed on most of the vent and drain valves for the four EDGs, to inhibit inadvertent valve movement. Site engineering personnel were working on permanent actions to prevent inadvertent valve repositioning.

The inspectors had no concerns with the EDG operability determination or the initial corrective actions for this issue. The inspectors determined through review of the PEP and discussions with Maintenance management that poor awareness of the surroundings by contract cleaning personnel and the potential for repositioning valves on the EDG skids during cleaning operations contributed to this problem.

c. Conclusions

A contract cleaning worker inadvertently bumped a jacket water coolant drain valve for the E2 emergency diesel generator, resulting in a partial drain down of the coolant expansion tank and an alarm in the control room. The emergency diesel generator was not rendered inoperable. Poor awareness by contract cleaning personnel of the potential for repositioning valves on the emergency diesel generator skid during cleaning operations contributed to this problem.

## M8 Miscellaneous Maintenance Activities

M8.1 (Closed) Violation (VIO) 50-277/98-10-01 Incorrect Refuel Floor Vent Exhaust Radiation Detector Disconnected During Calibration

On August 10, 1998, chemistry technicians were calibrating and testing the ‘A’ and ‘C’ refuel floor vent exhaust radiation monitors. During calibration of the ‘C’ detector, the technicians in the field inadvertently removed and dropped the ‘D’ detector. The technicians in the field reconnected the ‘D’ detector and continued on with the calibration of the ‘C’ detector. None of the technicians involved with this work notified any control room operations personnel or Chemistry Supervision of the dropped detector.

On August 11, instrument and control personnel determined that the ‘D’ detector was not working correctly because it had been damaged. During an investigation into the cause of the damaged ‘D’ detector on August 12, the chemistry technicians involved in the detector calibrations, informed the Chemistry Manager that they had removed the wrong detector, dropped it, and reinstalled it without notifying Chemistry supervision or operations personnel in the control room. PEP I0008822 was generated because of this issue.

The inspectors reviewed the corrective actions for PEP I0008822 and discussed this issue with Chemistry and Maintenance management. This issue was discussed with all of the station chemistry staff with particular emphasis on procedural compliance. Chemistry supervision performed a follow-up review in March 1999 to determine if corrective actions from this event were effective. No new related incidents had

occurred. In addition, Maintenance management discussed this issue with all maintenance personnel and restated managements expectations for procedural adherence and reporting of unexpected conditions. The inspectors have no additional concerns with this issue.

## III. Engineering

### E2 Engineering Support of Facilities and Equipment

E2.1 Shutdown of the Unit 2 Recirculation Pumps Due to Fouling on Service Water Side of the Motor Generator Lube Oil Coolers

a. Inspection Scope (37551 & 71707)

During the aftermath of Tropical Storm Floyd on September 16, 1999, the Unit 2 reactor operator observed that the Unit 2 recirculation pumps motor generator lube oil temperatures were increasing. Operations personnel determined that the temperature increase was due to additional fouling on the service water side of the lube oil coolers. Operations decided to remove each recirculation pump from service, separately, to allow cleaning of the coolers. The inspectors evaluated the response of operations personnel to this degraded condition and discussed this issue with several site engineering system managers and supervisors.

b. Observations and Findings

During the week of September 13, 1999, station personnel injected chemicals into the service water piping to control asiatic clams. Immediately following this injection, differential pressures increased across both of the Unit 2 recirculation pump motor generator lube oil coolers. The inspectors observed that action request (AR) tags were hanging on these coolers noting increased differential pressure on the service water side across the coolers.

Site engineering personnel performed an analysis of the fouling of these coolers following the chemical injection and decided that cleaning of the coolers could be deferred until next year based on anticipated decreasing river water temperature. Although engineering personnel evaluated the coolers heat transfer performance and determined that cleaning of the coolers could be deferred, they did not develop contingency plans in the event the coolers performance degraded further.

The inspectors concluded that information regarding the degradation of the coolers was not provided by site engineering to other station personnel during preparations for Tropical Storm Floyd. Most site organizations participated in several meetings held to ready the station for Tropical Storm Floyd. During these meetings, site engineering personnel did not highlight the degraded conditions on the Unit 2 recirculation pump motor generator lube oil coolers or the need for contingency plans should their performance further degrade.

The inspectors observed that operations personnel performed very well while maneuvering the unit to allow removal the recirculation pumps from service to facilitate cleaning of the Unit 2 recirculation pumps motor generator lube oil coolers.

c. Conclusions

During preparations for Tropical Storm Floyd, engineering personnel did not highlight to the station the degraded conditions that existed on the Unit 2 recirculation pump motor generator lube oil coolers or the need for contingency plans should their performance further degrade. Further degradation in the Unit 2 recirculation pumps motor generator lube oil coolers occurred in the aftermath of the storm, which resulted in significant challenges for station personnel, especially Operations.

## E3 Engineering Procedures and Documentation

E3.1 Unit 3 High Pressure Coolant Injection (HPCI) Rendered Inoperable Due to Large Oscillations in Pump Discharge Pressure and (Closed) Licensee Event Report (LER) 50-278/3-99-003

a. Inspection Scope (37551 & 71707)

Near the end of a routine Unit 3 High Pressure Coolant Injection (HPCI) pump, valve, flow, and unit cooler functional and in-service surveillance test on August 14, 1999, the HPCI system exhibited oscillations in discharge pressure, speed, and flow rate. The HPCI system was subsequently declared inoperable. The inspectors reviewed the Licensee Event Report (LER), PEP and other technical information associated with this event. In addition, the inspectors discussed this issue with the system manager.

b. Observations and Findings

After the HPCI system was declared inoperable, operations personnel placed the HPCI turbine auxiliary oil pump in pull-to-lock and reported this issue to the NRC per 10 CFR 50.72. Subsequently, engineering personnel determined that the HPCI pump remained operable even with the system oscillations. However, since the auxiliary oil pump had been placed in pull-to-lock, the HPCI system was inoperable following the oscillations until normal system alignment was restored. Station personnel wrote PEP I0010133 to document this event.

Site engineering personnel determined that the cause of the oscillations was due to the hydraulic governor needle valve for the HPCI turbine being set too far open allowing system instability. Opening this needle valve caused the turbine and pump to be more responsive to reaching full flow and pressure conditions but also results in the turbine and pump being more unstable. Closing the needle valve caused the turbine and pump to be less responsive but more stable. Procedural instructions for setting the needle valve position incorporated information from the governor vendor instructions. The inspectors noted that conflicting information existed in the governor vendor instructions, a General Electric Service Information Letter (SIL), and Electric Power Research Institute (EPRI) regarding the correct position of the HPCI turbine governor needle valve setting. After further analysis of the conflicting information, site engineering changed

the procedural instructions for setting the needle valve following this event and verified that the Unit 2 HPCI turbine needle valve was set in the new position.

The inspectors determined that actions by operations personnel to render the HPCI pump inoperable following the oscillations were appropriate until engineering personnel fully evaluated the problem. The inspectors reviewed the operability determination for the HPCI system with oscillations and had no concerns.

The inspectors performed an on-site review of LER 3-99-003 and identified no violation of NRC requirements.

c. Conclusions

During routine surveillance testing on August 14, 1999, the Unit 3 high pressure coolant injection system exhibited oscillations in discharge pressure, speed, and flow rate. Although the oscillations did not affect system operability, site engineering personnel determined that the oscillations were due to the hydraulic governor needle valve for the high pressure coolant injection turbine being set too far open allowing potential system instability. PECO took appropriate corrective action.

## E4 Engineering Staff Knowledge and Performance

### E4.1 Discrepancies with Testing of the 'A' Emergency Service Water (ESW) Pump

a. Inspection Scope (37551)

The inspectors reviewed the activities for an inservice test (IST) performed on August 18, 1999, of the 'A' emergency service water (ESW) pump. The inspectors also discussed testing issues with the system manager and engineering management.

b. Observations and Findings

Due to the 'A' ESW pump indicating decreasing pump capacity with performance in the alert range per the inservice testing program, site engineering personnel increased the pump testing frequency. In an effort to obtain more precise indication of actual pump capacity, higher accuracy discharge pressure gauges were temporarily installed in addition to the gauges normally used during surveillance testing. The surveillance procedure was changed to allow the use of the temporary gauges in lieu of the permanently installed gauges. Although the temporary gauges indicated that the 'A' ESW pump was in the action range which rendered the pump inoperable, engineering personnel determined that the pump remained operable based on data taken from the permanently installed gauges. Based on review of the IST code requirements, engineering personnel declared the test invalid. The test was reperformed using the permanently installed gauges and showed that the 'A' ESW pump was not in the action range. The 'A' ESW pump remained on an increased testing frequency.

The inspectors determined that the engineering personnel involved with the recommendation for the installation of the temporary gauges did not have a full recognition of the importance of maintaining the instrumentation constant during IST

testing. This resulted in the repeat performance of the surveillance test which increased the amount of time the system operated in a low flow configuration. Engineering personnel have determined that operation in a low flow configuration results in long term degradation of the ESW pump.

c. Conclusions

Engineering personnel did not recognize the importance of maintaining the instrumentation constant during inservice testing for the 'A' emergency service water (ESW) pump. This resulted in the repeat performance of a surveillance test which causes long term pump degradation due to low flow testing conditions.

## IV. Plant Support

### R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Locked High Radiation Doors and Posting Inspections During Plant Tours

a. Inspection Scope (71750)

The inspectors toured the Unit 2 and 3 turbine and reactor buildings during the inspection periodand verified that high radiation doors were properly posted and locked.

b. Observations and Findings

The inspectors tested approximately 40 high radiation doors that were required to be locked. The inspectors also observed numerous radiological postings throughout the Unit 2 and 3 turbine and reactor buildings. All high radiation doors required to be locked were found locked. No deficiencies were noted with the radiological postings. All locked high radiation doors tested and postings observed met the requirements of Technical Specification 5.7. No concerns were identified by the inspectors.

c. Conclusions

Locked high radiation doors and postings in the Unit 2 and 3 turbine and reactor buildings, observed during this inspection period, were adequately maintained per technical specification and plant administrative requirements.

### P2 Status of Emergency Planning (EP) Facilities, Equipment, and Resources

P2.1 Emergency Siren Losses During Tropical Storm Floyd

a. Inspection Scope (71750)

During Tropical Storm Floyd, most of the station emergency sirens were rendered inoperable, mainly due to loss of power. Also, the transceiver at Peach Bottom lost power during the storm. This prevented the controllers from communicating with the sirens. The inspectors reviewed the licensee's corrective actions and discussed this issue with site emergency planning personnel.

b. Observations and Findings

Due to the loss of many of the emergency sirens, Peach Bottom personnel made a 10 CFR 50.72 notification to the NRC for significant loss of the offsite notification system. Almost all of the sirens were restored to an operable condition a couple of days following the storm.

Site personnel determined that problems occurred with the transceiver at Peach Bottom when the 34 kilovolt power supply (351 line) was lost during the storm. This line had numerous outage problems throughout the summer. The licensee planned to evaluate improving the reliability of power to the transceiver and other plant equipment serviced by the 351 line. Several possible upgrades were being considered.

The inspectors determined based on discussions with emergency planning personnel and review of this issue that the station's response to the loss of emergency sirens was adequate. The inspectors noted that the licensee's long term corrective actions for the loss of power to the transceiver were comprehensive and the inspectors had no concerns with these actions.

c. Conclusions

During Tropical Storm Floyd, most of the station emergency sirens were rendered inoperable, mainly due to loss of power. PECO made a timely 10 CFR 50.72 notification to the NRC for significant loss of the offsite notification system. The station's response to the loss of emergency sirens was adequate.

**S2 Status of Security Facilities and Equipment**

S2.1 Unexpected Loss of Part of the Protected Area Security Lighting

a. Inspection Scope (71750)

Around sunset on September 5, 1999, a site security guard noticed that some of the perimeter security lighting near the warehouse building was off. Power to the lighting was lost when a clearance was applied to work a breaker that fed the warehouse. The inspectors reviewed the PEP associated with this problem and discussed the issue with security management.

b. Observations and Findings

Site security personnel immediately implemented compensatory actions for the loss of lighting, then installed temporary lighting until the permanent lighting was restored. Security personnel determined that the lighting for the perimeter had not degraded to the point where unauthorized or undetected access to the protected area could have occurred. However, this issue was logged as a security recordable event per 10 CFR 73, Appendix G.

Site security personnel were not notified that the breaker clearance would de-energize part of the perimeter security lighting. PECO identified in PEP (I0010216) that an

inadequate station operating procedure and an out-of-date security lighting matrix were the main causes of this problem and resulted inadequate actions being initiated for the warehouse breaker clearance. The station operating procedure was updated to require notification of security prior to de-energizing the warehouse breakers.

The inspectors noted that the security guard exhibited excellent questioning attitude and awareness of security equipment conditions by identifying the perimeter lighting that was off at dusk. The inspectors had no concerns with the response or evaluation of this condition by security personnel.

c. Conclusions

Around sunset on September 5, 1999, a site security guard noticed that some of the perimeter security lighting near the warehouse building was off. Site security personnel immediately implemented compensatory actions for the loss of lighting until the lighting was restored. The security guard exhibited excellent questioning attitude and awareness of security equipment conditions by identifying the perimeter lighting that was off at dusk.

## V. Management Meetings

### X1 Exit Meeting Summary

The inspectors presented the results of the inspection to members of licensee management on October 6, 1999. The licensee acknowledged the findings presented.

### X2 Plant Performance Review Public Meeting

On August 12, 1999, members of the NRC Region I management team met with PECO management in a public meeting to discuss the results of the plant performance review letter dated April 9, 1999.

## INSPECTION PROCEDURES USED

| | |
|---|---|
| IP 37551 | Onsite Engineering Observations |
| IP 60710 | Refueling Activities |
| IP 61726 | Surveillance Observations |
| IP 62707 | Maintenance Observations |
| IP 71707 | Plant Operations |
| IP 71750 | Plant Support Activities |

## ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

None

Closed

| | | |
|---|---|---|
| 50-277/98-10-01 | VIO | Incorrect Refuel Floor Vent Exhaust Radiation Detector Disconnected During Calibration |
| 50-278/3-99-003 | LER | High Pressure Coolant Injection (HPCI) System Declared Inoperable Due to Erratic Behavior Resulting in a Loss of a Single Train Safety System |

Discussed

None

## LIST OF ACRONYMS USED

| | |
|---|---|
| AR | action request |
| ECT | emergency cooling tower |
| EDG | emergency diesel generator |
| EO | equipment operator |
| EP | emergency planning |
| EPRI | Electric Power Research Institute |
| ESW | emergency service water |
| HPCI | high pressure coolant injection |
| IST | inservice testing |
| LERs | licensee event reports |
| PECO | PECO Nuclear |
| PEP | performance enhancement program |
| RCIC | reactor core isolation cooling |
| RHR | residual heat removal |
| RFP | reactor feedwater pump |
| RPS | reactor protection system |
| RWCU | reactor water cleanup |
| SIL | Service Information Letter |
| TSC | Technical Support Center |
| UPS | uninterruptible power supply |
| VIO | violation |