U. S. NUCLEAR REGULATORY COMMISSION

REGION I

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Licensee:	PECO Energy Company P. O. Box 195 Wayne, PA 19087-0195	
Facility Name:	Peach Bottom Atomic Power Station Units 2 and 3	
Dates:	June 5 - July 16, 1994	
Inspectors:	W. L. Schmidt, Senior Resident Inspector F. P. Bonnett, Resident Inspector R. K. Lorson, Resident Inspector	

Approved By: _____ 4 Aug '94

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Reactor Projects Section 2B
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EXECUTIVE SUMMARY

Peach Bottom Atomic Power Station
Inspection Report 94-10

Plant Operations

The plant operators conducted routine activities well at both units during the period, including: performance of the Unit 2 end of cycle coastdown operations (Section 2.0), response to a Unit 2 decreasing condenser vacuum condition (Section 2.1), and to a Unit 3 low containment pressure alarm (Section 2.7).

Despite the generally good performance, several operator weaknesses resulted in minor operational problems. Two low safety significance events occurred due to a weakness in self-checking during scram time testing (Section 2.3) and an untimely review of the core performance report (Section 2.4). Additionally, the only qualified on-shift shift technical advisor (STA) assumed the control room supervisor (CRS) position for about two hours. This event indicated a potential problem in providing an independent STA function with a dual role STA/CRS (Section 2.4).

A good management initiative to identify and correct plant equipment problems that present day-to-day operational challenges was implemented (Section 2.6). Additionally, plant management took good action to address potential equipment problems due to the recent hot weather conditions. The Independent Safety Engineering Group continues to provide good analysis and assessment of plant performance (Section 1.3 and 2.0).

Maintenance and Surveillance

A plant operator demonstrated a good awareness of equipment condition during routine testing by identifying an unusual noise coming from the E-3 emergency diesel generator. PECO properly identified and corrected the noise source (Section 3.1).

The maintenance technicians performed well during repair of the lower floating head seal on the 2A residual heat removal heat exchanger. The inspectors identified two potential concerns regarding the adequacy of the post repair testing (Section 4.1).

The inspector observed that PECO nuclear maintenance division personnel performed the handling, inspection, channeling, and placing of the new fuel into the fuel pool in a professional and well coordinated manner (Section 4.2).

Engineering and Technical Support

Engineering demonstrated good support for plant operations. Strengths included: investigation and resolution of spurious Unit 3 turbine bypass valve misoperation (Section 5.1), and evaluation of the impact of recent hot weather conditions on plant equipment (Section 5.3). Development of a temporary plant alteration ensured adequate safety-related cooling flow following several solenoid valve failures. The inspectors were concerned with the number of emergency service water system solenoid valve failures (Section 5.2). This issue remains unresolved (Unresolved Item 94-10-01).

The analysis performed to support installation of MOD P-287, "Reactor Vessel Water Level Measurement Pressure Compensation" was of high quality (Section 5.5). But a non-conformance report (NCR) resolution for piping vibrations on the one inch steam drain piping from the Unit 3 HPCI system steam inlet line did not correct the vibration problem and was incomplete because the NCR did not address possible fatigue failure considerations (Section 5.4).

Plant Support

The inspector concluded that PECO's emergency preparedness organization performed a thorough critique of the emergency preparedness training drill conducted to prepare for the upcoming emergency preparedness graded exercise (Section 6.3).

PECO responded well after determining that a randomly collected urine sample did not meet all of the FFD program test requirements (Section 6.4).

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DETAILS

1.0 PLANT ACTIVITIES REVIEW (71707)*

1.1 PECO Energy Company Activities

The PECO Energy Company (PECO) safely operated Peach Bottom Atomic Power Station (PBAPS) Unit 2 (Unit 2) and Unit 3 (Unit 3) over the period.

Unit 2 began the inspection period operating at about 100% power. During the period, PECO reduced power on Unit 2 to perform the following:

- June 11 - to remove the fifth stage feedwater heaters (FWH) from service. This lowered feedwater temperature to reduce the effects of end of cycle coastdown on thermal reactor power. The unit returned to full power until coastdown began again on June 17.
- June 24 - to correct decreasing condenser vacuum.

After PECO returned Unit 2 to maximum power output, coastdown continued for the remainder of the period completing the period at about 89% power.

Unit 3 operated at essentially 100% power for the entire inspection period. PECO reduced reactor power to about 35% on June 11, to perform condenser waterbox cleaning, control rod scram time testing, and other maintenance tasks. Operators restored reactor power to 100% on June 13.

1.2 NRC Activities

The resident and regional based inspectors conducted routine and reactive inspection activities concerning operations (Section 2.0), surveillance (Section 3.0), maintenance (Section 4.0), engineering and technical support (Section 5.0), and plant support (Section 6.0). The inspectors conducted these activities during normal and off-normal (backshift) PECO work hours. There was a total of 13 and 5 hours of backshift and deep-backshift inspection hours, respectively.

During the period, the inspectors assessed PECO's hot weather preparations (Section 5.3), and participated in, and observed, a training drill conducted in preparation for the emergency preparedness graded exercise (Section 6.3). Also, the inspectors reviewed preparations for the tenth Unit 2 refueling outage scheduled to begin in September 1994. The inspectors observed new fuel receipt, inspection, and storage (Section 2.2).

On June 29 the NRC issued the Systematic Assessment of Licensee Performance (SALP) report for Peach Bottom. This report covered the period of November 1992 through April 1994.

* The inspection procedure from NRC Manual Chapter 2515 that the inspectors used as guidance is parenthetically listed for each report section.

The following specialist inspections occurred during the report period:

Date	Subject	Report No.	Inspector
6/13-17/94	Rosemount Transmitter Loss of Fill Oil	94-11	L. Kay
6/27-30/94	Adjustable Speed Drive Modification	94-08	J. Calvert
6/6 - 7/94	Radwaste Shipment	PA-94-01	R. Myer

1.3 Review of PECO Self-Assessments

The inspectors reviewed several PECO self-assessment documents: the 1993 independent safety engineering group (ISEG) annual assessment and the April 1994 corporate assessment. These documents contained thorough discussions of nuclear safety and PECO efficiency issues. PECO continues to resolve the issues developed in these assessments.

2.0 PLANT OPERATIONS REVIEW (71707, 70710, 60710, 93702)

The inspectors found that control room operators conducted routine Unit 2 activities well, including: the removal of the fifth stage FWH and the response to a decreasing condenser vacuum (Section 2.1). Further, Unit 2 operators appropriately identified and entered the Technical Specification (TS) limiting conditions for operation (LCO) for an inoperable control rod hydraulic control unit. Control room operators conducted routine Unit 3 activities well. Two low safety significance events occurred due to a weakness in self-checking during scram time testing (Section 2.3) and an untimely review of the core performance report (Section 2.4).

Unit 2 operators performed well during the normal end of cycle coastdown operations. Coastdown begins at the point in core life when there is insufficient reactivity to achieve rated thermal power at maximum core flow with all control rods fully withdrawn. To improve fuel utilization, the operators used approved methods to increase core reactivity and extend the operating cycle. These actions included removing the fifth stage FWH and increasing reactor pressure to 1005 psia by adjusting the electro-hydraulic control (EHC) pressure setpoint.

The operating crews made correct determinations of safety system operability and reportability of identified conditions. The crews adequately tracked and controlled entry into, and exit from, TS LCOs. The inspectors routinely verified the operability of safety systems required to support given plant conditions at both units, noting no deficiencies. Housekeeping at both units was good.

The ISEG report on the May 15, 1994, Unit 2 scram contained a very good analysis and discussion of the transient. Included was a detailed discussion of the recirculation motor generator set linear voltage differential transformer failure and its cause for the subsequent flow biased high reactor power automatic scram.

2.1 Low Condenser Vacuum - Unit 2

On June 24, the control room operators responded well to a Unit 2 low condenser vacuum alarm. The operators promptly entered operational transient procedure OT-106, "Condenser Low Vacuum," reduced power to restore vacuum, and cleared the alarm. PECO's review of the event attributed the low condenser vacuum condition to an out-of-calibration instrument combined with degraded condenser performance due to fouling and elevated river temperatures. PECO restored the condenser vacuum by recalibrating the instrument and by chemically increasing the condenser cleanliness factor. Additionally, PECO developed a plan to mechanically clean the Unit 2 condenser, but postponed this cleaning due to satisfactory condenser performance at the reduced power levels associated with coastdown. The inspector concluded that PECO responded well to this event.

2.2 Scram Time Testing - Unit 3

A reactor operator (RO) scramming an incorrect control rod during testing on June 11 resulted in no safety consequences. The operator failed to perform a self-check resulting in the incorrect selection of the first control rod scrammed. The event indicated the need for operator caution when performing unfamiliar STs.

With Unit 3 operating at about 42% power, the operator conducting surveillance test (ST)-R-003-485-3, "Scram Time Testing," scrammed control rod 38-11 in lieu of control rod 38-15. The unit RO immediately identified the error. Shift management stopped the test, determined the cause of the error, temporarily changed the ST procedure, and initiated a Performance Enhancement Program (PEP) investigation. The temporary change (TC) to the ST procedurally requires control rod scram switch verification prior to scramming and test continuance.

The inspector agreed with the PEP report conclusions. The test RO failed to sufficiently self-check that he had selected the proper scram switch and became confused by the poorly laid out and labeled test panel. Additionally, the seldom used ST procedure did not require double verification of the selected control rod test switch.

2.3 Thermal Limit Exceeded - Unit 3

Unit 3 reactor operation with the maximum average planer ratio (MAPRAT) core thermal limit exceeding the TS limit resulted in no safety consequence because the condition was corrected within the required five hour TS action statement limit. On June 29, an untimely operator review of the core performance (P-1) log allowed the condition to exist for about two hours following a control rod adjustment.

The P-1 reviewed by the reactor engineer (RE) following the control rod move showed that MAPRAT changed from 0.94 to 0.98 as expected. The RO failed to review the 12:00 p.m. automatic P-1 because he became involved with other duties. Approximately two-hours later, the RE informed the RO and shift management that the noon P-1 indicated a MAPRAT of

1.002, in excess of the TS LCO. The control room supervisor (CRS) immediately entered General Procedure (GP)-13, "Response to Thermal Limit Violations," and reinserted the withdrawn control rods within the allowed time per TS 3.5.I. A subsequent P-1 log indicated that the MAPRAT was 0.94. PECO initiated a PEP investigation to determine the root cause for the event.

The inspector shared PECO's concern that the RO became distracted and did not utilize all available reactor performance information to confirm stable reactor conditions following the control rod adjustment. The RE had informed the RO that a reactivity spike or xenon transient would not occur following the control rod adjustment. The RE and RO erroneously believed that the thermal limits would not change between the demanded P-1 log and the 12:00 p.m. P-1 log. PECO initiated a requirement for the RO to review this report in a timely manner. Further, PECO installed an alarm in the process computer that would alert the RO if any thermal limit exceeds 1.0. PECO continues to investigate the reason why the MAPRAT spike occurred and the inspector will review the PEP after it is issued. PECO's response to this event satisfied the inspector.

2.4 Control Room Supervisor as Shift Technical Advisor

A potential problem involving the relief of the CRS to perform the shift technical adviser (STA) function was identified when a STA qualified senior reactor operator (STA/SRO) assumed the CRS position for approximately two hours. The STA/SRO assumed the CRS duties following shift turnover while the SRO (not STA qualified) scheduled to be the CRS completed an activity in the field. The inspectors noted that on-site control room staffing remained adequate to meet the TS requirements. Operations department procedures did not address the STA/SRO taking the CRS watch or how the STA would maintain independence from control room supervisory duties following an accident. PECO plans to formalize a position on STA/CRS turnover while the NRC continues to review a proposed TS amendment that would allow a dual role STA/SRO.

2.5 Emergency Safeguards Feature System Walkdown

The inspector noted no deficiencies in the logic status and relay positions during a walkdown of the emergency core cooling systems (ECCS) and reactor core isolation cooling (RCIC) logic panels located in the cable spreading room. This walkdown included a review of applicable electrical prints and determination of relay position for the standby condition. The inspector found four logic indicating lights out, all on Unit 3, that should have been illuminated for the standby condition. A damaged light bulb socket, documented on an equipment trouble tag (ETT) and an action request, caused one of the problems. For the other lights, the inspector contacted the CRS who determined, through investigation, that the bulbs had burnt-out. The significance of the burnt-out bulbs was negligible since they are normally used during logic system testing to verify the correct positioning of relays.

2.6 Work Around List

PECO implemented an effective process for identifying and tracking plant problems and issues that make day-to-day plant operations difficult. The "work around" list allows management to prioritize issues for correction. The list contained a total of 238 issues, approximately sixty related to tne operation, control, or use of safety related equipment. The inspectors plan to track the resolution and closure of the items over the next several report periods.

2.7 Instrument Nitrogen Rupture Disc Failure

PECO operators responded well to add nitrogen and investigate the cause of a low Unit 3 containment pressure alarm. Operator response included use of alarm response, off-normal, and special operating procedures to identify and correct a blown rupture disc in the instrument nitrogen system. The blown rupture disc did not prevent the instrument nitrogen system from supplying pneumatic pressure to components inside the primary containment, (i.e., main steam isolation valves, safety/relief valves, air operated check valves) during normal operation.

Two nitrogen compressors take a suction through two containment isolation valves from the normally nitrogen inerted primary containment atmosphere. Each compressor supplies a redundant header in the containment. The compressor's relief valves discharge into a common line that allows flow back to the suction of the compressor, but also, has a rupture disc which will relieve pressure to the reactor building ventilation system (if relief valve discharge pressure reaches 15 psig). With this arrangement, if the compressors are not running and the rupture disc blows, the containment atmosphere will vent to the reactor building ventilation system. This does not inhibit the operation of the compressors since they still have a suction path and would provide the necessary pneumatic pressure.

The inspector conducted a walkdown of the Unit 2 and 3 systems, finding components in the correct positions as specified in the piping and instrument diagram, except for one nitrogen header isolated at Unit 3 due to a leak inside the drywell. The inspector also found that a temporary plant alteration (TPA) installed at Unit 3 allowed monitoring of system operation to determine why the rupture disc had blown. Discussions with the system manager (SM) concerning the data collected during the TPA installation indicated that no normal operating transient caused the rupture disc to blow. PECO metallurgical analysis indicated that the disc had failed due to fatigue. The SM also discussed the possibility of removing the section of piping that allowed the relief valve discharge to flow to the suction of the compressor as a possible method of preventing this problem in the future.

The inspector also reviewed the system operating and alarm response procedures for the nitrogen system and noted that the system normally maintains 80-100 psig in the receivers. High pressure alarms are set at 120 psig with relief valve settings at 125 psig, and the low pressure alarm being at 75 psig. This low pressure alarm is important since the inboard MSIVs need 75 psig in order to close and remain closed following a LOCA containment pressurization.

The inspector found that the alarm response card properly addressed the actions to be taken if receiver pressure falls below 75 psig, in accordance with the TS LCO for MSIV operability.

2.8 Licensee Event Report Update

The inspectors reviewed the following Licensee Event Reports (LERs), finding them factual and that PECO had identified the root causes, implemented appropriate corrective actions, and made the required notifications.

LER No.	LER Date	LER Title
2-94-003	5/15/94	Unit 2 Scram on High Neutron Flux when a Recirculation Pump Increased in Speed.

3.0 SURVEILLANCE TESTING OBSERVATIONS (61726, 71707)

The inspectors observed the conduct of surveillance tests (STs) to confirm that the ST procedures were followed and to ensure that the test acceptance criteria were satisfied. The inspectors verified that STs were properly scheduled and approved by shift supervision prior to performance, control room operators were knowledgeable about testing in progress, and redundant systems or components were available for service, as required. The inspectors routinely verified adequate performance of daily STs including instrument channel checks, and jet pump and control rod operability tests. The inspectors found the licensee's activities to be acceptable.

During observations of several surveillance activities including narrow range reactor water level pressure compensated level calibration and emergency power bus undervoltage relay testing, the inspector observed good communications and supervisory involvement.

3.1 E-3 EDG Exhaust Problem

A plant operator (PO) demonstrated good awareness to running plant equipment conditions by identifying a high frequency noise coming from the E-3 emergency diesel generator (EDG) during the monthly routine test (RT). With the E-3 EDG running at full load, the PO heard a high frequency knocking sound coming from the area around the No. 6 cylinder. The inspector heard the noise, observed the second test, and reviewed PECO's repair activities. After troubleshooting the noise, the SM, work control supervisor, and a rotating equipment maintenance foreman agreed that the noise resulted from an exhaust leak and was not an operability concern. The E-3 EDG remained operable until performing the next test. Technicians removed the heat shield covering the exhaust header to allow for thermography testing during the diesel run. As the heat shield was removed, the SM noted that the threaded plug from the alternate exhaust header thermocouple well for the No. 6 cylinder had fallen out

and provided a direct exhaust path to the atmosphere. Replacing the plug prior to the EDG RT eliminated the noise. Thermography performed during the RT did not identify any further exhaust leaks.

The inspector concluded that PECO's activities involving the identification and resolution of the noise problem were appropriate and done well. While this event was the first case of a well-plug becoming loose in the exhaust header, the inspector found that the well plug was not torqued and that a tightness check was not required during maintenance. PECO stated that the plugs come from the manufacturer already installed and are never removed during maintenance outages. The inspector had no further questions.

3.2 (Closed) Circulating Water Composite Sampling Program Violation 94-04-01

PECO took effective actions to ensure the collection of representative river water samples flowing into and leaving the site. On several occasions between March 23 and April 15, 1994 the inspector observed large variations in sample flowrate resulting in a non-representative sampling.

PECO determined that silt buildup in the sampling lines resulted in the sample flowrate divergence and misoperation of the system. Initially, PECO declared the automatic sampling systems inoperable and initiated daily grab samples. PECO installed an automatic portable sampling system to monitor the plant intake and discharge as an interim action. Additionally, PECO initiated a study to determine the most effective sampling system for their application. This violation is closed.

4.0 MAINTENANCE ACTIVITY OBSERVATIONS (62703)

The inspectors observed portions of ongoing maintenance work to verify proper implementation of maintenance procedures and controls. The inspectors verified that the licensee adequately implemented administrative controls including blocking permits, fire watches, and ignition source and radiological controls. The inspectors reviewed maintenance procedures, action requests (AR), work orders (WO), item handling reports, radiation work permits (RWP), material certifications, and receipt inspections. During observation of maintenance work, the inspectors verified appropriate Quality Verification (QV) involvement, plant conditions, TS LCOs, equipment alignment and turnover, post-maintenance testing and reportability reviews. The inspectors found the licensee's activities to be acceptable.

4.1 2A RHR Heat Exchanger Repair - Unit 2

PECO's maintenance technicians performed well during the repair on the lower floating head seal of the 2A residual heat removal (RHR) heat exchanger. The heat exchanger leak was detected when a trace amount of radioactive contaminated water was detected in the effluent of

the high pressure service water (HPSW) system. The outage to repair the heat exchanger's floating head seal took three of the seven days allotted per the TS. PECO determined during disassembly that misorientation of the seating surfaces during a previous repair in January 1994, was the probable cause of the leak.

The inspector reviewed PECO methods for conducting post-repair leak checks and identified two potential concerns. First, the demineralized water leak check was performed at a pressure below the HPSW system operating pressure. Additionally, PECO's test method did not take into consideration the dynamic force applied to the floating head during HPSW system initiation. PECO management agreed to review their leak checking practices.

The inspectors discussed PECO's plans to seal weld the floating head seal flange noting that this method has successfully solved the same problem at another boiling water reactor (BWR) facility. PECO's response to this issue satisfied the inspectors.

4.2 Refuel Preparation Operations - Unit 2

The inspector found that PECO nuclear maintenance division (NMD) personnel performed the handling, inspection, channeling, and placing of the new fuel into the fuel pool in a professional and well coordinated manner. Observations of the new fuel handling on the Unit 2 refuel floor, showed that the GE FFD crew and the site radiation protection personnel functioned well. The inspectors noted one minor problem when the spacer of a new fuel bundles was bent. PECO conducted a critique of the event and shipped the bundle back to the manufacturer for repair.

5.0 ENGINEERING AND TECHNICAL SUPPORT ACTIVITIES (37700)

The inspectors routinely monitor and assess licensee support staff activities. During this inspection period, the inspectors focused on the emergency service water (ESW) solenoid failures, Unit 3 high pressure coolant injection (HPCI) system steam line drain support, and Unit 3 turbine bypass valve misoperation. The results of these reviews and others are discussed in detail below.

5.1 Turbine Bypass Valve Misoperation - Unit 3

System engineering and management displayed good troubleshooting practices during the Unit 3 load reduction on June 11, when they investigated and found the cause for spurious turbine bypass valve (BPV) mis-operation. Prior to the load reduction, the No.1 BPV would spuriously open about 50% during normal plant operations and during the performance of ST-O-060F-420-3, "Turbine Control Valve Closure Scram Functional Test," causing small pressure oscillations in the reactor. PECO investigated the problem and discovered that two of the six cabinet ventilation fans located in the EHC logic cabinet caused the problem. The fans were

mechanically bound and would produce a signal spike causing the BPV to open during each attempt to start. I&C technicians disconnected these fans and initiated an AR to replace the fans during the next major outage.

5.2 ESW Solenoid Valves Failures

System managers and plant management devoted appropriate attention to ensure that safety-related ECCS pump room coolers and EDG coolers would always receive adequate cooling water flow. This became an issue due to several recent failures of normally-energized solenoid valves to operate during surveillance testing, preventing the repositioning of the associated air operated cooler supply valve. The most recent failure occurred on July 6, when the solenoid valve for the E-4 EDG failed to open during routine surveillance testing. The SM provided a good presentation to the plant management staff during a morning leadership meeting. System engineering subsequently evaluated, developed, and installed a TPA, that failed open the normally closed ESW supply valves to the ECCS room and EDG coolers.

PECO took good actions to evaluate this condition in accordance with 10 CFR 50.59. The TPA failed open the air operated valves by isolating and bleeding down the air supply. The safety evaluation adequately discussed the increased flow achieved after failing open the air operated valves.

The inspector considered that the TPA temporarily addressed the issue of solenoid failures in the ESW system. However, review of past work history showed that PECO replaced these solenoid valves in 1992- 1993 with an upgraded design due to earlier repositioning failures. A newer lube free model (ASCO X206-380-3RF) replaced the previous model solenoid valve. The inspector considered this an unresolved item pending review of PECO's final resolution and review of solenoid failure data. **(Unresolved Item 94-10-01)**

5.3 Hot Weather Preparations

PECO thoroughly reviewed the impact of recent hot weather conditions on plant equipment. The review identified approximately 23 potential concerns resulting from the elevated river and ambient temperatures. The SMs reviewed these issues and developed appropriate action items to address each concern. The reviewed for the ESW and HPSW systems and determined that the anticipated river temperatures would not prevent either of these systems from performing their required safety functions.

PECO reviewed system design basis documentation and assumed a 90°F river inlet temperature for all safety and non-safety cooling systems. The inspector noted that recent inlet river temperatures have been in the low 80°F range and that the maximum historical recorded river temperature was 88°F and concluded that it would be unlikely to exceed any system inlet temperature limit. Additionally, PECO analyzed system performance data and determined

margins for system operation above the 90°F river inlet temperature. The inspector reviewed the cooling requirements and recent system performance data for the ESW and the HPSW systems and determined that they could perform their safety functions above 90°F.

PECO elevated the affect of the elevated ambient temperatures limits for each area. The inspector noted that margins existed between the current ambient temperatures and the temperature for the safety-related systems.

The inspector noted that PECO management took effective control and oversight in evaluating and establishing protective measures to deal with this issue.

5.4 HPCI Steam Line Drain Support - Unit 3

PECO did not correct the cause for piping vibration or address possible fatigue failure considerations for the one inch steam drain piping from the Unit 3 HPCI system steam inlet line. The inspector observed the vibration and discussed this concern with the manager of engineering design. PECO previously initiated an AR to correct the problem and documented the discrepancy in a non-conformance report (NCR). The inspector reviewed the completed AR and NCR. The AR stated that the drain piping was vibrating. The NCR reviewed the condition and determined that rework was necessary to replace a pipe hanger that had loosened. The NCR also specified the root cause as "other" stating that another pipe support could not be attached due to thermal expansion concerns. The support rework reduced, but did not eliminate the vibration of the piping section. The NCR resolution did not correct the problem identified on the AR or NCR. Further, the NCR did not address any possible fatigue concerns due to the vibration. The inspector planned to review this issue in a subsequent report.

5.5 Reactor Vessel Water Level Pressure Compensation Modification

The inspector reviewed the applicable engineering documentation and concluded that PECO had performed a good analysis and review of MOD P-287 developed to revise the reactor vessel water level pressure compensation algorithm to ensure accurate level indication during power rerate operations. The power rerate project, scheduled for implementation during the Unit 2 1994 refueling outage, will increase the rated thermal reactor power and station net generation output.

MOD P-287 revised the pressure compensation algorithm to account for the increased reactor pressure and ambient temperatures expected during power rerate operation. Reactor vessel water level is determined by measuring the difference between the pressure exerted by the height of water in the reactor vessel and the pressure exerted by a reference column of known height and density. The pressure compensation system ensures that the reactor vessel water level is measured accurately by compensating for the reference leg density variations associated with changes in the reactor vessel pressure and ambient temperature.

The inspector concluded that the design input document and the 10 CFR 50.59 evaluation were of high quality. Additionally, the inspector determined that PECO's calculations EE-1457-4, "Calculation of Instrument Setpoints for the Reactor Water Level Compensation System," and PE-200, "Reactor Water Level Measurement Pressure Compensation Test Data Sheets" were adequate and utilized appropriate input assumptions. Calculation EE-1457-4 developed the revised pressure compensation algorithm and PE-200 developed the test data tables for the pressure compensation system.

5.6 Review of High Pressure Coolant Injection System Isolation Logic

The inspectors evaluated the design and operation of the HPCI system high energy line break (HELB) isolation logic and found that it met the intent of the updated final safety analysis report (UFSAR) and the TMI action plan. The inspector performed this review in response to a possible deficiency identified at another BWR facility. The HELB isolation function, actuated by either high area temperatures or high steam flow signals, prevents the release of radioactive steam to the secondary containment. The inspectors evaluated the automatic actions that would occur following an HELB isolation and the necessary actions the operators would take to return the system to operation on an invalid isolation, with the HPCI suction path aligned to the torus.

The inspector found that a HELB isolation would cause the steam line isolation valves to close and the torus suction valve to close if the suction had switched to the torus. The HELB isolation and torus suction valve closure signal would not automatically clear following the isolation of the steam line, due to a seal-in function in the logic circuit. If operators found that the isolation was invalid, the procedures for responding to the isolation would allow the system to be restarted. This would require verification that the signal was not valid and resetting of the sealed-in isolation logic. Following this, the steam line isolation valve would not reopen automatically, unless there was a valid HPCI initiation signal. The torus suction valves would automatically reopen following resetting of the isolation signal, in preparation for HPCI restart on a valid initiation signal.

The inspectors found that this design met the intent of the isolation system discussed in the UFSAR and the intent of TMI action plan item II.E.4.2. In this case, the fact that the torus suction valves went closed on a HELB isolation was not the result of a primary containment isolation signal (i.e., low reactor level or high containment pressure). These valves do not receive a primary containment isolation signal and their penetration is below the normal water level of the torus, so they should not allow a direct containment atmosphere leak path to the secondary containment.

6.0 PLANT SUPPORT (71707, 90712)

6.1 Radiological Controls

The inspectors examined work in progress in both units to verify proper implementation of health physics (HP) procedures and controls. The inspectors monitored the ALARA (As Low As Reasonably Achievable) program implementation, dosimetry and badging, protective clothing use, radiation surveys, radiation protection instrument use, handling of potentially contaminated equipment and materials, and compliance with RWP requirements. The inspectors observed that personnel working in the radiologically controlled areas met applicable requirements and were frisking in accordance with HP procedures. During routine tours of the units, the inspectors verified that a sampling of high radiation area doors were locked, as required. All activities monitored by the inspectors were found to be acceptable.

6.2 Physical Security

The inspectors monitored security activities for compliance with the accepted Security Plan and associated implementing procedures. The inspectors observed security staffing, operation of the Central and Secondary Access Systems, and licensee checks of vehicles, detection and assessment aids, and vital area access to verify proper control. On each shift, the inspectors observed protected area access control and badging procedures. In addition, the inspectors routinely inspected protected and vital area barriers, compensatory measures, and escort procedures. The inspectors found the licensee's activities to be acceptable.

6.3 Emergency Preparedness Practice Drill

PECO conducted a training emergency preparedness drill on July 13 in preparation for the emergency preparedness graded exercise that is currently scheduled to occur in August 1994. The purpose of the drill was to allow PECO to activate the Technical Support Center (TSC) and Emergency Offsite Facility (EOF), and to practice response for each of the emergency classifications with state and local agencies. The inspectors participated in the drill and observed PECO's actions in the simulator and in the TSC.

The inspectors observed the drill critique conducted at the training center. PECO's drill evaluators identified many strengths and some areas for improvement. The inspector concurred with PECO's weaknesses that included Emergency Director (ED) command and control, quality of briefings in the TSC, and ED communication with external agencies. The inspector concluded that PECO's emergency preparedness organization performed a thorough and satisfactory critique of the drill.

6.4 Fitness for Duty Program

PECO performed well after determining that a randomly collected urine sample from an employee did not meet all of the FFD program test requirements. PECO conducted the additional urine sampling as required by their FFD program and thoroughly investigated this event.

7.0 MANAGEMENT MEETINGS (71707,30702)

The resident inspectors provided a verbal summary of preliminary findings to the station management at the conclusion of the inspection. During the inspection, the inspectors verbally notified PECO management concerning preliminary findings. The inspectors did not provide any written inspection material to the licensee during the inspection. The licensee did not express any disagreement with the inspection findings. This report does not contain proprietary information.