U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos. License Nos.	50-277, 50-278 DPR-44, DPR-56
Report Nos.	97-05
Licensee:	PECO Energy Company
Facility:	Peach Bottom Atomic Power Station Units 2 and 3
Dates:	June 8, 1997 - August 9, 1997
Inspectors:	W. L. Schmidt, Senior Resident Inspector M. J. Buckley, Resident Inspector B. D. Welling, Resident Inspector
Approved By:	C. J. Anderson, Chief Reactor Projects Branch 4 Division of Reactor Projects

9709190254 970912 PDR ADOCK 05000277 Q PDR

EXECUTIVE SUMMARY

Peach Bottom Atomic Power Station NRC Inspection Report 50-277/97-05, 50-278/97-05

This integrated inspection report includes aspects of licensee operations; surveillance and maintenance; engineering and technical support; and plant support areas.

Plant Operations:

- Verbal communications among operators in the control room and with others in the field were usually excellent. Operators typically conducted thorough briefings prior to significant operations and the ting, and following shift turnovers (Section O1).
- The inspectors found that emergency operating procedure (EOP) tools and equipment were present as listed in the EOP tool inventory procedure, but identified a few minor discrepancies in EOP equipment condition. Overall, the inspectors concluded that the tools and equipment were adequate to support performance of EOPs (Section 02.2).
- The NRC identified that procedures at the Unit 2 reactor water cleanup (RWCU) system local operating station were not being controlled as required. This issue is being treated as a non-cited violation. Corrective actions for this issue were adequate, although not formally documented in the corrective action process (Section 03.1).
- The station's limited distribution of temporary procedure changes (TCs) affecting local operating stations posed an unnecessary burden for operators. Action was taken to expand the TC distribution practice (Section O3.2).
- PECO did not ensure that an inoperable control room ventilation radiation monitor was properly tripped and maintained in the tripped condition as required by Technical Specification 3.3.7.1. Operations staff recognized the noncompliance with technical specifications. However, PECO did not fully identify the extent of the procedure inadequacies that led to this condition. The failure to maintain adequate procedures to control this safety related activity is a violation of Technical Specification 5.4.1 (Section 03.3).

Maintenance:

- The Unit 3 quarterly high pressure coolant injection (HPCI) system surveillance test was performed satisfactorily. Operators missed an opportunity to identify minor leakage on the HPCI pump inboard seal. Operations and engineering follow-up for this issue was very good (Section M1.1).
- I&C technicians satisfactorily accomplished the calibration of the drywell pressure instrumentation. The technicians displayed adequate knowledge and were qualified

to perform this work. Some minor problems with attention to detail, partially repeating sections of the test, and communications did not affect the overall results (Section M1.2).

- During the calibration check of a control room ventilation radiation monitor, technicians were confused on how to determine acceptance criteria, and they signed-off a step prior to recording the pertinent data. Further, technicians did not cover a detector hole, for foreign material exclusion purposes, until questioned by the inspector. These discrepancies revealed weaknesses in knowledge and attention to detail by I&C technicians (Section M1.3).
- PECO identified, corrected, and made a complete operability determination of an exhaust leak on the E-2 EDG caused by a missing gasket on the exhaust ring catcher. Although PECO properly addressed the narrow generic issue for the exhaust ring catcher flanges, PECO did not initiate a PEP or other formal review and thus did not consider the root cause of the missing gasket and the potential for other gasket problems (Section M2.1).
- The maintenance activities for the repletement of MO-2-10-89B were characterized by strong planning and comprehensive execution. The activities had extensive maintenance supervisory oversight and coordination by the system manager (Section M2.2).

Engineering:

- The NRC identified procedural discrepancies associated with the emergency diesel generator air start reservoir pressure that could allow inadvertent entry into a TS action statement. Corrective actions were prompt, but failed to address all affected procedures. This issue was of minimal safety impact, but revealed inconsistencies between station procedures, setpoints, and technical specifications (Section E1.1).
- The NRC conducted a review of PECO's analysis to allow a final feedwater temperature reduction of up to 80°F at full power for cycle extension and during coastdown. The licensee's justification for this operation addressed the appropriate analyses and design evaluations. Also, the inspectors independently observed actual feedwater temperatures to confirm final feedwater temperature did not exceed the 80°F limit. The operation of Unit 3 with up to 80°F reduction in feedwater would not significantly reduce the margin of safety to the public for the coastdown to 40% of rated power (Section E1.2).
- Overall, station response to a high pressure condition in the Unit 2 RHR discharge headers was good. Operators entered appropriate abnormal operating procedures. Initial actions by the system manager to evaluate and monitor the issue were excellent. However, after the condition appeared to be resolved, engineering was slow in providing a documented status to operations (Section E2.1).

- PECO's immediate and follow-up actions in response to the identification of a failed relay during post maintenance testing of the E-1 EDG were timely and comprehensive (Section E2.2).
- PECO's operability evaluation for the leakage identified on the directional control valve on HCU 50-27 reflected generally strong knowledge of the system and the effects of the leakage. The monitoring plan was based on proper assumptions. Overall, the evaluation and corrective actions were considered very good (Section E2.3).
- Following the identification of voltage regulation problems on the E-2 EDG, PECO properly declared it inoperable and took prompt and thorough corrective actions to restore operability. Engineering used sound investigative reasoning to address potential common cause failures concerns for the other EDGs (Section E2.4).
- The inspector found that the initial actions related to the stroking failures of high pressure service water (HPSW) system motor operated valves MO-2-10-89A and MO-2-10-89C were performed promptly. A number of actions related to the analyses of these and similar auxiliary contact failures remain open. Corrective actions for a related PEP Issue were pending or not fully resolved. Due to the ongoing nature of these activities, this issue is considered unresolved, pending completion of licensee analysis and subsequent NRC review (Section E2.5).
- The inspector concluded that PECO's immediate and follow-up actions in response to the identification of a failed relay during post maintenance testing of the E-1 EDG were timely and comprehensive.

Plant Support:

- The inspectors noted no negative issues during routine tours of the radiologically controlled areas of both plants. The tours included review of general housekeeping and radiological conditions, postings, and barriers (Section R1).
- The inspectors identified no significant areas of concern during observations of security force activities. The inspectors observed that repair activities on the access building roof were being continuously monitored by security personnel (Section S1).

TABLE OF CONTENTS

.

EXECU	TIVE SUMM	ARY II
Summa	ry of Plant S	itatus
I. Opera	tions	승규는 영국에 가장 이 가지 않는 것이 같이 많이 많이 많이 많이 많이 했다.
1. oporo	D1 Condu	ict of Operations
	01.1	General Commente
(12 Opera	tional Status of Facilities and Faci
	02 1	Engineered Seten Factories and Equipment
	02.1	Engineered Safety Feature System Walkdowns (71707) 1
	12 02.2	Emergency Operating Procedure Tool Inventory
	Jo Opera	tions Procedures and Documentation
	03.1	Distribution of Torona a Local Operating Station 2
	03.2	Distribution of Temporary Procedure Changes
,	03.3	Control Room Ventilation Radiation Monitor Inoperable 4
	J/ Qualit	y Assurance in Operations
	07.1	Plant Operations Review Committee (PORC) Meeting 5
II. Mair	tenance and	d Surveillance
1	M1 Condu	ict of Maintenance and Surveillance
	M1.1	High Pressure Coolect Injection System Synaillense Test Illeit
		3)
	M1.2	Calibration Check of Drowell Pressure Instrumentation
		PT/PISHH/PSH 3-10-1000 (Unit 2)
	M1 3	Calibration of Control Room Padiation Manites
	M1.4	Maintenance Activities (62707)
	M2 Maint	enance and Material Condition of Facilities and Facilities
	M2 1	E-2 Emergency Diosel Constant Subaut Content Minimum 1
	1112.1	Missing
	M2 2	Perior mant of "D" Decided Hard D
	1412.2	Outlet Value (Upit 2)
		Outlet valve (Onit 2) 10
III. Eng	ineerina	
E	E1 Condu	uct of Engineering
	E1.1	Emergeni v Diesel Generator Starting Air Pasanusis Pressure
		Discrepancy
	F1 2	Unit 3 Coastdown and Reaster Food Pump Inighting
	L 1.2	Temperature
	E2 Engin	Period Support of Facilities and Fac
	E2 Light	Pering Support of Facilities and Equipment
	E2.1	Residual Heat Removal System Discharge Header
	F0.0	Pressurization (Unit 2)
	E2.2	Falled Helay on E-1 Emergency Diesel Generator
	E2.3	Control Hod Drive Withdrawal Directional Control Valve
		Leakage
	E2.4	E-2 Emergency Diesel Generator Voltage Regulation Problems 17

		E2.5	High Pre	essure S	ervice W	ater	S	ste	em	Va	lve	St	rok	e	Fai	lu	es			5		17
IV.	Plant Su	pport .																				18
	R1	Radiol	ogical Pr	otection	and Che	mis	try	(RI	Pa	C)	Cor	ntro	als				11	1		1	1	18
	S1	Condu	ict of Sei	curity an	d Safequ	uard	s A	cti	viti	es											1	18
	S2	Status	of Secu	rity Faci	lities and	Eq	uip	Tie	nt	1.1												19
٧.	Manager	ment Me	eting									÷.	R				ł.					10
	X1	Exit M	leeting S	ummary													1	1		1	*	10
	X2	Review	N of UFS	AR Com	mitment	s												1		. *	1	10
	X3	Manaç	gement N	Aeeting	Summary	1 .													* *	*	*	19
LIS	T OF AC	RONYM	S USED																			20
INS	PECTION	PROCE	DURES	ISED									4.9		* *	۰.	8.4	*	* *		۰.	20
ITE	MS OPEN	NED CL	OSED A	ND DISC	LICCED			• •		• •	* *	• •	* *	• •	3,1		• •	*	8.18	.*	*	23
1 1 10	terior Or Lat	the bor / her be	ound, M	110 0100	JUSSED	4 4	1 1 1			1.1				14.74		1.1	a	1.0	2. 2	1.1	12 61	14

Report Details

Summary of Plant Status

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

Unit 2 remained at approximately 100% power throughout the period.

Unit 3 entered the period at 98% power, in end-of-cycle coastdown. Operators reduced power on June 13-14 to investigate a speed control problem on the 3B reactor feed pump turbine. The unit ended the period at approximately 81% power, after removal of the fourth stage feedwater heaters on August 6.

I. Operations

O1 Conduct of Operations'

O1.1 General Comments

Operators performed routine activities well. Operator response to alarms and abnormal conditions was generally very good.

The inspectors observed that verbal communications among operators in the control room and with others in the field were usually excellent. Operators typically conducted thorough briefings prior to significant operations and testing, and following shift turnovers.

Operators removed the Unit 3 fourth stage feedwater heaters from service without incident.

O2 Operational Status of Facilities and Equipment

O2.1 Engineered Safety Feature System Walkdowns (71707)

The inspectors used Inspection Procedure 71707 to walkdown accessible portions of the following engineered safety feature (ESF) systems:

- HPCI Unit 3
- E-1 Emergency Diesel Generator
- E-2 Emergency Diesel Generator

Equipment operability and material condition were acceptable in all cases. Minor discrepancies were brought to PECO's attention and corrective actions were initiated.

ITopical headings such as 01, M8, etc., are used in accordance with the NRC standardized react; ' inspection report outline. Individual reports are not expected to address all outline topics.

02.2 Emergency Operating Procedure Tool Inventory

a. Inspection Scope (71707)

The inspectors conducted a partial inventory of tools and equipment used in the performance of emergency operating procedures (EGPs).

b. Observations and Findings

With the assistance of an operator, the inspectors inventoried EOP tools using Routine Test (RT)-O-100-505-2, "Emergency Operating Proceduce Tool Inventory." The inspectors observed the following:

- The RT procedure was a complete rewrite and significantly improved over the previous recurring action request document. The RT was more clearly written and included specific steps to ensure that the items were in good working order and to initiate corrective actions for deficiencies. The procedure rewrite was in response to Performance Enhancement Program (PEP) Report Number 10006606, which had identified problems with the previous recurring action request document.
- For those lockers/panels inventoried, all tools and equipment specified in the procedure were present. Most items were in good working condition.
- A few discrepancies in EOP equipment condition were noted: two multimeters had weak batteries; housekeeping in the T 215 Charging Equipment Lockers was poor; and two of the braided hoses in the T 215 Lockers were not under the false bottom, as specified.

c. <u>Conclusions</u>

The inspectors found that EOP tools and equipment were present as listed in the EOP tool inventory procedure, but identified a few minor discrepancies in EOP equipment condition. Overall, the inspectors concluded that the tools and equipment were adequate to support performance of EOPs.

03 Operations Procedures and Documentation

O3.1 Uncontrolled Procedures at a Local Operating Station

a. Inspection Scope (71707)

The inspector reviewed plant procedures maintained at selected local operating stations.

b. Observations and Findings

During a routine review of plant procedures, the inspector noted some improperly controlled procedures at a local operating station. Some of the system operating (SO) procedures in the controlled procedures binder at the Unit 2 reactor water cleanup (RWCU) filter demineralizer station were not the most recent revision or were not marked as "controlled by document services." The affected procedures were Level I, which require step-by-step adherence. In the case of one procedure, SO 12A.1.A-2, "RWCU Automatic Regeneration of a Filter Demineralizer and Post Filter," both revision 8 and revision 9 were in the binder.

During discussions with operations support and document services personnel, the inspector learned that the Unit 2 RWCU procedure binder had been inadvertently removed from the list of controlled procedure binders approximately 1 to 2 years ago. Thus, document services personnel no longer inserted revisions nor audited the procedures in the binder.

Operations reviewed this issue informally, initiating no Action Request or Performance Enhancement Process (PEP) report. However, they identified no instances in which the non-current procedures may have contributed to any improper operation of the system. Further, procedural guidance specifies that operators should verify the current revision status of a procedure prior to use. Operations determined that operators had an opportunity to identify the procedure control deficiencies. PECO promptly corrected the RWCU procedure binder discrepancies and added the binder to the document services controlled procedures list.

(S)

The inspector reviewed several other controlled procedures binders at local operating stations, including the Unit 3 RWCU operating station, and identified no other deficiencies.

c. Conclusions

The NRC identified that procedures at the Unit 2 RWCU local operating station were not being controlled, as required. This issue constituted a document control violation of minor significance and is being treated as a non-cited violation consistent with Section IV of the <u>NRC Enforcement Policy</u> (NCV 50-277; 50-278/97005-01).

03.2 Distribution of Temporary Procedure Changes

a. Inspection Scope (71707)

The inspector reviewed station practices regarding the distribution of temporary procedure changes.

b. Observations and Findings

The inspector observed that temporary procedure changes (TCs) were distributed only to selected "TC-controlled" locations, such as the control room. Other local operating stations or satellite locations did not necessarily receive TCs even if the TCs affected the procedures at that station. For example, a TC affecting EDG procedures may not have been distributed to the controlled procedures binder at the EDGs.

The inspector discussed the TC distribution practices with operations and document services personnel. Operators were expected to verify the revision level and TC status of each procedure prior to performing it at a local operating station. As an alternative, operators could pull a copy of the TC from the control room or from the controlled procedure files in the Administration Building. However, some operators indicated that the TC distribution practice was burdensome and had the potential to delay some actions specified in system operating procedures, for example.

Operations support supervision reviewed the TC distribution practices, as well as the operators' concerns. Operations determined that TCs should be distributed to all affected local operating stations and initiated the necessary changes to the TC distribution practice.

c. <u>Conclusions</u>

The inspector concluded that the station's limited distribution of temporary procedure changes affecting local operating stations posed an unnecessary burden for operators. Action was taken to expand the TC distribution practice.

03.3 Control Room Ventilation Radiation Monitor Inoperable

a. Inspection Scope (71707)

The inspector reviewed PECO's initial actions in response to a failed control room ventilation radiation monitor (RIS 0760A). The inspector assessed compliance with procedures and technician specifications as well as procedure adequacy.

Observations and Findings

On July 9 at 5:30 p.m., operators declared RIS 0760A, a main control room (MCR) ventilation radiation monitor, inoperable due to unreliable channel check readings (approximately twice the levels of the other channels). Technical Specifications Section 3.3.7.1 requires this channel to be placed in trip within six hours. Coerators implemented GP-25, Appendix 13, "MCR Ventilation Isolation, Division I," which placed the channel in trip at 10:25 p.m. At about 3:00 a.m. on July 10, operators observed, while clearing an unrelated alarm, that the "CONTROL ROOM RAD MONITOR DIV. I INITIATED" alarm cleared. This indicated that the radiation monitor channel had been taken out of the trip position. Operators determined that

a technician who was troubleshooting the system had removed the trip by changing a switch position and leaving it repositioned sometime after 10:25 p.m. on July 9. The channel did not remain in the technical specification required condition until 3:25 a.m. on July 10, when operators re-tripped this channel.

Upon discovery of this issue, the inspector questioned how GP-25 controlled placing the channel in a tripped condition. After review of GP-25, operations personnel determined that GP-25 had never been exited, and was still active with the switch position inconsistent with this procedure.

The inspector also reviewed GP-25 for adequacy. The inspector determined that the procedure contained less than adequate controls to prevent resetting of the trip signal during troubleshooting. PECO initially issued a temporary change to GP-25 to add additional equipment status tags to alert operators and technicians of the equipment condition. After further review, PECO made additional changes to input a jumpered trip signal, independent of troubleshooting switch positions.

Licensee staff recognized the non-compliance with Technical Specification 3.3.7.1 and initiated the required licensee event report. However, they did not identify the procedure inadequacies until questioned by the inspector.

PECO identified that communications and human performance related problems also contributed to this event. Corrective actions had been initiated by the end of the inspection period.

c. <u>Conclusions</u>

PECO did not ensure that an inoperable control room ventilation radiation monitor was properly tripped and maintained in the tripped condition as required by Technical Specification 3.3.7.1. Operations staff recognized the non-compliance with technical specifications. However, PECO did not fully identify the extent of the procedure inadequacies that led to this condition. The failure to maintain adequate procedures to control this safety related activity is a violation of Technical Specification 5.4.1. (NOV 50-277; 50-278/97005-02)

07 Quality Assurance in Operations

07.1 Plant Operations Review Committee (PORC) Meeting

a. Inspection Scope (40500)

The inspector attended the Plant Operations Review Committee (PORC) meeting on August 7, 1997.

THE REAL PROPERTY OF

b. Observations and Conclusions

At the meeting, PORC discussed two safety evaluations associated with operation of the fuel pool cooling system and the demolition of intermediate range monitors (IRMs) to support a wide range neutron monitoring modification. The inspector noted that the PORC Chairman made a last-minute change to the scheduled members because none of the members, as originally planned, had significant operations experience. This was an appropriate decision, as one unscheduled member identified some key questions associated with the demolition of the IRMs, requiring additional actions prior to PORC approval of the safety evaluation. The PORC members demonstrated an adequate safety perspective and maintained a questioning attitude during the meeting.

II. Maintenance and Surveillance

11 Conduct of Maintenance and Surveillance

M1.1 High Pressure Coolant Injection System Surveillance Test (Unit 3)

a. Inspection Scope (61726)

The inspector observed the performance of surveillance test ST-O-023-301-3, "High Pressure Coolant Injection Pump, Valve, Flow and Unit Cooler Functional and Inservice Test," on July 7, 1997.

b. Observations and Findings

The inspector observed that the Unit 3 quarterly high pressure coolant injection (HPCI) system surveillance was satisfactorily conducted according to the surveillance test procedure. The inspector observed portions of the test performed by operators in the HPCI room.

No deficiencies associated with the actual performance of the surveillance test were identified. However, operators missed an opportunity to identify minor leakage at the HPCI pump inboard seal. The inspector brought the leakage to the operator's attention. Operations initiated an action request and determined that operability was not affected.

The system manager also reviewed the action request, concurred in the operability statement, and planned further investigation and possible repair activities for the next refueling outage.

c. <u>Conclusions</u>

The inspector concluded that the Unit 3 quarterly HPCI system surveillance test was performed satisfactorily. Operators missed an opportunity to identify minor leakage on the HPCI pump inboard seal. Operations and engineering follow-up was very good.

M1.2 <u>Calibration Check of Drywell Pressure Instrumentation PT/PISHH/PSH 3-10-100D</u> (Unit 3)

a. Inspection Scope (61726)

The inspector observed instrumentation and controls (I&C) technicians performing a calibration check of the drywell pressure instrumentation on June 26, 1997.

b. Observations and Findings

The inspector observed the performance of SI3P-10-100-B1C2, "Calibration Check of Drywell Pressure Instruments PT/PISHH/PSH 3-10-100D." The technicians displayed adequate knowledge of the equipment and were generally familiar with the procedure. The inspector noted some minor problems associated with attention to detail and communications, as discussed below:

- At one step in the procedure, the technician had logged the drywell gage pressure in the procedure rather than the actual reading of volts DC, as the procedure required. After determining that the recorded reading was outside the required criteria for this parameter, the technicians recognized that they had taken the wrong reading. The technicians then proceeded to retake the correct reading and then verified that it met the acceptance criteria.
- During the performance of section 6.5 "GROSS FAILURE TEST OF PISHH/PSH 3-10-100D," the technicians missed the reading because the "mark" was not heard by the technician's partner. The technicians had missed the mark because of other communications on the line. The technicians went back through the steps of the procedure, setup the same conditions, and repeated this part of the test so a value could be established. The results were within the stated criteria in the procedure.

The inspector reviewed the procedure and found no provision to go back and perform a partial section over again, as was done for the missed reading. Technicians also did not inform their supervisor before repeating the procedural steps. Through a discussion with maintenance management, the inspector determined that PECO intends to ensure more supervisory presence at the worksite, and expects I&C technicians to consult supervision when problems arise. The inspector determined that the repeated steps did not impact the overall results of the activity. The inspector verified that the technicians were properly qualified for performing the calibration work for the drywell pressure instrumentation.

c. <u>Conclusions</u>

1&C technicians satisfactorily accomplished the calibration of the drywell pressure instrumentation. The technicians displayed adequate knowledge and were qualified to perform this work. Some minor problems with attention to detail, partially repeating sections of the test, and communications did not affect the overall results.

M1.3 Calibration of Control Room Radiation Monitor

a. Inspection Scope (61726)

The inspector observed I&C technicians performing the calibration check of the control room emergency ventilation radiation monitor on July 7, 1997.

b. Observations and Findings

The inspector observed I&C technicians performing selected steps for SI2R-63L-0760-B1CE, "Control Room Radiation Monitor RIS-0760B Electric Calibration Check." The inspector noted some discrepancies associated with the signofs and recording of acceptance criteria. Specifically, the inspector found that a step was signed-off as being complete prior to recording the necessary data to support the completion of the step. Further, it was noted technicians were confused on how to calculate the acceptance criteria. One technician had entered a set of acceptance criteria, but another technician changed these values by subtracting the background radiation from the values in the procedure. Later, the acceptance criteria were changed back to the original values. The technicians briefly discussed this with an I&C supervisor who arrived at the work site.

The inspector found that technicians did not cover a detector hole after the detector had been removed. The inspector brought this to the attention of a technician, who then covered the hole with tape for foreign material exclusion (FME) purposes.

c. <u>Conclusions</u>

During the calibration check of a control room ventilation radiation monitor, technicians were confused on how to determine acceptance criteria, and they signed-off a step prior to recording the pertinent data. Further, technicians did not cover a detector hole, for foreign material exclusion purposes, until questioned by the inspector. These discrepancies revealed weaknesses in knowledge and attention to detail by I&C technicians.

M1.4 Maintenance Activities (62707)

The inspectors observed the conduct of portions of the following maintenance activities, identifying no negative issues:

2A RHR Heat Exchanger, Seal Weld Floating Head Work Order C0158516

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 E-2 Emergency Diesel Generator Exhaust Gasket Missing/Bolts Missing

a. Inspection Scope (62707)

Inspectors reviewed PECO's corrective actions for a missing gasket on the E-2 emergency diesel generator (EDG) exhaust ring catcher flange. Also, the inspectors performed a walkdown of the EDGs, with particular attention to bolt and flange areas.

b. Observations and Findings

During a load run on July 30, of the E-2 EDG, PECO personnel identified an exhaust leak from the governor side ring catcher flange. The gasket material for the ring oh flange could no longer be found, but the gap still remained where the gasket ially provides a seal. An evaluation by engineering determined that the cxhaust could lead to degradation of surrounding equipment over time. PECO

considered the EDG operable, based on an evaluation that considered the amount of exhaust not going to the turbo charger and inputs to the heat load and oxygen content of the EDG compartment. Operators also completed a successful load run on the EDG. PECO inspected the other EDGs for similar ring catcher gasket problems and found none.

PECO did not initiate a PEP, or other formal investigation. Thus, the licensee missed an opportunity to determine a root cause for the missing gasket or evaluate the potential for other generic issues with similar gaskets.

Maintenance personnel tightened the flange without installing a gasket as an interim corrective action and checked the torque on the ring catcher flanges with gaskets still installed. This action was evaluated and recommended by engineering. On August 12, the Fix-It-Now team installed a new gasket and operations performed a satisfactory E-2 test run.

After observing the missing gasket on the E-2 EDG exhaust ring catcher the inspector visually verified proper installation of the all other ring catcher flange gaskets on the EDG. Also, the inspector performed a walk-down on each EDG inspecting, with particular attention to flanged areas.

On the E-3 EDG, the inspector found that the flange from the turbo charger discharge to the scavenging air supply was missing two bolts. This was discussed with licensee engineers, who later inspected the affected flange and determined that EDG operability was not affected. PECO technicians subsequently replaced the bolts.

c. Conclusions

PECO identified, corrected, and made a complete operal ility determination of an exhaust leak on the E-2 EDG caused by a missing gasket on the elhaust ring catcher. Although PECO properly addressed the narrow generic issue for the exhaust ring catcher flanges, PECO did not initiate a PEP or other formal review and thus did not consider the root cause of the missing gasket and the potential for other gasket problems.

M2.2 Replacement of "B" Residue; Heat Removal Heat Exchanger Outlet Valve (Unit 2)

a. Inspection Scope (62707)

The inspector observed maintenance activities associated with PECO's corrective actions for a leak through on MO-2-10-089B, "B" HPSW RHR heat exchanger outlet valve.

b. Observations and Findings

PECO initially discovered a problem with the MO-2-10-89B valve during surveillance testing on June 28, 1995, when the discharge pressure alarm for the D HPSW pump, "System II HPSW Pump Disch Lo Press," came in the control room. Investigation by the system manager identified the problem as seat leakage through the "B" heat exchanger outlet valve. Previously, PECO had a similar problem with the Unit 3 heat exchanger outlet valve, and the system manager had a system pressure and flow trend established. The inspector observed a through wall opening in the seat wall of about 1 inch in area during internal inspection of the leaking valve.

PECO evaluated the 2D heat exchanger as operable, since the flow and pressure determined by ST-O-032-300-2 on September 26, 1995 showed flow of 4800 GPM and pressure of 245 PSIG. The requirement established in TS for flow is >4500 GPM with >233 PSIG.

The 2B HPSW subsystem was placed out-of-service on June 23 while the "B" HPSW RHR heat exchanger discharge valve replacement took place. The system was returned to service on June 25, well within the allowed outage time for the system per technical specifications.

The inspector reviewed the work package and procedure and found that the work was performed in accordance with procedures. The inspector verified the method and type (double butt) of weld, materials used, and qualifications of the welder working at the valve. Weld material can only be received by a person qualified to do the type weld for that material. Also, the inspector observed the alignment of the replacement valve and noted the strong maintenance supervisory oversight throughout the replacement activity.

c. Conclusions

The maintenance activities for the replacement of MO-2-10-89B were characterized by strong planning and comprehensive execution. The activities had extensive maintenance supervisory oversight and coordination by the system manager.

III. Engineering

E1 Conduct of Engineering

E1.1 Emergency Diesel Generator Starting Air Reservoir Pressure Discrepancy

a. Inspection Scope (71707, 37551)

The inspector reviewed technical specification (TS) requirements and station procedures associated with the emergency diesel generator (EDG) starting air reservoir pressure setting.

b. Observations and Findings

During a routine inspection of the EDGs, the inspector observed that the starting air reservoir pressure for the E-2 EDG was approximately equal to the level which requires entry into a TS action statement. The inspector found that the starting air reservoir pressure gage read 225 psig; a reading below this requires entry into TS action statement 3.8.3.E.1, which specifies restoring air start reservoir pressure within 48 hours.

The inspector noted a number of discrepancies during review of plant procedures and setpoints related to the 225 psig TS criteria:

- "The Diesel Generator Daily Shutdown Inspection," SO 52A.8.A, allowed a minimum reservoir air pressure of 220 psig, vice 225 psig. Further, the procedure allowed the operator to blow down the starting air reservoir to 200 psig during the daily blowdown of the reservoirs for moisture removal.
- "Diesel Generator Air Start Reservoir Check Valve Test," ST-O-52C-422-2, allows an as-left air reservoir pressure of as low as 220 psig.
- "Diesel Generator Air System Startup," SO 52C.1.A, allowed the air pressure to drop to 220 psig before the air compressor started.

"he "auto start low pressure" alarm setting was 165 psig, significantly buow the TS action criteria of 225 psig.

These discrepancies made inadvertent entry into the TS action statement possible. The inspector also noted that the wide range of the gages used for TS operability made accurate determination of the pressure difficult. The gages are 0 - 600 psig gages with increments of 20 psig. Operators stated that these gages made it difficult to determine the actual pressure within a few psig.

The inspector discussed with operations supervision the inconsistencies between plant procedures and the TS action statement criteria. Operations recommended a number of actions for this issue, including:

- Raising the auto start setpoint of the starting air compressor from 225 psig to 230 psig.
- Raising the "auto start low pressure" alarm setting from 165 psig to above 225 psig.
- Replacing the current 0 600 psig pressure indicators.

During a limited review of this issue, operations did not identify any instances in which the actual logged reading of the air start reservoirs was less than 225 psig. Operations and engineering also took prompt actions to address the procedural discrepancies by initiating temporary procedure changes. However, not all affected procedures were changed. For example, "Diesel Generator Air Start Reservoir Check Valve Test," ST-0-52C-422-2, still allowed an as-left air reservoir pressure of as low as 220 psig.

The inspector also discussed the inconsistencies between procedures and TS with the system manager and engineering supervision. Following the end of the inspection period, they determined that the issue had warranted a PEP report when it was first identified. The system manager subsequently initiated a PEP report to investigate the cause and corrective actions.

The inspector determined that the potential safety consequence of this issue was minor. Per TS, the EDGs remain operable with starting air reservoir pressure greater than or equal to 150 psig, as this is the minimum pressure at which one start of the EDG is assured. The 225 psig criteria ensures that a minimum of 5 starts of the EDG can be performed.

c. <u>Conclusions</u>

6

During a review of the minimum pressure criteria for the EDG air start reservoirs, the inspector identified procedural discrepancies that could allow inadvertent entry into a TS action statement. Corrective actions were prompt, but failed to address all affected procedures. This issue was of minimal safety impact, but revealed inconsistencies between station procedures, setpoints, and technical specifications.

E1.2 Unit 3 Coastdown and Reactor Feed Pump Injection Temperature

a. Inspection Scope (37551)

The inspector conducted a limited review of PECO's analysis to allow a final feedwater temperature reduction of up to 80°F at full power for cycle extension and during coastdown.

b. Observations and Findings

Peach Bottom Units 2 and 3 had previously been analyzed to support feedwater heater out-of-service operation, but limited to 55°F feedwater temperature reduction at rated power. PECO completed an analysis that supports a feedwater temperature reduction of 80°F, corresponding to a decrease from 381°F to 301°F, at rated power conditions. A vendor's analysis used by PECO to justify the reduction in final feedwater temperature as a cycle extension mode of operation applied to core flows of 100% of rated and greater, as well as to 100% load line.

During the review of PECO's evaluations, the inspector noted the evaluation showed the feedwater temperature reduction would not impact the current LOCA-ECCS performance and the anticipated transients without scram (ATWS) analysis results and would have a small impact on thermal limits; however, more restrictive fuel thermal limits would be required for off-rated core power and flow.

The analysis included the limiting anticipated operational occurrences with respect to fuel thermal limits based on licensing requirements and the plant FSAR. Of these, the conditions that had possible significant impact included: 1) Feedwater controller failure at maximum demand; 2) Load rejection without bypass valve operation; 3) Loss of feedwater heaters; 4) Rod withdrawal error; and 5) Fuel loading error.

PECO evaluated the effect of the 80°F reduction in feedwater temperature operation on the feedwater nozzle and feedwater sparger for the period of time to coastdown to 40% power. The duration of the raduced feedwater temperature at the end of cycle for the unit would be 3 weeks for rated power and 28 weeks of decreasing power. The final feedwater temperature at the end of coastdown at 40% power is calculated to be 248°F. There would be an impact on the feedwater nozzle, but PECO's projected operating time for Unit 3 (11.4 years) would be below the time interval assumed in the design analysis for seal refurbishment of 14 years. With the decreased feedwater inlet temperature, PECO's evaluation showed the usage factor would still be acceptable.

c. <u>Conclusions</u>

The inspector conducted a review of PECO's analysis to allow a final feedwater temperature reduction of up to 80°F at full power for cycle extension and during coastdown. The inspector verified that the licensee's justification for this operation addressed the appropriate analyses and design evaluations. Also, the inspectors

independently observed actual feedwater temperatures to confirm final feedwater temperature did not exceed the 80°F limit. The operation of Unit 3 with up to 80°F reduction in feedwater would not significantly reduce the margin of safety to the public for the coastdown to 40% of rated power.

E2 Engineering Support of Facilities and Equipment

E2.1 Residual Heat Removal System Discharge Header Pressurization (Unit 2)

a. Inspection Scope (37551)

The inspector reviewed actions taken in response to a high pressure condition observed in the Unit 2 Residual Heat Removal (RHR) discharge headers.

b. Observations and Findings

On July 15, operators observed an RHR discharge header high pressure alarm and noted increased pressure on both discharge header pressure indicators. Operators took action per the appropriate abnormal operating procedure to reduce pressure and clear the alarm. Operations documented the condition on an Action Request. Operators continued to note increasing pressure over the next two days.

Engineering evaluated this condition and developed an action plan. The system manager determined that leakage past the B RHR discharge valve, MO-2-10-025B was the most likely cause. Initial actions to correct the condition by stroking the valve were not successful. Engineering quantified the leakage at 0.1 gpm, significantly below the operability limit of 1.0 gpm. The inspector observed strong, in-plant involvement by the system manager in monitoring the condition and recommending corrective action.

Operators continued to quantify and control the leakage by using an abnormal operating procedure. The leakage rate remained approximately constant for the next several days. On August 2, operators exited the abnormal operating procedure to perform ST-I-010-105-2, "RHR B Logic System Functional Test." This test stroked valve MO-2-10-25B and the condition cleared. Engineering concluded that the valve appeared to have better seated itself. Following the test, however, engineering was slow in documenting on the Action Request the status of the monitoring and resolution efforts. As a result, at the conclusion of the inspection period, some operators were unsure of the status of the condition.

c. <u>Conclusions</u>

Overall, station response to a high pressure condition in the Unit 2 RHR discharge headers was good. Operators entered appropriate abnormal operating procedures. Initial actions by the system manager to evaluate and monitor the issue were excellent. However, after the condition appeared to be resolved, engineering was slow in providing a documented status to operations.

E2.2 Failed Relay on E-1 Emergency Diesel Generator

a. Inspection Scope (71707, 37551)

The inspector reviewed actions taken following the identification of a failed relay during post-maintenance testing on the E-1 emergency diesel generator (EDG) on June 8, 1997.

b. Observations and Findings

During post-maintenance testing of the E-1 EDG per a routine test procedure, operators observed that the generator field failed to flash. After investigation, technicians determined that a K-1 trip contact failed to close, which prevented the field flash relay from operating.

The inspector noted that the EDG remained in an inoperable status pending resolution of the condition. A temporary change was initiated to manually reset the affected relay to allow for continued testing. In addition, the licensee addressed the immediate generic implications of this issue by visually inspecting the K-1 relays of the other three EDGs to ensure that they would support an automatic start. Following replacement of the relay on June 11, 1997, the EDG was tested and restored to an operable status.

The licensee performed an evaluation and failure analysis at the PECO corporate laboratory. The evaluation concluded that a contact spring was not in its designed position, most likely due to an incorrect installation by the manufacturer. The licensee discussed the issue with the manufacturer and with the vendor that qualified the relay. Based on these discussions and the lack of similar failures documented in industry information, the licensee further considered the event to be an isolated occurrence. The inspector reviewed the licensee's determination and identified no concerns.

c. <u>Conclusions</u>

The inspector concluded that PECO's immediate and follow-up actions in response to the identification of a failed relay during post-maintenance testing of the E-1 EDG were timely and comprehensive.

E2.3 Control Rod Drive Withdrawal Directional Control Valve Leakage

a. Inspection Scope (37551)

The inspector assessed the licensee's evaluation and corrective actions for the leakage identified on SV-3-03A-13120EX, directional control valve on hydraulic control unit (HCU) 50-27.

Observations and Findings

On June 5, PECO identified a water leak at the solenoid valve (SV) on Unit 3 HCU 50-27, between the SV and the SV body. The directional withdrawal control valve is located in the line leading from the underpiston side of the control rod drive (CRD) mechanism, part of the reactor manual control system. The leak was contained within a catch containment. Although operators conservatively reported the leak as 60 drops per minute, the inspector verified the leak to be 26 to 28 drops per minute on that date.

Although separation is provided between the scram and normal control rod functions to prevent failures in the manual control circuity from affecting the scram circuitry, SV-13120 does perform a passive safety function in the closed position. While it is closed, it prevents diversion of pressurized scram accumulator water from the exhaust water header rather than being directed to the underpiston area of the CRD. This condition affects only control rod 50-27.

PECO used an evaluation documented in General Electric document GEK-7811/9684, which provides information regarding the effects of a leaking directional control valve on CRD operability. The evaluation results are as follows:

< 1 GPM	No affect on CRD notch-in performance
> 1, < 2 GPM	Shortened settle period
> 2 GPM	Failure to insert one notch
Fails open	No CRD movement

The licensee staff discussed with the inspector the effects of the leakage, compliance issues, safety impact, and plans for repair. The HCU is planned for repair during the October 1997, outage unless the leakage increased to the point where it affected CRD operability. Until the outage, the on-shift equipment operator will evaluate the status of this leak once per shift.

The NRC inspector has monitored this leak and found a slow increase in the leakage: 27 drops/min on July 7, 42 drops/min on July 14, and 60 drops/min on July 30.

c. <u>Conclusions</u>

PECO's operability evaluation for the leakage identified on the directional control valve on HCU 50-27 reflected generally strong knowledge of the system and the effects of the leakage. The monitoring plan was based on proper assumptions. Overall, the evaluation and corrective actions were considered very good.

E2.4 E-2 Emergency Diesel Generator Voltage Regulation Problems

a. Inspection Scope (37551)

The inspector reviewed PECO's actions to address the voltage regulation problems on the E-2 EDG.

<u>Observations and Findings</u>

On June 17, operators experienced voltage regulation problems on the E-2 EDG and declared it inoperable. The voltage regulation problems occurred while performing a shutdown of the E-2, after the completion of a routine test. PECO determined that the proper start and operation of the E-2 would not be assured. After the satisfactory completion of corrective maintenance, PECO declared the E-2 EDG operable on June 23.

PECO determined the cause of the voltage regulation problems to be a loose potentiometer coupling for the motor operated controller. This condition prevented the motor operated controller from returning to its center position when shutdown. PECO also replaced and tuned governor control components, as a conservative measure. The motor operated controllers for the other three EDGs were verified by technicians to be in the center position. PECO engineers reviewed the historical operation of the E-2 and other and identified no other problems with voltage regulation. PECO was evaluating the possibility of maintenance activities that could be implemented to prevent a similar failure in the future.

c. Conclusions

Following the identification of voltage regulation problems on the E-2 EDG, PECO properly declared it inoperable and took prompt and thorough corrective actions to restore operability. Engineering used sound investigative reasoning to address potential common cause failure concerns for the other EDGs.

E2.5 High Pressure Service Water System Valve Stroke Failures

a. Inspection Scope (37551)

The inspectors reviewed actions taken to address the failure of high pressure service water (HPSW) system motor operated valves MO-2-10-89A and MO-2-10-89C to stroke closed.

b. Observations and Findings

On July 1, 1997, during a HPSW system surveillance test, MO-2-10-89A and MO-2-10-89C, the Unit 2 HPSW system discharge isolation valves for the 2A and 2C residual heat removal system heat exchangers, failed to close. An operability determination was performed promptly and concluded that the valves still met their safety related functions. Troubleshooting of the valves by the Fix-It-Now team revealed they did not close due to a failure of the associated auxiliary contacts in the 480 V motor control center starter coils. The auxiliary contacts were replaced and the valves were tested satisfactorily.

The inspectors noted that there has been a history of auxiliary contact failures in safety related applications. Previous failures occurred in 1993, 1995, and 1996. The failure in 1996 rendered the Unit 2 B core spray loop inoperable. This event was investigated in PEP issue IOO06255. Although the investigation was completed in December 1996, a number of the corrective actions were assigned to be completed over a year later, December 31, 1997. Some data was planned for review in August 1997.

The inspector reviewed the results of the failure analysis performed on the HPSW valve auxiliary contacts. The documentation indicated that some data was not available and that it may have been lost during the troubleshooting process. Another review of auxiliary contact failures was initiated on August 5, with a planned due date of September 15, 1997.

c. <u>Conclusions</u>

The inspector found that the initial actions related to the stroking failures of high pressure service water (HPSW) system motor operated valves MO-2-10-89A and MO-2-10-89C were performed promptly. A number of actions related to the analyses of these and similar auxiliary contact failures remain open. Corrective actions for a related PEP Issue were pending or not fully resolved. Due to the ongoing nature of these activities, this issue is considered unresolved, pending completion of licensee analysis and review of previous corrective actions, and subsequent NRC review. (URI 50-277; 50-278/ 97005-03)

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

The inspectors noted no negative issues during routine tours of the radiologically controlled areas of both plants. The tours included review of general housekeeping and radiological conditions, postings, and barriers.

S1 Conduct of Security and Safeguards Activities

The inspectors identified no significant areas of concern during observations of security force activities. The inspectors observed that repair activities on the access building roof were being continuously monitored by security personnel.

S2 Status of Security Facilities and Equipment

The inspectors conducted routine walkdowns of the protected area and did not identify any significant deficiencies.

V. Management Meeting

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of the licensee management on August 21, 1997. The licensee acknowledged the findings presented.

X2 Review of UFSAR Commitments

A discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report (UFSAR) description highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the UFSAR description. While performing the inspections discussed in this report, the inspector reviewed the application portions of the UFSAR that related to the areas inspected. The inspector verified that the UFSAR wording was consistent with the observed plant practices, procedures.

X3 Management Meeting Summary

On July 29, 1997, NRC and licensee management conducted a meeting to discuss the results of the NRC Systematic Assessment of Licensee Performance (SALP) for the period October 15, 1995, to June 7, 1997.

LIST OF ACRONYMS USED

action request (AR) action statement (AS) administrative guideline (AG) APRM gain adjust factor (AGAF) as-low-as-reasonably-achievable (ALARA) average power range monitors - neutron (APRMs) control rod drives (CRDs) control room deficiency list (CRDL) control room emergency ventilation (CREV) core power and flow log (CPFL) core spray (CS) core thermal power (CTP) design input document (DID) electro-hydraulic control (EHC) eleventh refueling outage (2R11) emergency core cooling system (ECCS) emergency diesel generator (EDG) emergency operating procedures (EOP) emergency preparedness (EP) emergency service water (ESW) end-of-cycle (EOC) engineering change request (ECR) engineered safety feature (ESF) functional testing (FT) general procedure (GP) Generic Letter (GL) health physics (HP) high pressure coolant injection (HPCI) high pressure service water (HPSW) hydraulic control unit (HCU) improved TS (ITS) independent safety engineering group (ISEG) inservice inspection (ISI) inspector followup items (IFIs) instrument and control (I&C) intermediate range monitor - neutron (IRM) licensee event report (LER) limited senior reactor operators (LSROs) limiting conditions for operation (LCO) load tap changer (LTC) local leak rate test (LLRT) loss of coolant accident (LOCA) loss of off-site power (LOOP) low pressure coolant injection (LPCI) lubricating oil (LO) main control room (MCR) modification (MOD)

motor generator (MG) nuclear maintenance division (NMD) nuclear review board (NRB) offsite dose calculation manual (ODCM) offsite power start-up source #2 (2SU) offsite power start-up source #3 (3SU) Peco Energy (PECO) performance enhancement program (PEP) plant operations review committee (PORC) post-maintenance tenting (PMT) primary containment. (PC) primary containment isolation system (PCIS) primary containment isolation valve (PCIV) protected area (PA) quality assurance (QA) rediologically controlled area (RCA) rated thermal power (RTP) reactor core isolation cooling (RCIC) reactor engineer (RE) reactor feed pump (RFP) reactor operator (RO) reactor protection system (RPS) reactor water cleanup (RWCU) reliability centered maintenance (ROM) residual heat removal (RHR) residual heat removal (RHR) safety evaluation report (SER) safety related structures, system and components (SSC) safe'y relief valve (SRV) sortam solenoid pilot valve (SSPV) secondary containment (SC) senior reactor operator (SRO) shift technical advisor (STA) shift update notice (SUN) source range monitor (SRM) specific gravity (SG) spent fuel pool (SFP) standby gas treatment (SGTS) standby liquid control (SLC) station blackout (SBO) structure, system and component (SSC) surveillance requirement (SR) surveillance test (ST) systems approach to training (SAT) technical requirements manual (TRM) technical specification (TS) temporary plant alteration (TPA) turbine bypass valve (BPV)

turbine control valve (TCV) turbine stop valve (TSV) undervoltage (UV) unresolved item (URI) updated final safety analysis report (UFSAR)

INSPECTION PROCEDURES USED

- IP 37551: Onsite Engineering Observations
- IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
- IP 61726: Surveillance Observations
- IP 62707: Maintenance Observation
- IP 71707: Plant Operations
- IP 71750: Plant Support Observations
- IP 92700: Onsite Follow of Written Reports of Nonroutine Events at Power Reactor Facilities
- IP 92901: Operations Followup
- IP 92902: Followup Engineering
- IP 92903: Followup Maintenance
- IP 92904: Plant Support Followup
- IP 93702: Prompt Onsite Response to Events at Operating Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

.

NCV 50-277; 50-278/97005-01	Document Control at Local Operating Station
VID 50-277; 50-278/97005-02	Inadequate Procedure for Tripping Control Room
URI 50-277; 50/278/97005-03	Ventilation Radiation Monitor Auxiliary Contact Failures

Closed

l