Mark E. Warner
Plant Manager
Peach Bottom Atomic Power Station

PECO Energy Company
1848 Lay Road
Delta, PA 17314-9032
717 456 4244

PECO NUCLEAR
A Unit of PECO Energy

January 1, 2000

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Docket No. 50-277, 50-278
SUBJECT: Licensee Event Report, Peach Bottom Atomic Power Station Unit 2 & 3

This LER reports an inoperability of all RHR pumps simultaneously during the RHR Logic System Functional Test. The LER is being submitted pursuant to the requirements of 10 CFR 50.73 (a)(2)(i)(B) and 10 CFR50.73 (a)(2)(v).

Reference: Docket No. 50-277, 50 278
Report Number: 2-99-008
Revision Number: 00
Event Date: 12/02/99
Report Date: 01/01/00

Facility: Peach Bottom Atomic Power Station Unit 2 &
3 1848 Lay Road, Delta, PA 17314

Sincerely,

Mark E Warner

Mark E. Warner, Plant Manager

MEW/scb

enclosure

cc: N. J. Sproul, Manager, Financial Controls and Co-owner Affairs
R. R. Janati, Commonwealth of Pennsylvania
INPO Records Center
H. J. Miller, US NRC, Administrator, Region I
R. I. McLean, State of Maryland
A. C. McMurtray, US NRC, Senior Resident Inspector
A. F. Kirby III, DelMarVa Power

CCN 99-14101

IE22

PDR ADOCK 05000277

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Peach Bottom Atomic Power Station Unit 2	0500 277	1 of 5

TITLE (4)
This LER reports an inoperability of all RHR pumps simultaneously during the RHR Logic System Functional Test.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	Sequential Number	Revision Number	MONTH	DAY	YEAR	Facility Name	Docket Number
									Unit 3	0500-278
12	02	99	99	008	00	01	01	00	Facility Name	Docket Number

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(B)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
	20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
	20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)	X	50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 336A
	20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (include area code)
Steven C. Beck	717.456.3243

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

Cause	System	Component	Manufacturer	Reportable to EPIX		Cause	System	Component	Manufacturer	Reportable to EPIX
D	BO	P	B265	Y						

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED Submission Date (15)	Month	Day	Year
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

During a review of the RHR Logic System Functional Test (LSFT) procedure, Engineering Department personnel discovered that a portion of the current revision of the procedure caused all four Residual Heat Removal (RHR) pumps to be inoperable (incapable of automatically starting) simultaneously for approximately two hours during performance of the test. This discovery occurred on December 2, 1999.

Further investigation revealed that the 2A RHR logic was last tested in August, 1997; the 2B RHR logic was last tested in March, 1997; the 3A RHR logic was last tested in March, 1997; and the 3B RHR logic was last tested in September, 1997. A review of previously performed RHR LSFT procedures from 1992 through 1997 indicate that this situation has occurred during previous test performances. Both units were in Mode 1 the last time the tests were previously completed. The resulting condition placed the applicable unit in LCO 3.0.3 for approximately two hours .

The LER is being submitted pursuant to the requirements of 10 CFR 50.73 (a)(2)(i)(B) and 10 CFR 50.73 (a)(2)(v) due to all Residual Heat Removal (RHR) system pumps being rendered inoperable during performance of the RHR Logic System Functional Test. This occurred on both Unit 2 and Unit 3.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		Year	Sequential Number	Revision Number	
Peach Bottom Atomic Power Station Unit 2 & 3	0500-277 0500-278	99	008	00	2 of 5

TEXT (If more space is required, use additional copies of NRC form 336A) (17)

Requirements of the Report

The LER is being submitted pursuant to the requirements of 10 CFR 50.73 (a)(2)(i)(B) and 10 CFR 50.73 (a)(2)(v) due to all Residual Heat Removal (RHR) (EIIS:BO)system pumps being rendered inoperable (incapable of automatically starting) for approximately two hours during performance of the RHR Logic System Functional Test. This occurred at different times on both Unit 2 and Unit 3.

Unit Conditions at Time of Event

Unit 2 and 3 were in Mode 1 (RUN) at approximately 100 percent power (EIIS: EA) at the time of the last performance of the RHR Logic System Functional tests. No other systems, structures, or components were inoperable during test performance which contributed to this event.

Description of the Event (see attachment 1)

On December 2, 1999, the Engineering Department was reviewing and revising the logic system functional test procedures for both the "A" & "B" RHR logic on Units 2 and 3 when it was discovered that the current revisions would simultaneously render all four RHR (EIIS:BO) pumps inoperable (incapable of automatically starting) for approximately two hours.

The RHR Logic System Functional Test Procedure tests all aspects of the RHR system logic. Part of this test involves starting the RHR pumps sequentially by simulating an initiation signal to the associated pump via temporarily installed test equipment. The pumps are tested in the following sequence: A, C, B, then D. The procedure renders each individual pump inoperable during performance of the test. When the individual pump test is complete, the procedure states that operability is restored to that pump. It was discovered in the procedure review that operability (auto start capability) was not restored to all four pumps until after the final pump test was completed due to a "seal-in" signal to the individual pump stop logic not being reset. No alarms or indications existed that would alert the operating crew of this condition during performance of the test.

As shown in attachment 1 for the "A" RHR LSFT, when testing the "A" pump, a simulated initiation signal causes the K18A relay to energize and close the K18A contact in the pump auto start logic. Subsequently, the "A" RHR pump starts. The K18A relay also closes a contact in the pump stop logic. The purpose of this contact is to prevent the "A" pump from restarting when the control switch is taken to STOP and an initiation signal is present.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		Year	Sequential Number	Revision Number	
Peach Bottom Atomic Power Station Unit 2	0500-277 0500-278	99	008	00	3 of 5

TEXT (If more space is required, use additional copies of NRC form 336A) (17)

After verifying that the pump started as required, the test procedure directed the crew to momentarily take the "A" pump control switch to STOP and verify the "A" pump stopped. When the control switch was momentarily placed in STOP, the K72A and K170A relays energized. The K72A contact closed and, since the simulated initiation signal was still active and the K18A contact closed, the K72A and K170A relays remained energized through the seal-in portion of the logic.

When the K170A relay energized, the K170A contact opened in the pump auto start logic. With the K170A contact open, the pump will not start automatically, regardless of which RHR logic (A or B) sends an initiation signal to the pump. The procedure did not address the seal-in logic and the need to reset it. In order to reset the seal-in logic the procedure should have directed the crew to remove the simulated initiation signal before proceeding to the next pump.

The auto start logic and stop logic is similar for all four RHR pumps. Therefore, when the "C" pump was tested it became inoperable, causing both the "A" and "C" pumps to be inoperable. Next, the "B" pump was tested causing the "A", "C", and "B" pumps to be inoperable. Finally, the "D" pump was tested, rendering all four RHR pumps inoperable (incapable of automatically starting). This portion of the test lasted approximately two hours.

Upon completion of the "D" pump, the simulated initiation signal was removed, the K170A and K72A relays de-energized, and the auto start logic returned to a normal configuration causing all pumps to become operable. No alarms or other indications existed that would have alerted the operating crew that the pumps would not have automatically started during the applicable portion of the test.

Further investigation revealed that the 2A RHR logic was last tested in August, 1997; the 2B RHR logic was last tested in March, 1997; the 3A RHR logic was last tested in March, 1997; and the 3B RHR logic was last tested in September, 1997. A review of previously performed RHR LSFT procedures from 1992 through 1997 indicate that this situation has occurred during previous test performances. Both units were in Mode 1 the last time the tests were previously completed. The resulting condition placed the applicable unit in LCO 3.0.3 for approximately two hours .

Cause of the Event

The cause of the event was inadequate procedural guidance for performing the RHR Logic System Functional Test. Specifically, the procedure did not require resetting each pump immediately after the pump was tested. Instead, all pumps were reset after the final pump was tested and all four RHR pumps were inoperable simultaneously for a short period of time during the test.

Analysis of the Event

All RHR pumps were inoperable (incapable of automatically starting) for approximately two hours during the performance of the test. If an accident or transient would have occurred during the time period that the RHR pumps were inoperable, the High Pressure Coolant Injection System, Reactor Core Isolation Cooling System, Automatic Depressurization System, and all Low Pressure Core Spray Subsystems would have operated to mitigate the event. According to the UFSAR Core Standby Cooling Systems (CSCS) safety analysis, Section 6.5.3.3, assuming no single failure, the Core Spray system provides adequate cooling for intermediate and large line break sizes up to and including the design-basis double-ended recirculation line break, without assistance from any other CSCS.

Additionally, even though the RHR pumps were incapable of automatically starting for a short period of time during test performance, they retained their manual initiation capability. Plant procedures direct the operating crew, upon receipt of a valid initiation signal, to verify and, if necessary, start all available RHR pumps. Since the manual start capability was retained to all four pumps, the pumps would have been started manually and would have been used to mitigate an event.

Due to the low probability of the initiating event (DBA-LOCA), the short period of time the RHR pumps were inoperable (approximately two hours), and the availability of the Low Pressure Core Spray system, the safety consequences of this event were minimal.

Corrective Actions

The following corrective actions were taken as a result of this event:

- All RHR Logic System Functional Test procedures will be revised prior to the next scheduled test performance to require the auto start logic for each pump to be reset immediately after the pump is tested and prior to proceeding to the next pump.

- All other Emergency Core Cooling System Logic System Functional Test procedures are being reviewed to determine if a similar situation exists. These tests will not be performed until this review is complete.

Previous Events

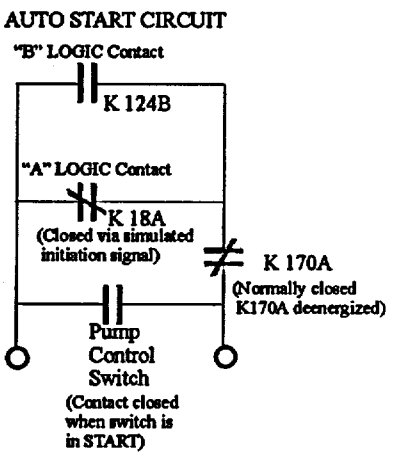
No previous events could be identified where an inadequate Logic System Functional Test procedure cause a loss of function of redundant trains of a safety system.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		Year	Sequential Number	Revision Number	
Peach Bottom Atomic Power Station Unit 2 & 3	0500-277 0500-278	99	008	00	5 of 5

TEXT (If more space is required, use additional copies of NRC form 336A) (17)

Attachment 1

"A" RHR PUMP START LOGIC WHEN INITIATION SIGNAL SIMULATED DURING LSFT



"A" RHR PUMP START LOGIC WHEN PUMP WAS STOPPED USING CONTROL SWITCH AND INITIATION SIGNAL STILL SIMULATED