

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION

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KEN POWERS
PLANT MANAGER

March 26, 1993

Docket No. 50-277

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

SUBJECT: Licensee Event Report
Peach Bottom Atomic Power Station - Unit 2

This LER concerns an automatic scram on Reactor water level when a condensate pump trip caused two Reactor Feed Pumps to trip on low suction pressure.

Reference:	Docket No. 50-277
Report Number:	2-93-004
Revision Number:	00
Event Date:	03/02/93
Report Date:	03/26/93
Facility:	Peach Bottom Atomic Power Station RD1, Box 208, Delta, PA 17314

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv) and 10 CFR 50.73(a)(2)(v).

Sincerely,

cc: J. J. Lyash, US NRC Senior Resident Inspector
T. T. Martin, US NRC, Region I

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Peach Bottom Atomic Power Station - Unit 2

DOCKET NUMBER (2)

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PAGE (3)

TITLE (4) Automatic Scram on Reactor Water Level when a Condensate Pump Trip Caused Two Reactor Feed Pumps to Trip on Low Suction Pressure

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 NAMES	DOCKET NUMBER (8)
03	02	93	93	004	00	03	26	93		050000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)							
N			20.402(b) X 50.73(a)(2)(iv) 73.71(b)							
POWER LEVEL (10) 0.710			20.405(a)(1)(i) X 50.73(a)(2)(iv) 73.71(c)							
			20.405(a)(1)(ii) 50.73(a)(2)(v) OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
			20.405(a)(1)(iii) 50.73(a)(2)(vi)(A)							
			20.405(a)(1)(iv) 50.73(a)(2)(vi)(B)							
			20.405(a)(1)(v) 50.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)

NAME

Anthony J. Wasong, Regulatory Supervisor

TELEPHONE NUMBER

AREA CODE

7 1 7 4 5 6 - 7 0 1 4

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
X	B/J	R/L Y	C 7 7 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)		NO		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
		X					

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

On 03/02/93, the "C" Condensate Pump breaker tripped open and caused the "A" and "C" RFPs to trip on low pump suction pressure. The Reactor water level decreased to the scram setpoint. The High Pressure Coolant Injection (HPCI) and the Reactor Core Isolation Coolant (RCIC) systems started on low Reactor water level. The HPCI and RCIC systems continued to restore Reactor water level until the "C" RFP was returned to service. An Unusual Event was declared due to the HPCI injection to the reactor from a valid initiation signal. The Unusual Event was terminated at 1908 hours. The cause of the scram has been determined to be an unexpected trip of the "C" Condensate Pump. An investigation was conducted to inspect the relays and components which could have caused the "C" Condensate Pump trip and no equipment problems could be reproduced. Therefore, it has been concluded that the trip was not due to equipment failure. An investigation did identify a human factors issue with the location of the control switches. After HPCI had completed its function, it was discovered that the HPCI Auxiliary Oil Pump (AOP) would not start. The cause of the HPCI AOP failure has been determined to be a spurious failure of a time delay relay to properly operate. The relay coil has been replaced and setup. An evaluation will be performed on this event and previous similar type relay problems to identify additional corrective actions.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Requirements of the Report

This report is being submitted pursuant to 10 CFR 50.73 (a)(2)(iv) due to Engineered Safety Feature (ESF) actuations and to satisfy the requirements of 10 CFR 50.73 (a)(2)(v) describing conditions that alone could have prevented the fulfillment of a safety function.

Unit Conditions at Time of Event

Unit 2 was in the "RUN" mode at 70% of rated thermal reactor power with the "B" and "C" Condensate Pumps (EIS:SD) (EIS:P) and the "A" & "C" Reactor Feed Pumps (RFP) (EIS:SK) in-service. The "B" RFP was out of service at this time. There were no other systems, structures, or components that were inoperable that contributed to the event.

Description of the Event

On 03/02/93 at 1830 hours, when attempting to place the "A" Condensate Pump in-service, the "C" Condensate Pump breaker tripped open. Having only the "B" Condensate Pump in-service while at 70% power caused the "A" RFP to trip on low pump suction pressure. The loss of the "A" RFP caused the Reactor water level to decrease to the low level scram setpoint resulting in an automatic scram. In addition, Primary Containment Isolation System (PCIS) (EIS:JM) Group II/III isolations also occurred when the Reactor water level decreased below 0". The High Pressure Coolant Injection (HPCI) (EIS:BJ) system, Reactor Core Isolation Coolant (RCIC) (EIS:BN) system, and the Alternate Rod Insertion system also initiated when Reactor water level dropped below the -48" set point. The -48" initiation caused the start of HPCI and RCIC systems and a trip of the Recirculation Pumps (EIS:AD). While the HPCI and RCIC systems were in the injection mode, the "C" RFP also tripped on low pump suction pressure. The HPCI and RCIC systems continued to restore Reactor water level until the "C" RFP was returned to service. Subsequently, the HPCI system was placed in the standby mode. The RCIC system was left in the injection mode to assist in the control of Reactor water level. At 1840 hours, an Unusual Event was declared in accordance with the Emergency Plan due to the HPCI and RCIC injection to the reactor from a valid initiation signal. The NRC was notified of the event via ENS at 1855 hours and the Unusual Event was terminated at 1908 hours. The PCIS and the Reactor Protection System (RPS) (EIS:JC) scram logics were reset and the affected systems were restored to the appropriate configuration. After HPCI had completed its function, it was discovered that the HPCI Auxiliary Oil Pump (AOP) would not start on 03/03/93 at approximately 0830 hours.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 800 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Cause of the Event

The cause of the scram has been determined to be an unexpected trip of the "C" Condensate Pump. Having only the "B" Condensate Pump in-service while at 70% power caused the "A" and "C" RFPs to trip on a low pump suction pressure. The "A" RFP tripped immediately and the "C" RFP tripped on a time delay soon after. The loss of the "A" RFP caused the Reactor water level to decrease to the low level scram setpoint. An investigation was conducted to determine the cause of the condensate pump trip. The relays and components which could have caused the "C" Condensate Pump trip were inspected and no equipment problems were found or could be reproduced.

Another possible cause of the pump trip involving human performance was also investigated. Operations personnel were in the process of placing the "A" Condensate Pump in-service in accordance with SO-5.1.B-2 "Placing a Second and Third Condensate Pump In Service" when the trip occurred. It was postulated that the Reactor Operator trainee (Utility:Licensed) could have inadvertently actuated the "C" Condensate Pump Suction Valve instead of the "A" Condensate Pump Suction Valve since these valve control switches are located adjacent to one another. The "C" Condensate Pump Suction Valve is interlocked with the "C" Condensate Pump Motor Breaker to trip the motor breaker open if the suction valve is not in the full open position. Several reenactments were made at the plant and on the simulator to determine if human performance was the cause of the condensate pump trip. Information obtained from these reenactments and extensive interviews did not substantiate that human performance was the cause of the "C" Condensate Pump trip. However, the investigation did identify a human factors issue with the location of the control switches.

The cause of the HPCI AOP failure has been determined to be an unexpected spurious failure of a time delay relay (TA) (EIS:RLY) to properly operate in the control logic. The relay is located in the HPCI Room and these type relays are Cutler Hammer model 673. Extensive troubleshooting was performed on the HPCI AOP control logic and it was determined that the TA relay was not sequencing the starting resistors at the correct time.

Analysis of Event

No actual safety consequences occurred as a result of this event.

All isolations and initiations functioned per design. If a design basis accident or transient would have occurred and the HPCI system failed to start, the Automatic Depressurization System (EIS:RV) was operable, if required, to reduce Reactor (EIS:RPV) pressure to allow the low pressure coolant injection (EIS:BO) systems to inject. The RCIC system was also operable to provide core cooling.

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH IP-630, U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3155-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 3656's) (17)