



PEACH BOTTOM—THE POWER OF EXCELLENCE

**PHILADELPHIA ELECTRIC COMPANY**

PEACH BOTTOM ATOMIC POWER STATION

R. D. 1, Box 208

Delta, Pennsylvania 17314

(717) 456-7014

December 17, 1990

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 a Technical Specification violation resulting from exceeding a reactor coolant cooldown rate due to incorrect procedural guidance.

Reference:	Docket No. 50-277
Report Number:	2-90-036
Revision Number:	00
Event Date:	11/15/90
Report Date:	12/17/90
Facility:	Peach Bottom Atomic Power Station RD 1, Box 208, Delta, PA 17314

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B).

Sincerely,

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

1/1  
IE22

bcc: R. A. Burricelli, Public Service Electric & Gas  
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Peach Bottom Atomic Power Station - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 2 7 7 1	PAGE (3) 1 OF 0 3
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TITLE (4)  
Excessive Reactor Coolant Cooldown Rate Due To Procedural Deficiency Results  
In Technical Specification Violation

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
1	1	5 9 0	9 0	0 3 6	0	0	1 2	1 7 9 0	
								DOCKET NUMBER(S) 0 5 0 0 0	
								0 5 0 0 0	

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5 (Check one or more of the following) (11)				
POWER LEVEL (10) 0 0 0	20.402(b)	20.405(c)	50.73(a)(2)(ix)	73.71(b)	OTHER (Specify in Abstract below and in Text, NRC Form 2664)
	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(iv)	73.71(c)	
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(v)		
	20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)		
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)		
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)		

LICENSEE CONTACT FOR THIS LER (12)

NAME A. A. Fulvio, Regulatory Engineer	TELEPHONE NUMBER AREA CODE 7 1 7 4 5 6 - 7 0 1 4
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On 11/15/90, at 2350 hours, while in the shutdown mode at 0 percent power, an excessive cooldown of the reactor coolant in the 'B' reactor recirculation (recirc) loop occurred while placing the shutdown cooling (SDC) mode of Residual Heat Removal (RHR) in service. When SDC was placed in service the coolant temperature decreased from 250 degrees F to 120 degrees F. Technical Specifications limit the average rate of reactor coolant change to not exceed 100 degrees F in any one hour period. On 11/16/90 at 0010 hours, the 'B' recirc discharge valve and cooling to the 'B' RHR heat exchanger were isolated thereby terminating the event. The cause of the event is incorrect procedural guidance when taking a recirc loop out of service in that the recirc discharge valve was left open while placing SDC in service. After appropriate review, SDC was restored on 11/16/90 at 0030 hours and an acceptable cooldown rate was observed. Appropriate Operating procedures will be revised. There were no actual safety consequences. There was one previous similar event.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

Requirements for the Report

This report is required pursuant to 10 CFR 50.73 (a)(2)(i)(B) to report a Technical Specification (Tech Spec) violation concerning an excessive cooldown rate of reactor (EIIS:RPV) coolant in the 'B' reactor recirculation (recirc)(EIIS:AD) loop.

Unit Conditions at Time of the Event

Unit 2 in shutdown mode at 0 percent thermal power.

'A' Reactor Recirc pump (EIIS:P) running.

'B' Reactor Recirc pump off with discharge valve (EIIS:V) open.

Description of the Event

On 11/15/90, at 2350 hours, an excessive cooldown of the reactor coolant in the 'B' reactor recirc loop occurred while placing the shutdown cooling (SDC) mode of Residual Heat Removal (RHR)(EIIS:BO) in service. Prior to placing SDC in service, the 'B' recirc loop was at 250 degrees F. When SDC was placed into service, a cooldown to 120 degrees F occurred. Tech Spec 3.6.A.1 limits the average rate of reactor coolant change to not exceed a 100 degrees F change in any one hour period.

The SDC mode provides reactor cooling while shutdown by injecting RHR flow into the recirc loop downstream of the recirc pump discharge valve. High Pressure Service Water (HPSW)(EIIS:BI) is the heat sink for the RHR heat exchangers (EIIS:HX).

On 11/16/90, at 0000 hours, while performing the 15 minute surveillance of recirc loop temperatures, the Reactor Operator (RO) observed the excessive cooldown to 120 degrees F. He also observed that the temperature recovered and was at 180 degrees F trending down at the time of this reading.

At 0010 hours, the RO closed the 'B' recirc discharge valve and isolated HPSW cooling to the 'B' RHR heat exchanger. This action terminated the recirc loop cooldown.

At 0030 hours, after Operations Management review, SDC was placed back into service with an observed acceptable cooldown rate.

Cause of the Event

The cause of the event is incorrect procedural guidance when taking a Recirc loop out of service. System Operating Procedure, SO 2A.2.A-2, "Recirculation Pump Shutdown" was recently revised on 11/1/90 as a result of General Electric Company (GE) Service Information Letter (SIL) 517 to require that the recirc pump discharge valve be closed following a recirc pump trip and reopened after a 5 minute wait. Closing the valve allows the recirc pump shaft and thrust bearing to engage thereby protecting the recirc pump from reverse rotation. Opening the valve establishes loop circulation to prevent the loop from cooling down to ambient temperature. This averts a condition in which restart of an idle recirc pump may be prohibited because of Tech Spec 3.6.A.1 limits. However, neither this procedure nor SO 10.1.B-2, "Residual Heat Removal System Shutdown Cooling Mode Manual Start", included direction



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		0	3	6	0	0	3 OF 0 3

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

to close the discharge valve when SDC is placed in service to prevent an excessive temperature transient in the recirc pump casing and suction piping. When SDC is initially placed in service, a slug of cold water in the SDC piping can cause excessive loop cooldown transients.

Prior to the 11/1/90 revision, the recirc discharge valve remained closed following a recirc pump shutdown. This event was the first time the revised procedure was used.

Analysis of the Event

There were no actual safety consequences associated with this event.

Tech Spec operating limits for reactor pressure versus reactor metal temperature were not exceeded. Therefore, brittle fracture limits were unaffected by this event.

The reactor vessel fatigue analysis is not affected by this event. This is because reverse flow through the 'B' recirc pump with a step change coolant decrease is bounded by a design improper recirc pump start.

Corrective Actions

Appropriate Operating procedures will be revised to ensure the recirc pump discharge valve remains closed when SDC is placed into service.

On 11/16/90, at 0030 hours, after Operations Management review, SDC was placed back into service with an observed acceptable cooldown rate.

Previous Similar Events

There were two previous events identified in which an excessive heat-up rate of a Recirc loop occurred due to procedural weakness. LER 3-90-009 identified an excessive heat-up rate when sudden reverse flow entered the 'B' recirc loop when placing the recirc pump in service while Reactor pressure was decreasing. Corrective actions addressed revising procedures to add guidance concerning the heat-up and potential of sudden reverse flow due to reactor depressurization. The second event was also identified in LER 3-90-009. This event concerned the startup of the Unit 3 'B' Recirc loop. During the start-up an excessive heat-up rate occurred due to lack of procedural guidance to control the heatup. Corrective actions consisted of enhancing procedural guidance. Since this event involved placing SDC in service, the corrective actions in LER 3-90-009 could not have prevented this event.