

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION

R. D. 1, Box 208

DELTA, PA 17314

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KEN POWERS  
PLANT MANAGER

April 20, 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 a Technical Specification violation due to excessive stroke times for two main steam isolation valves. A 14 day extension for the due date of this report was requested of the Senior Resident NRC Inspector to allow for additional analysis of the event.

Reference:	Docket No. 50-277
Report Number:	2-93-005
Revision Number:	00
Event Date:	12/05/92
Reportability Date:	03/09/93
Report Date:	04/20/93
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)(i) and 10 CFR 50.73(a)(2)(vii).

Sincerely,

*Ken Powers*

cc: R. A. Burricelli, Public Service Electric & Gas  
W. P. Dornsife, Commonwealth of Pennsylvania  
INPO Records Center  
J. J. Lyash, US NRC Senior Resident Inspector  
T. T. Martin, US NRC, Region I  
R. I. McLean, State of Maryland  
C. D. Schaefer, DelMarVa Power  
H. C. Schwemm, VP-Atlantic Electric

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## LICENSEE EVENT REPORT (LER)

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 (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.

FACILITY NAME (1)

Peach Bottom Atomic Power Station - Unit 2

DOCKET NUMBER (2)

0 5 0 0 0 2 7 7 1 OF 0 4

PAGE (3)

TITLE (4) Technical Specification Violation due to Long Stroke Times of Main Steam Isolation Valves

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 (5)				
1	2	0	5	9	2	9	3	0	0	5	0	5	0	0	0
1	2	0	5	9	2	9	3	0	0	5	0	5	0	0	0

OPERATING MODE (9)		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)	20.406(c)	50.73(a)(2)(iv)	73.71(b)				
				20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)				
				20.405(a)(1)(ii)	50.36(c)(2)	X 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)				
				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

Anthony J. Wasong, Manager - Experience Assessment

TELEPHONE NUMBER

AREA CODE

7 1 7 4 5 6 - 7 1 0 1 4

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

CAUSE	SYSTEM	COMPONENT	MANUFAC TURE	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFAC TURE	REPORTABLE TO NPROS

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 3/9/93, it was determined that two inboard Main Steam Isolation Valves (MSIVs), AO-80A and AO-80C, were potentially unable to meet their Technical Specification stroke times at very low power levels. Primary Containment integrity was unaffected by this concern. These power levels occurred for a short time on or about 12/5/92, 1/2/93, and 3/2/93. The purpose of the MSIVs is to isolate the four Main Steam lines within 10.5 seconds in the event of certain design basis events. During these design basis conditions (i.e., reactor at operating temperature), all MSIV's were fully capable of performing their function. There are two MSIVs for each Main Steam line. On 3/2/93 following a reactor shutdown AO-80A required approximately 18 minutes to close. All other MSIVs closed as required. The valve disc to body clearances on two MSIVs, AO-80A and AO-80C, were found to be inadequate causing the valves to bind during approximately the last 3/4" of the full 10" valve stroke. No safety consequences occurred as a result of this event. AO-80A and AO-80C operated as designed during tests at higher reactor power levels. The valve disc to body clearances on AO-80A and AO-80C were increased.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Peach Bottom Atomic Power Station  
Unit 2

YEAR

SEQUENTIAL  
NUMBERREVISION  
NUMBER

0 5 0 0 0 2 7 7 9 3 — 0 0 5 — 0 0 0 2 OF 0 4

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

Requirements for the Report

This report is submitted pursuant to 10 CFR 50.73 (a)(2)(i)(B) due to a Technical Specification (Tech Spec) violation when at very low power levels two Main Steam Isolation Valves (MSIVs) were determined to be incapable of meeting their Tech Spec required stroke time. There was no threat to primary containment integrity at any time. This report is also submitted pursuant to 10 CFR 50.73 (a)(2)(vii) to report a condition where a single cause resulted in two MSIV's in separate primary containment penetrations not meeting their Tech Spec required stroke times. Redundant valves for each penetration were operable through the event.

Unit Conditions at Time of Discovery

Unit 2 was in the REFUEL mode. There were no other systems, structures, or components that were inoperable that contributed to the event.

Description of the Event

On 3/9/93, it was determined that two inboard Main Steam Isolation Valves (MSIVs)(EHS:V), AO-80A and AO-80C, were potentially unable to meet their Tech Spec stroke times at very low power levels when MSIV temperatures are lower than normal operating conditions. These power levels occurred for a short time on or about 12/5/92, 1/2/93, and 3/2/93. The purpose of the MSIVs is to isolate the four Main Steam lines within 10.5 seconds in the event of certain design basis events. During these design basis conditions (i.e., reactor at operating temperature), all MSIV's were fully capable of performing their function. There are two MSIVs (inboard and outboard) for each Main Steam line. On 1/2/93, during post-shutdown stroke time testing, AO-80A failed to fully close after receiving the initial closure signal. After being re-opened, AO-80A required approximately 40 minutes to fully close. Additionally, AO-80C required approximately 47 seconds to close when tested. The four outboard MSIVs and the other two inboard MSIVs closed within acceptable periods of time. A second event occurred on 3/2/93 following a reactor shutdown when AO-80A required approximately 18 minutes to close. All other MSIVs closed as required.

Cause of the Event

Following the 3/2/93 slow closure, AO-80A was disassembled and inspected. It was discovered that the valve disc (poppet) nose guide clearance to the valve body bore was potentially as low as .006 inches. AO-80C was also disassembled and the poppet to

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Peach Bottom Atomic Power Station  
Unit 2

0 5 0 0 0 2 7 7 9 3 — 0 0 5 — 0 0 0 3 OF 0 4

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

valve body clearance was found to be potentially as low as .008 inches. The minimum vendor's recommended clearance is .010 to .015 inches. It is believed that this small clearance caused the poppet to bind in the valve body bore. There is also a possibility that this binding was aggravated due to cooldown differences between the poppet and valve body bore because the valves closed at normal operating conditions and subsequently closed without incident following complete reactor cooldown.

During the last Unit 2 refueling outage in the fall of 1992, a modification to replace the poppets with an improved design was performed on the inboard MSIVs. This modification included machining of the poppet and valve body in order to ensure adequate clearance. The acceptable clearance, as supplied by the valve manufacturer, was .010 to .015 inches. The as-left poppet to valve body clearance for AO-80A and C was .010 inches. Although at the lower end of the acceptable range, this clearance was deemed adequate. However, due to the large size of these valves, an accurate measurement of the exact clearance is very difficult and not repeatable. It is this difficulty that is attributed to the clearance on AO-80A and AO-80C being found to be potentially less than .010 inches following the 3/2/93 event.

Following the 1/2/93 slow closure event, AO-80A and AO-80C were inspected. The cause of the slow closures was at that time believed to involve the air control system to the valves; however, the precise cause could not be determined with certainty. The solenoids were cleaned and the MSIVs were tested satisfactorily. An accelerated testing program was implemented to test AO-80A and AO-80C with the reactor at various power levels following startup. This event was not reportable due to the operability of the remaining MSIVs and that the failures of the two valves could not be attributed to a single cause.

Analysis of the Event

No actual safety consequences occurred as a result of this event. During each of the above events, the redundant outboard MSIVs closed within the required period of time. Therefore, the integrity of primary containment was not compromised. Additionally, AO-80A and AO-80C closed as required during fast closure tests conducted at various reactor power levels following the 1/2/93 event. The binding of the valves only existed for a brief time after reactor cooldown. At power levels above the startup range of power (i.e., heated conditions), no stroking concerns existed.

The four outboard MSIVs on Unit 2 have not been modified and therefore contain a different poppet design which has not exhibited this type of binding. The remaining two inboard MSIVs, AO-80B and AO-80D, were similarly modified during the last refueling

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Peach Bottom Atomic Power Station  
Unit 2YEAR SEQUENTIAL REVISION  
NUMBER NUMBER NUMBER

0 5 0 0 0 2 7 7 9 3 — 0 0 5 — 0 0 0 4 OF 0 4

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

outage. However, their as-left clearances were greater than AO-80A and AO-80C and they did not exhibit binding during the 1/2/93 and 3/2/93 plant shutdowns. In addition, all eight Unit 3 MSIVs have not yet been modified and have not exhibited this type of binding. Therefore Unit 3 is not affected by this event.

Corrective Actions

The valve manufacturer was contacted following the discovery of the less than adequate poppet to valve body clearances. The manufacturer stated that poppet to valve body clearance could be increased to .015 to .020 inches without adversely affecting valve operation. Therefore, both AO-80A and AO-80C were machined to increase the poppet to valve body clearance.

The importance of carefully obtaining accurate, consistent measurements was stressed to the appropriate personnel.

The MSIV maintenance procedure will be revised to include the appropriate poppet to valve body clearance range. Also instructions will be included in the procedure to require additional and redundant valve body and poppet measurements to ensure accurate as-left clearance determinations.

Other similar maintenance procedures will be reviewed for possible enhancement.

The modification design documents will be evaluated and updated to reflect the revised clearance tolerances as appropriate.

Previous Similar Events

No previous similar events were identified in which one or more MSIVs were inoperable beyond the Technical Specification Limiting Conditions for Operation due to inadequate closure time.