

Exelon Nuclear  
Peach Bottom Atomic Power Station  
1848 Lay Road  
Delta, PA 17314-9032

Telephone 717.456.7014  
www.exeloncorp.com

10CFR 50.73

November 9, 2005

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Peach Bottom Atomic Power Station (PBAPS) Units 2 and 3  
Facility Operating License Nos. DPR-44 and DPR-56  
NRC Docket Nos. 50-277 and 50-278

Subject: Licensee Event Report (LER) 2-05-02

This LER reports an unanalyzed condition that occurred for brief periods of time during previous Refueling Outages in 2002 for Unit 2 and 2003 for Unit 3. The condition involved the seismic capability of the Recirculation System during modification activities. In accordance with NEI 99-04, the regulatory commitment contained in this correspondence is to restore compliance with the regulations. The specific methods that are planned to restore and maintain compliance are discussed in the LER. If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,



Joseph P. Grimes  
Plant Manager  
Peach Bottom Atomic Power Station

JPG/djf/CR 377756

Attachment

cc: PSE&G, Financial Controls and Co-owner Affairs  
R. R. Janati, Commonwealth of Pennsylvania  
INPO Records Center  
S. Collins, US NRC, Administrator, Region I  
R. I. McLean, State of Maryland  
US NRC, Senior Resident Inspector

CCN 05-14100



## LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects@nrc.gov](mailto:infocollects@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Peach Bottom Atomic Power Station (PBAPS) Units 2 and 3	2. DOCKET NUMBER 05000 277	3. PAGE 1 OF 4
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## 4. TITLE

Recirculation Motor / Pump Modification Activities Unanalyzed for Postulated Seismic Conditions

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	21	2005	05	- 02 -	0	11	16	2005	PBAPS Unit 3	05000278
									FACILITY NAME	DOCKET NUMBER
										05000

## 9. OPERATING MODE

5

## 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)

- |   |   |  |  |
|---|---|--|--|
| <input type="checkbox"/> 20.2201(b)         | <input type="checkbox"/> 20.2203(a)(3)(i)             | <input type="checkbox"/> 50.73(a)(2)(i)(C)             | <input type="checkbox"/> 50.73(a)(2)(vii)        |
| <input type="checkbox"/> 20.2201(d)         | <input type="checkbox"/> 20.2203(a)(3)(ii)            | <input type="checkbox"/> 50.73(a)(2)(ii)(A)            | <input type="checkbox"/> 50.73(a)(2)(viii)(A)    |
| <input type="checkbox"/> 20.2203(a)(1)      | <input type="checkbox"/> 20.2203(a)(4)                | <input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B)    |
| <input type="checkbox"/> 20.2203(a)(2)(i)   | <input type="checkbox"/> 50.36(c)(1)(i)(A)            | <input type="checkbox"/> 50.73(a)(2)(iii)              | <input type="checkbox"/> 50.73(a)(2)(ix)(A)      |
| <input type="checkbox"/> 20.2203(a)(2)(ii)  | <input type="checkbox"/> 50.36(c)(1)(ii)(A)           | <input type="checkbox"/> 50.73(a)(2)(iv)(A)            | <input type="checkbox"/> 50.73(a)(2)(x)          |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2)                  | <input type="checkbox"/> 50.73(a)(2)(v)(A)             | <input type="checkbox"/> 73.71(a)(4)             |
| <input type="checkbox"/> 20.2203(a)(2)(iv)  | <input type="checkbox"/> 50.46(a)(3)(ii)              | <input type="checkbox"/> 50.73(a)(2)(v)(B)             | <input type="checkbox"/> 73.71(a)(5)             |
| <input type="checkbox"/> 20.2203(a)(2)(v)   | <input checked="" type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C)             | <input type="checkbox"/> OTHER                   |
| <input type="checkbox"/> 20.2203(a)(2)(vi)  | <input type="checkbox"/> 50.73(a)(2)(i)(B)            | <input type="checkbox"/> 50.73(a)(2)(v)(D)             | Specify in Abstract below<br>or in NRC Form 366A |

## 10. POWER LEVEL

0

## 12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

PBAPS Unit 2 &amp; 3, James Mallon, Regulatory Assurance Manager

TELEPHONE NUMBER (Include Area Code)

717-456-3351

## 13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

## 14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE)☒ NO

## 15. EXPECTED SUBMISSION DATE

MONTH DAY YEAR

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

On 9/21/05, Engineering personnel identified that there was insufficient analysis of the interim configuration of system supports for planned modification work to replace the 3B Recirculation (Recirc) motor / pump during the Unit 3 15<sup>th</sup> Refueling Outage. Although the replacement of the 3B Recirc motor / pump was deferred, it was determined that similar modification work was performed in previous refueling outages on Units 2 and 3. During previous outages, the interim condition of associated loop of Recirc / Residual Heat Removal (RHR) piping was not analyzed for seismic conditions. This condition also affected the operability of the Shutdown Cooling (SDC) and Low Pressure Coolant Injection (LPCI) modes of RHR while in the interim configuration. There were no actual safety consequences. There were no seismic events during the brief periods of time while in the interim configuration. The event was caused by less than adequate review of the interim configuration of the Recirc system associated with Recirc motor / pump modification activities. Engineering analyses will be performed to design an acceptable temporary piping support configuration and revise appropriate implementing procedures in support of future Recirc motor / pump replacements.

# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Peach Bottom Atomic Power Station, Units 2 and 3	05000277	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		05	- 02	- 00	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

## Unit Conditions Prior to the Event

At the time the unanalyzed conditions existed in previous refueling outages, the affected unit was in the shutdown condition with Reactor coolant temperature < 212 F. There were no structures, systems or components out of service that contributed to this event.

## Description of the Event

On 9/21/05, Engineering personnel identified that there was insufficient analysis of the interim configuration of system supports for planned modification work to replace the 3B Recirculation (Recirc) motor / pump during the Unit 3 15<sup>th</sup> Refueling Outage. Although the replacement of the 3B Recirc motor / pump was deferred, it was determined that similar modification work was performed in previous recent refueling outages on Units 2 and 3 (see below Table).

**Table – Previous Recent Recirc Motor / Pump Modification Work**

Recirc Loop	Dates of Modification Work Activities	Unit Affected	Refueling Outage
2B Recirc	9/11/02 – 10/7/02	2	14 <sup>th</sup>
3A Recirc	9/17/03 – 10/5/03	3	14 <sup>th</sup>

Just prior to this issue being identified by Engineering on 9/21/05, a Senior Licensed Operator had questioned Engineering concerning the acceptability of a planned activity to install shielding on the 3B Recirc (EIIS: AD) piping (EIIS: PSF). The subsequent investigation by Engineering personnel led to the discovery that the planned temporary piping configuration in support of the 3B Recirc motor / pump replacement had not been analyzed for seismic loading. Specifically, the 'B' loop Recirc / Residual Heat Removal (RHR) piping was not analyzed for structural integrity and was not analyzed to be operable to support the operability of the Shutdown Cooling (SDC) (EIIS: KE) and Low Pressure Coolant Injection (LPCI) (EIIS: BO) modes of RHR for the 'B' loop of RHR.

The concern with the inadequate analysis affecting seismic qualifications was identified prior to work being performed during the 15<sup>th</sup> Refueling Outage for Unit 3.

This report is being submitted pursuant to the following reporting requirements:

1. 10CFR 50.73(a)(2)(i)(B) - Conditions Prohibited by Technical Specifications - Technical Specification Limiting Condition for Operation (LCO) 3.4.8 and 3.9.7 requires that SDC be operable (depending on the various plant conditions in Modes 4 and 5). Since the SDC subsystem could not be considered operable during certain Recirc system interim configurations during motor / pump modifications, conditions prohibited by Technical Specifications occurred during previous Refueling Outages on Units 2 and 3.

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

## Description of the Event (continued)

2. 10CFR 50.73(a)(2)(ii)(B) – Unanalyzed Condition Affecting Plant Safety – During previous refueling outages for Units 2 and 3, there were brief periods of time when the structural integrity of the Recirc system was not analyzed for the interim configuration of Recirc motor / pump maintenance.

## Analysis of the Event

There were no actual safety consequences associated with this event. The Recirc / RHR piping was not placed in an unanalyzed configuration during the recent Unit 3 15<sup>th</sup> Refueling Outage since the work was deferred. No seismic events occurred during the periods of maintenance work when the unanalyzed piping configurations existed during prior Refueling Outages.

The Recirc piping design, material and fabrication is in accordance with ASME Section III, 1980 Edition, including addenda through Winter 1981. This piping is seismically designed and is required to meet applicable design requirements for seismic events.

During Recirc motor / pump replacement activities, the Recirc Motor supports are removed to facilitate subsequent Recirc motor replacement. Additionally, snubbers (EHS: SNB) attached to the pump / motor assembly are removed and rigid supports are installed. The system hangers (EHS: H) are typically pinned to facilitate the rigging activities required for the work. These configurations were not analyzed to meet the system design stress limits required for seismic events. Had a seismic event occurred during the time period that the piping was in the unanalyzed configuration, allowable stress limits could have been exceeded depending on the intensity of the seismic event. Within the last three years, the 3A Recirc motor / pump was replaced during the 14<sup>th</sup> Unit 3 Refueling Outage in September 2003 and the 2B Recirc motor / pump was replaced during the 14<sup>th</sup> Unit 2 Refueling Outage in September 2002. Recirc motor / pump replacement activities are performed typically within a three week window and the various interim configurations that were unanalyzed were a smaller subset of the entire work window time period.

The unanalyzed condition for the 3A and 2B Recirc motor / pump work only existed while the applicable Unit was in shutdown conditions. During shutdown conditions, RHR SDC is required. There are four SDC subsystems per unit. All four take their suction from the 'A' loop of Recirc. There were no actual losses of the ability to maintain the plant in the cold condition.

For the 2B Recirc motor / pump maintenance work, two SDC subsystems (i.e. the 'A' and 'C' SDC subsystems) could be credited for SDC (not assuming the availability of the 'B' and 'D' SDC subsystems which feed the unanalyzed 'B' Recirc discharge piping). Based on a review of plant operating records during the September 2002 time period, there was a time period when the 2D SDC subsystem was being operated and credited for Technical Specification 3.9.7 compliance. During this time, a condition prohibited by Technical Specification 3.9.7 occurred as a result of not performing the Technical Specification Required Action for the SDC being inoperable.

For the 3A Recirc motor / pump maintenance, no shutdown cooling subsystems would be considered operable in the unanalyzed condition. During this time, a condition prohibited by Technical Specification 3.9.7 occurred as a result of not performing the Technical Specification Required Actions for the SDC being inoperable.

**LICENSEE EVENT REPORT (LER)**

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**NARRATIVE** (If more space is required, use additional copies of NRC Form 366A) (17)

Analysis of the Event (continued)

The SDC function, as described in the Technical Specification bases for shutdown conditions, is not required to mitigate design basis events as described in the plant safety analysis. However, SDC is required for removing decay heat to ensure that the plant can be maintained in the cold shutdown condition.

Any two of the four Emergency Core Cooling Systems (ECCS) were required to be operable during plant shutdown conditions. If the Reactor cavity is flooded up and there are no Operations with the Potential to Drain the Reactor Vessel (OPDRVs), then ECCS is not required to be operable. Assuming that the LPCI subsystem associated with the Recirc loop being worked on was inoperable, three other ECCS subsystems could be available for the ECCS function depending on the ECCS system work windows being performed during Recirc motor / pump work.

Additional analysis of this event is being performed in accordance with the Corrective Action Program. Any significant changes in the analyses for this event will be provided in a supplemental LER if necessary.

Cause of the Event

The cause of the event is due to less than adequate review of the interim configuration of the Recirc system associated with Recirc motor / pump modification activities. Modification work performed on the 2B and 3A Recirc motor / pumps was based on a similar modification performed on the 2A Recirc motor / pump during the time period of 9/24/94 – 10/18/94. Engineering reviews performed in 1994, as well as subsequent Engineering reviews for other Recirc motor / pump replacements, did not consider the interim configuration with regards to seismic capability. Further causal evaluation is being performed in accordance with the Corrective Action program.

Corrective Actions

Engineering analyses will be performed to design an acceptable temporary piping support configuration for future Recirc motor / pump work.

Appropriate procedures for Recirc motor / pump replacement for Units 2 and 3 will be revised to ensure that the interim configuration of the Recirc system during replacement work is in an analyzed condition.

An extent of condition review is being performed in accordance with the Corrective Action Program. This review will assess other interim configurations of equipment that is required to be operable during maintenance conditions.

Previous Similar Occurrences

There were no previous LERs identified involving unanalyzed conditions during modification activities.