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Exelon Nuclear

10CFR 50.73

December 15, 2011

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

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

Subject: Licensee Event Report (LER) 2-11-05

Enclosed is a Licensee Event Report concerning an inoperability associated with an offsite power circuit. 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,

Garey L. Stathes
Plant Manager
Peach Bottom Atomic Power Station

GLS/djf/IR 1282238

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

CCN: 11-105

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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.

# LICENSEE EVENT REPORT (LER)

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

| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. PAGE |
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| Peach Bottom Atomic Power Station (PBAPS) Unit 2 | 05000277 | 1 OF 4 |

**4. TITLE**

Inoperability of Qualified Offsite Power Circuit due to Design Weakness

| 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 |
| | | | | | | | | | PBAPS Unit 3 | 05000278 |
| 10 | 26 | 2011 | 11 | - 005 - | 00 | 12 | 15 | 2011 | FACILITY NAME | DOCKET NUMBER |

**9. OPERATING MODE**

1

**10. POWER LEVEL**

100%

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

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

**12. LICENSEE CONTACT FOR THIS LER**

| FACILITY NAME | TELEPHONE NUMBER *(Include Area Code)* |
|---|---|
| PBAPS Unit 2, James M. Armstrong, Regulatory Assurance Manager | 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 11/16/11, Engineering personnel determined that a condition prohibited by Technical Specifications (TS) occurred as a result of two time periods within the last 3 years where the alignment of the two qualified circuits between the offsite transmission network and the onsite Class 1E AC electrical power distribution system did not comply with the NRC General Design Criterion (GDC) 17 (10CFR 50 Appendix A) concerning electric power systems. Contrary to GDC 17, alignments of the offsite power circuits to the station credited for TS compliance did not minimize, to the extent practical, their simultaneous failure under postulated operating and environmental conditions. It was determined that a lack of separation occurred due to the auxiliary power supply to the two credited offsite power source transformers (i.e., the 00X011 and 00X005 transformers) being provided from a common power source. The cause of the event was attributed to an inadequate design of the auxilliary power to the 00X011 transformer. In order to upgrade the reliability of the offsite sources, the 00X011 was installed in the mid-1990s to provide the station with a third offsite power source that could be made available to feed a TS qualified circuit. Interim controls have been established to ensure that the 00X005 and 00X011 are not simultaneously credited as part of the two TS operable qualified circuits. Procedural and / or design changes will be performed as part of the corrective action program to ensure that GDC 17 criteria is met. There were no actual safety consequences associated with this event.

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NARRATIVE

## Unit Conditions Prior to the Discovery of the Event

Unit 2 and Unit 3 were both in Mode 1 operating at approximately 100% rated thermal power when this event occurred in March 2010 and May 2010. There were no other structures, systems or components out of service that contributed to this event.

## Description of the Event

On 11/16/11, Engineering personnel determined that a condition prohibited by Technical Specifications (TS) occurred as a result of two time periods within the last three years where the alignment of the two qualified circuits (EIIS: EA) between the offsite transmission network and the onsite Class 1E AC electrical power distribution system did not comply with the NRC General Design Criterion (GDC) 17 (10CFR 50 Appendix A) concerning electric power systems. This concern was initially identified by Engineering personnel on 10/26/11. Contrary to GDC 17, alignments of the two qualified circuits to the station credited for TS compliance did not minimize, to the extent practical, their simultaneous failure under postulated operating and environmental conditions. It was determined that a lack of separation occurred due to the auxiliary power supply (EIIS: JX) to the two credited offsite power source transformers (i.e., the 00X011 and 00X005 transformers) being provided from a common power source. Therefore, when these two transformers (EIIS: XFMR) were credited simultaneously for the two TS required offsite circuits, one of the transformers would have needed to be considered inoperable.

TS Limiting Condition for Operation (LCO) 3.8.1, AC Sources – Operating, requires that there be two qualified circuits between the offsite transmission network and the Unit 2 and Unit 3 on-site Class 1E AC Electrical Power Distribution System. With one offsite circuit inoperable, the inoperable circuit must be returned to an operable status within 7 days or the unit must be brought to a hot shutdown condition with 12 hours. Because the 00X011 and 00X005 transformers were simultaneously credited for the two TS operable offsite circuits for two time periods that exceeded 7 days (3/18/10 – 3/26/10 and 5/10/10 – 5/28/10), there were two occasions where TS compliance was not met. A third time period (during the last 3 years) existed between 3-7/10 – 3/8/10, but did not exceed the 7 days required action time for one qualified offsite circuit being inoperable.

## Analysis of the Event

This report is being submitted pursuant to:

10CFR 50.73(a)(2)(i)(B) – Condition Prohibited by Technical Specifications – Because of the crediting of the 00X011 and 00X005 transformers for the two TS operable offsite circuits for two time periods that exceeded 7 days (3/18/10 – 3/26/10 and 5/10/10 – 5/28/10), there were two occasions where TS compliance was not met. TS LCO 3.8.1,

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**Analysis of the Event, continued**

AC Sources – Operating, requires that there be two qualified circuits between the offsite transmission network and the Unit 2 and Unit 3 on-site Class 1E AC Electrical Power Distribution System. With one offsite circuit inoperable, the inoperable circuit must be returned to an operable status within 7 days or the unit must be brought to a hot shutdown condition with 12 hours. Because the two time periods (3/18/10 – 3/26/10 and 5/10/10 – 5/28/10) exceeded the allowed Required Action times of the TS, this event was determined to be a condition prohibited by TS.

Two qualified circuits between the offsite transmission network and the onsite Class 1E Distribution System and four separate and independent Diesel Generators ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an abnormal operational transient or a postulated design basis event. There are three independent sources of offsite power. One source is an overhead 230 kV transmission line which is stepped down to 13 kV by the 2SU startup transformer (00X003). The second source is the 230 kV overhead transmission line that is stepped down to 13 kV by the 343 startup transformer (00X011). The third source is from the tertiary winding of the #1 autotransformer (which connects the 500 kV system to the 230 kV system transmission lines) that is stepped down to 13 kV by the 3SU startup transformer (00X005).

For limited time periods when using the 00X005 and 00X011 transformers as the startup sources to feed the two TS qualified offsite circuits, a GDC 17 separation concern existed. It was determined that a lack of separation occurred due to the auxiliary power supply to the two credited offsite power source transformers (i.e., the 00X011 and 00X005 transformers) being provided from a common power source. Therefore, when these two transformers were credited simultaneously for the two TS required offsite power circuits, one of the transformers would have needed to be considered inoperable. The auxiliary power operates the transformer load tap changers as well as the cooling fans and therefore, provides power to equipment that is required to maintain the transformers operable. However, this common auxiliary power supply is equipped with redundant feeds. In the event the normal feed was lost, automatic switchover to a backup auxiliary power feed would have occurred. Although this auxiliary power backup feature provides substantial assurance that a loss of auxiliary power would not happen concurrently to the 00X005 and 00X011 transformers, it could not be credited as meeting GDC 17 since separate auxiliary power feeds were not supplying the two transformers.

There were no actual safety consequences associated with this event. During the time periods of exposure, there were no design basis events and no challenges to the offsite power circuits. Had a design basis event occurred during the time period of exposure, assurance exists that the control power would have been available due to the robust nature of the backup power to the auxiliary power bus.

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NARRATIVE

## Cause of the Event

The cause of the event was attributed to an inadequate design of the auxilliary power to the 00X011 transformer. In order to upgrade the reliability of the offsite sources, the 00X011 was installed in the mid-1990s to provide the station with a third independent offsite power source that could be made available to feed a TS offsite power circuit. Although the auxiliary power to the transformer was designed to have a robust backup, it was not designed in a manner that assured separation with the 00X005 transformer to minimize, to the extent practical, the likelihood of a simulataneous failure of the 00X005 and 00X011 transformers. This condition affected the auxiliary power power supply that feeds the load tap changers for the 00X005 and 00X011 transformers and not the separation of the transformers themselves.

## Corrective Actions

Interim controls have been established to ensure that the 00X005 and 00X011 are not simulateously credited as part of the two TS operable offsite power circuits.

Procedural and / or design changes will be performed as part of the corrective action program to ensure that GDC 17 criteria is met.

## Previous Similar Occurrences

There were no previous events identified involving an inoperable offsite power circuit as a result of a design weakness.