Exelon Generation

10CFR 50.73

CCN: 18-76

August 10, 2018

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

Peach Bottom Atomic Power Station (PBAPS) Unit 2 and Unit 3
Renewed Facility Operating License No. DPR-44 and DPR-56
NRC Docket No. 50-277 and 50-278

Subject: Licensee Event Report (LER) 2-18-002

Enclosed is a Licensee Event Report concerning a violation of Technical Specifications caused by a failure of an Emergency Diesel Generator. In accordance with NEI 99-04, the regulatory commitment contained in this correspondence is to restore compliance with the regulations. The specific methods that have been 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 Jim Kovalchick at 717-456-3351.

Sincerely,

David A. Henry
Director Site Operations
Peach Bottom Atomic Power Station

DAH/dnd/IR 4146926

Enclosure

cc: US NRC, Administrator, Region I
US NRC, Senior Resident Inspector
R. R. Janati, Commonwealth of Pennsylvania
S. Gray, State of Maryland
B. Watkins, PSE&G, Financial Controls and Co-Owner Affairs

NRC FORM 366 (04-2018) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. Facility Name	2. Docket Number	3. Page
Peach Bottom Atomic Power Station Unit 2	05000277	1 OF 4

4. Title

Emergency Diesel Generator Air Inlet Check Valve Failure Results in a Condition Prohibited by Technical Specifications

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
									Peach Bottom Atomic Power Sta. Unit 3	05000278
06	13	2018	2018	- 002	- 0	08	10	2018	Facility Name	Docket Number 05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. Power Level	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
100%	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ Other (Specify in Abstract below or in NRC Form 366A)	

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
James M. Kovalchick, Regulatory Assurance Manager	717-456-3351

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to ICES		Cause	System	Component	Manufacturer	Reportable to ICES
B	EK	V	NA	Y						

14. Supplemental Report Expected	15. Expected Submission Date	Month	Day	Year
☐ Yes (If yes, complete 15. Expected Submission Date) ☒ No				

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On 6/13/18, during a surveillance test of the E-3 Emergency Diesel Generator, higher than normal engine temperatures were noted and abnormal noises were heard while running the engine at full load. The engine was shut down and troubleshooting initiated. Inspection of the turbocharger air inlet check valve discovered a pin used to hold the check valve disc in place was missing. The pin had become dislodged and had traveled to the turbocharger, where it caused damage to the rotating blades of the turbocharger. Repairs were performed and the diesel generator was placed back in service on 6/23/18.

Investigation of the failure determined that inadequate repairs during maintenance in April 2017 resulted in the pin loosening at certain engine loads. This event is being reported as required by 10CFR 50.73(a)(2)(i)(B).

There were no actual safety consequences as a result of this event.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Peach Bottom Atomic Power Station Unit 2	05000277	2018	- 002	- 0

NARRATIVE

Unit Conditions Prior to the Event

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

Description of Event

On 6/13/18, a periodic surveillance test was being performed on the E-3 Emergency Diesel Generator (EDG). The test is performed to verify the EDG can slow start and run at full load for at least one hour. The EDG was started and after approximately 40 minutes, brought up to full load (2700 – 2800 kW). After approximately 30 minutes of operating at full load, temperature readings indicated higher than normal exhaust temperatures at several locations. After further observation and indications of higher than normal operating temperatures, the decision was made to shut down the engine. As the EDG was being shutdown, a rattling noise was heard in the area of the turbocharger. The EDG operated at full load for approximately 55 minutes.

Troubleshooting centered around the turbocharger air inlet check valve, which allows for an increased flow of air to the turbocharger air inlet as the load on the engine increases. Inspection identified a pin used to hold the check valve disk to the pivot shaft was missing and had entered the air inlet piping. Air intake for the engine's two turbochargers is initially through a common pipe, which splits to direct air to each turbocharger. The dislodged pin bounced between the two turbochargers, causing damage to the aluminum turbocharger blades. The damage resulted in aluminum particles being distributed through the air intake, lube oil and exhaust systems. Aluminum particles were also found in the cylinders of the engine. Larger aluminum particles were caught in the intercooler fins.

Repairs included replacing the air inlet check valve, replacing the turbochargers, removing larger particles of the impeller blades from the intercooler inlet, cleaning the cylinder liners, replacing piston rings and flushing the lubricating oil system.

Post maintenance testing was performed, and the diesel generator was placed back in service on 6/23/18.

Analysis of Event

The onsite standby power source for the four 4 kV emergency buses in each unit consists of four EDGs. Each EDG can supply power to two 4 kV buses, one for each unit. Technical Specification (TS) 3.8.1, Condition B, provides required actions when one EDG is inoperable. These actions include determining that the remaining EDGs are not inoperable due to a common cause failure and restoring the EDG to an operable status within 14 days.

The pin that had become dislodged from the E-3 EDG air inlet check valve had been replaced during preventive maintenance performed in April 2017. The pin was manufactured on site and was unique to the

NARRATIVE

E-3 EDG. The air inlet check valves for the three remaining EDGs were inspected with no concerns identified. All three EDGs remained operable while E-3 was being repaired.

Repairs were completed, post-maintenance testing performed and the E-3 EDG was declared operable at 7:10 pm on 6/23/18. As a result of this event, the E-3 EDG was inoperable for repairs for approximately 9 days, 21 hours. The previous surveillance test was performed on 5/20/18, 24 days prior to the failed surveillance on 6/13/18. Analysis determined the E-3 EDG would have performed its design function at the time of the May surveillance test, but potentially not afterward. As a result, the E-3 EDG is considered to have been inoperable for a total of approximately 34 days. This exceeds the TS 3.8.1 allowed outage time of 14 days. As a result, this event is being reported in accordance with 10CFR 50.73(a)(2)(i)(B), for any operation or condition prohibited by Technical Specifications.

There were no actual safety consequences as a result of this event. The plant's safety analysis assumes one EDG is unavailable. If a design basis event had occurred during the time the E-3 EDG was inoperable, the units could have been safely shutdown with the three remaining EDGs.

Cause of the Event

The cause was determined to be less than adequate repairs to the air inlet check valve during maintenance performed in April of 2017. Several causal factors existed, including shaft bushing wear and inadequate shaft to disk fit, which resulted in higher vibration of the shaft and disk. With the higher vibration, tolerances for the interference fit of the pin to the disk shaft were not adequate to prevent the pin from becoming dislodged.

Corrective Actions

The valve disk, shaft and bushings were replaced and repairs to the EDG were performed as described above. Additional causal factors and corrective actions are documented in the corrective action program.

Previous Similar Occurrences

No previous similar occurrences have been identified.