



10CFR 50.73

November 22, 2016

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

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

Subject: Licensee Event Report (LER) 3-16-001

Enclosed is a Licensee Event Report concerning a condition that could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident. The loss of safety function was the result of a pipe leak in a drain line for the High Pressure Coolant Injection system. 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 Armstrong at 717-456-3351.

Sincerely,

A handwritten signature in dark ink, appearing to read "Patrick D. Navin", written over a light blue horizontal line.

Patrick D. Navin
Plant Manager
Peach Bottom Atomic Power Station

PDN/dnd/IR 2720241

Attachment

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

CCN: 16-103



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/>)

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 and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.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.

1. FACILITY NAME

Peach Bottom Atomic Power Station Unit 3

2. DOCKET NUMBER

05000278

3. PAGE

1 OF 3

4. TITLE

Leak in High Pressure Coolant Injection Drain Pipe Results in a Loss of Safety Function

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	26	16	2016	- 001	- 0	11	22	16	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. POWER LEVEL	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

James M. Armstrong, 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	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	BJ	PSP	Unkwn	N					

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 9/26/16, at approximately 1845 hours, investigation of a water leak on a 3/4" diameter drain line for the High Pressure Coolant Injection (HPCI) turbine determined there was a through-wall flaw resulting in a leak of approximately 2 drops per minute. The pipe is classified as ASME Code Class 2 exempt and operates above 200 degrees F. As a result, the HPCI system was declared inoperable. The flaw was the result of a liquid drop impingement erosion process caused by the flow characteristics upstream of the orifice. The pipe section was replaced and the HPCI system was declared operable on 9/28/16 at approximately 2102 hours.

There were no actual consequences as a result of the leak.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Peach Bottom Atomic Power Station Unit 3	05000278	2016	- 001	- 0

NARRATIVE**Unit Conditions Prior to the Event**

Unit 3 was 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

The High Pressure Coolant Injection (HPCI) system (EISS: BJ) is part of the emergency core cooling system that assures that the reactor is adequately cooled in the event of a small break loss of coolant accident. The system permits the reactor to be shut down while maintaining sufficient water inventory until the reactor vessel is depressurized and the low pressure coolant injection system maintains core cooling. The system uses a steam-driven pump with suction from the condensate storage tank or the suppression pool, and injects water into the reactor vessel via one of the two main feedwater lines. The turbine is driven by steam from a main steam line and exhaust steam is discharged to the suppression pool. To remove condensation that forms in the turbine, drain lines are in place that send water to a drain pot. Restricting orifices are located on the 3/4" diameter drain lines to reduce pressure prior to the water entering the drain pot. The drain lines are classified as ASME Code Class 2 exempt and operate above 200 degrees F when the HPCI pump is operating.

On 9/26/16, investigation of a water leak on one of the 3/4" diameter drain lines for the HPCI turbine determined there was a through-wall flaw resulting in a leak of approximately 2 drops per minute. Pressure boundary integrity is required for system operability. As a result, the HPCI system was declared inoperable at approximately 1845 hours in accordance with Technical Specification 3.5.1.C. The pipe section was replaced and the HPCI system was declared operable on 9/28/16 at approximately 2102 hours. The elapsed time from the discovery of the failure to when the equipment was returned to service was approximately 50 hours and 17 minutes.

Cause and Analysis of the Event

The affected section of the pipe was removed. Inspection identified pitting on the interior surface of the pipe, just upstream of the pressure reducing orifice. The flaw was the result of a liquid drop impingement erosion process caused by the flow characteristics upstream of the orifice. A review of maintenance records dating back to the 1980s identified no previous replacements of this pipe; it is likely it was installed as part of original construction. The pump was last operated the previous day (9/25/16) and no leaks were noted. However, the failure mechanism (erosion) requires a significant period of time to develop into a through-wall flaw.

HPCI is a single train system. Therefore, this event is being reported in accordance with 10CFR 50.73(a)(2)(v)(D) as a condition that could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident. This issue was also reported to the NRC in accordance with 10CFR 50.72(b)(3)(v)(D) on 9/27/16 at 0020 hours by EN# 52264.

**LICENSEE EVENT REPORT (LER)
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2. DOCKET NUMBER**05000278****3. LER NUMBER**

YEAR	SEQUENTIAL NUMBER	REV NO.
2016	- 001	- 0

NARRATIVE

There were no actual consequences as a result of the leak. If a design basis event had occurred, the HPCI system would have been able to perform its design function. If a failure were to occur that would have prevented HPCI from performing its design function, the Automatic Depressurization System would have reduced reactor pressure to allow the low pressure cooling systems to maintain reactor vessel level and provide core cooling.

Corrective Actions

The affected section of pipe and the orifice were replaced. The second HPCI turbine drain line was inspected, along with the two drain lines on the Unit 2 HPCI turbine, and no leaks were identified. Additional actions are planned to perform inspections of similar drain piping that contain orifices.

Previous Similar Occurrences

Based on a review of maintenance records, no previous similar occurrences of through-wall flaws of this piping have occurred.