



PEACH BOTTOM--THE POWER OF EXCELLENCE

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION

R. D. 1, Box 208

Delta, Pennsylvania 17314

(717) 456-7014

October 10, 1990

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 condition outside design basis concerning wall penetration seals not floodtight due to programmatic weakness.

Reference: Docket No. 50-277
Report Number: 2-90-023
Revision Number: 00
Event Date: 09/10/90
Report Date: 10/10/90
Facility: Peach Bottom Atomic Power Station
RD 1, Box 208, Delta, PA 17314

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(ii) and 10 CFR 50.73(a)(2)(v).

Sincerely,

cc: J. J. Lyash, USNRC Senior Resident Inspector
T. T. Martin, USNRC, Region I

9010250112 901010
PDR ADOCK 05000277
S PDC

IE22
11

bcc: ANI Library
R. A. Burricelli, Public Service Electric & Gas
Commitment Coordinator
Correspondence Control Program
T. M. Gerusky, Commonwealth of Pennsylvania
INPO Records Center
R. I. McLean, State of Maryland
C. A. McNeill, Jr. - S26-1, PECO President and COO
D. B. Miller, Jr. - SMO-1, Vice President - PBAPS
Nuclear Records - PBAPS
H. C. Schwemm, VP - Atlantic Electric
J. Urban, Delmarva Power

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Peach Bottom Atomic Power Station - Unit 2

DOCKET NUMBER (2)
0 5 0 0 0 2 7 7 1 OF 0 5

PAGE (3)
1 OF 5

TITLE (4)
Condition Outside Design Basis Concerning Wall Penetration Seals Not Floodtight
Due To Programmatic Weakness

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(S)																	
0	9	1	0	9	0	0	2	3	0	0	1	0	1	0	9	0	0	5	0	0	0	2	7	7	1	0	5
											Peach Bottom - Unit 3		0 5 0 0 0 2 7 8														
													0 5 0 0 0														

OPERATING MODE (9) N

POWER LEVEL (10) 0 7 1 4

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(e)	<input type="checkbox"/> 50.73(e)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(1)	<input checked="" type="checkbox"/> 50.73(e)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(e)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(e)(2)(viii)(A)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(e)(2)(viii)(B)	
<input type="checkbox"/> 20.405(a)(1)(vi)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(e)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: A. A. Fulvio, Regulatory Engineer

TELEPHONE NUMBER: 7 1 4 5 6 - 7 0 1 4

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On 9/10/90, Engineering personnel discovered an unqualified external temporary penetration seal assembly in the south wall of the Unit 2 High Pressure Service Water (HPSW)/Emergency Service Water (ESW) Pump Motor area compartment. This condition could compromise the watertight integrity of this area in the event of a local external flood. On 9/14/90, it was discovered that an unqualified temporary seal in a Standby Gas Treatment (SBGT) System conduit could result in SBGT inoperability if an internal flood occurred in the High Pressure Coolant Injection System compartment. As a result of these two deficiencies additional review on 9/24/90 revealed an unqualified seal in the east wall of the Unit 3 HPSW/ESW Pump Motor area compartment. These three deficiencies were outside the design basis of the plant. The cause of the event is due to programmatic weaknesses involving installation of penetration seals during modifications. There were no actual safety consequences. The three seal assemblies were replaced with qualified seals. Both trains of SBGT were operable by 9/15/90. An installation procedure was provided with interim guidance to require an independent review and 10 CFR 50.59 review be performed prior to flood seal work. A review of external flood barriers will be performed.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Peach Bottom Atomic Power Station Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 2 7 7							LER NUMBER (6)			PAGE (3)		
								YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
								9 0	0 2 3	0 0	0 2	OF	0 5

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

Requirements for the Report

This report is being submitted pursuant to 10 CFR 50.73 (a)(2)(ii)(B) to report a condition involving external and internal flood seals (EIIS:SEAL) affecting the High Pressure Service Water (HPSW)(EIIS:BJ), Emergency Service Water (ESW)(EIIS:LB), and Standby Gas Treatment (SBGT) Systems. The report is also being submitted pursuant to 10 CFR 50.73(a)(2)(v) to report a condition that alone could have prevented the SBGT (EIIS:BH) System from performing its safety function.

Unit Status at Time of Discovery of Events

Unit 2 HPSW/ESW Pump Motor Area Compartment (EIIS:MK) Flood Seal Assembly
9/10/90:

- Unit 2 in RUN mode at 74% thermal power
- Unit 3 in RUN mode at 50% thermal power

SBGT Internal Conduit (EIIS:CND) Flood Seal 9/14/90:

- Unit 2 in RUN mode at 80% thermal power
- Unit 3 in RUN mode at 100% thermal power
- 'A' SBGT Train in Test
- 'B' SBGT Train in Standby

Unit 3 HPSW/ESW Pump Motor Area Compartment Flood Seal 9/24/90:

- Unit 2 in RUN mode at 82% thermal power
- Unit 3 in RUN mode at 100% thermal power

There were no other structures, systems, or components known to be inoperable that contributed to these events.

Description of the Event

On 9/10/90, Engineering personnel discovered an unqualified external flood penetration seal assembly in the south wall of the Unit 2 HPSW/ESW Pump Motor area compartment. This assembly consisted of an unqualified core bore seal through the wall as well as an unqualified internal seal in the conduit that passes through the core bore. This was discovered during a review of temporary penetration seals initiated as a result of an event at the Limerick Generating Station involving improper penetration seals. This condition could compromise the watertight integrity of the Unit 2 HPSW/ESW Pump Motor area compartment in the event of a local flood as indicated in the Updated Final Safety Analysis Report (UFSAR). The compartment contains the four Unit 2 HPSW Pump Motors (EIIS:MO) as well as one of the two plant ESW Pump Motors. Installation of a qualified seal for the core bore was completed on 9/10/90. The internal conduit seal was installed on 9/14/90. As a result of engineering preparation of a safety evaluation related to the temporary penetration seal review performed on 9/10/90, an additional condition was discovered on 9/14/90 that was outside the design basis of the plant and could cause the SBGT System to become inoperable as a result of an internal flood of the Unit 3 High Pressure Coolant Injection (HPCI) System (EIIS:BJ) Compartment. An internal temporary seal of

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Peach Bottom Atomic Power Station Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 2 7 7 9 0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0	23	00	03	OF 05

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

a conduit running from the HPCI System Compartment to the SBTG Room was not qualified for internal flood protection. This seal was part of the 9/10/90 review but was not realized to cause a SBTG system operability problem at that time. In the event of an internal Unit 3 HPCI System compartment flood, condensate would enter the conduit and flow into two SBTG control panels (EIIS:PL) and cause grounding of the controls (EIIS:JC) for the SBTG filter train heaters (EIIS:EHTR) which would cause SBTG System inoperability. At 1400 on 9/14/90, the SBTG System which is common for Units 2 and 3 as well as the Unit 2 and 3 secondary containments (EIIS:NG) were declared inoperable. Repairs were immediately made on one of the SBTG control panels by disconnecting a spare conduit which interconnected the two control panels thereby restoring one of the two trains of SBTG and the secondary containments to operability at 1405. The conduit penetration seal was resealed and declared operable on 9/15/90 after 24 hour seal curing time.

As a result of these conditions, an additional review was initiated on other permanent flood seals. On 9/24/90, a penetration on the external wall of the Unit 3 HPSW/ESW Pump Motor area compartment was found not to be properly sealed for an external flood as described in the UFSAR. Installation of a qualified penetration seal was completed on 9/24/90.

Prompt notification to the NRC concerning the Unit 2 HPSW/ESW compartment seal assembly, the SBTG conduit seal and the Unit 3 HPSW/ESW compartment seal were made on 9/10/90, 9/14/90, and 9/24/90 respectively.

Cause of the Event

The cause of the improperly sealed penetrations is due to programmatic weakness in the modification control process. The three penetration seal assemblies in this event became unqualified as a result of modifications. The Unit 2 HPSW/ESW area compartment seal assembly was temporarily sealed in May, 1990 as part of a modification concerning an upgrade of existing accident monitoring instrumentation at the HPSW/ESW pump structure. The temporary seal in the conduit between the SBTG and HPCI rooms was temporarily installed in April, 1990 as part of a modification involving the relocation of SBTG Heater relays. These temporary seals were qualified as a fire seal but not as a flood seal. No specification for use of temporary penetration flood seal existed for use in modifications. These walls had been identified as flood walls prior to performing work; however, the safety significance of installing an unqualified temporary seal was not realized. It was determined that the installation procedure IP 5.8, "Procedure for Installation and Inspection of Penetration Seals and Encapsulation" did not contain adequate independent review of the penetration seal work release form nor did it contain controls to perform 10 CFR 50.59 reviews prior to performing flood penetration seal work. The lack of a specification for a temporary flood seal is considered to be a contributing cause to this event.

For the Unit 3 HPSW penetration seal, the exact cause of the improper seal is unknown. However, similar to the above seal deficiencies, the cause is also believed to be inadequate installation review associated with an early plant modification before 1982 concerning outside lighting photocells at the HPSW/ESW Pump Structure.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Peach Bottom Atomic Power Station Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 2 7 7 9 0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0 2 3	0 0	0 4	0 5	

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

Analysis of the Event

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

Unit 2 and 3 are designed to be safely shutdown in the event of a maximum flood of 1,750,000 cubic feet per second (CFS) river flow. This flood corresponds to a plant elevation level of 136.9 feet which includes maximum wave run-up. The normal plant grade (i.e. ground level) is at elevation 116 feet. A flood occurring such that the river height reaches the 115 foot level (i.e. 1,000,000 cfs) has a recurrence rate of once every millenium. The HPSW/ESW compartments are designed to be flood protected up to 137.5 feet. The unqualified seal on the Unit 2 HPSW/ESW Compartment was at the 125 foot level and the Unit 3 HPSW/ESW Compartment seal was at the 123 foot level. In the event of a maximum design flood, leakage would enter the HPSW/ESW compartments. Because this leakage would not enter the compartment until above 123 feet and this leakage would be collected and pumped out by the sump collection system (EIIS:WH), the HPSW and ESW pumps would remain operable. Unit 2 and 3 Technical Specifications require the plants to be scrammed and placed in cold shutdown when river elevation reaches 114 feet.

The HPCI Compartment is designed to be flood protected up to 111 feet elevation to protect flooding of other Core Standby Cooling System (CSCS) compartments due to a HPCI suction pipe rupture that would flood the HPCI Compartment. If the HPCI suction pipe rupture caused flooding of the Unit 3 HPCI Compartment, the water level could potentially rise to above the 106 feet elevation which is the level of the conduit seal where water would flow through the unqualified internal conduit penetration seal and into two SGBT control panels thereby causing grounding of the controls for the SGBT filter train electric heaters which would cause SGBT system inoperability.

The safety objective of the SGBT System is to limit ground level radioactive release from the Reactor Building by releasing filtered primary and secondary containment atmosphere to the main stack. The purpose of the electric heaters are to maintain relative humidity through the filter trains below 70%. This is to ensure efficient removal of methyl iodine by the charcoal filters (EIIS:FLT). Reduced efficiency of the filters during a design basis event in either unit could have resulted in offsite doses in excess of that analyzed.

Corrective Actions

The Unit 2 HPSW/ESW area compartment core bore seal was replaced with a qualified seal on 9/10/90. The internal conduit seal was installed on 9/14/90.

The SGBT conduit seal was replaced with a qualified seal on 9/15/90.

The Unit 3 HPSW/ESW area compartment seal was replaced with a qualified seal on 9/24/90.

IP 5.8 was provided with interim guidance to require an additional Installation Engineer to perform an independent review of the penetration seal work release form prior to the start of any seal work. Additionally, the interim guidance requires a 10 CFR 50.59 review be performed by Engineering personnel prior to start of work involving a flood or High Energy Line Break (HELB) related seal.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Peach Bottom Atomic Power Station Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 2 7 7	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 0	— 0 2 3	— 0 0	0 5	OF 0 5

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

IP 5.8 will be permanently revised to reflect the above interim guidance and a temporary flood seal specification will be approved.

As a result of the Unit 2 HPSW/ESW area compartment and the SBTG internal conduit temporary seals not being qualified, sample review of other permanent flood seals was performed by Engineering. This resulted in discovering the Unit 3 HPSW/ESW area compartment seal being unqualified.

A longer term engineering review of permanent external flood and HELB barriers will be performed to verify the integrity of external flood and HELB walls.

Internal flood seals were previously verified floodtight as a result of LER 2-88-29 (See Previous Similar Events Section).

Previous Similar Events

Two previous similar events were identified concerning deficiencies in penetration seals. LER 2-88-29 concerned various deficient penetration seals that could have resulted in internal flooding between Core Standby Cooling Systems, Reactor Cooling Isolation Cooling and Torus Compartments in the event of a single failure of condensate piping. Corrective actions, in part, consisted of reviews and repair of internal flood related penetration seals that were not firewalls upgraded because of 10 CFR Appendix R. These corrective actions could not have prevented occurrences of this event because they did not address programmatic controls for temporary seals nor external flood seals. LER 3-88-11 concerned an unsealed penetration in the floor of the Unit 3 HPSW/ESW area compartment. Corrective actions consisted of sealing the hole and performing a visual inspection of any other openings. These corrective actions could not have prevented occurrence of this event since the inspection of penetration was limited to only a visual inspection and not to penetration seal specifications.