CCN 90-14224

PEACH BOTTOM—THE POWER OF EXCELLENCE

PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
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December 6, 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 potential loss of primary containment due to a leak in the backup nitrogen supply to a containment purge isolation valve boot seal.

Reference:	Docket No. 50-277
Report Number:	2-90-032
Revision Number:	00
Event Date:	11/06/90
Report Date:	12/06/90
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,

John Gray

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IE22
1/1

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NRC Form 366
(9 83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO 3150-0104
EXPIRES 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Peach Bottom Atomic Power Station - Unit 2	0 5 0 0 0 2 7 7	1 OF 0 5

TITLE (4) Potential Loss of Primary Containment Due to a Leak in the Backup Nitrogen Supply to a Containment Purge Isolation Valve Boot Seal

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 5 0 0 0
1 1	0 6	9 0	9 0	—	0 3 2	—	0 0	1 2	0 6	9 0		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N		20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
0 9 8		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
A. A. Fulvio, Regulatory Engineer	7 1 7 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 NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On 11/5/90, at 0830 hours, a leak in a backup nitrogen (N2) supply line developed which had the potential to degrade primary containment in the event of a LOCA combined with a seismic event or a loss of offsite power. This backup nitrogen line supplies pressure to the boot seal of an Inboard Containment Purge Isolation Valve in the event of a loss of normal instrument air. At the time of this event an Outboard Containment Purge Isolation valve was blocked with its boot seal deflated. Although primary containment integrity was never compromised, a potential containment leak path existed through the boot seals of the inboard and outboard Containment Isolation Valves. The N2 leak was repaired. A modification is scheduled to be installed during the upcoming Unit 2 Refueling Outage (1/91) which will replace the backup bottles with nitrogen supplied directly from the Containment Atmospheric Dilution System. One previous similar LER was identified.

Requirements for the Report

This report is required per 10 CFR 50.73 (a)(2)(ii) due to a condition outside the design basis and 10 CFR 50.73 (a)(2)(v) due to an event that alone could have prevented the fulfillment of safety function.

Unit Conditions at Time of Event

Unit 2 was in the RUN mode at 98% rated thermal reactor power. Air Operated (AO)-2521A "Torus Air Purge Outboard Isolation Valve" (EIIS:ISV), and its associated pneumatic supply was blocked closed with its boot seal deflated for maintenance. The AO-2520 "Drywell Air and N2 Purge Inboard Isolation Valve" and AO-2521B "Torus Air Purge Inboard Isolation Valve" were blocked closed in support of AO-2521A maintenance (See figure 1 for valve layout).

Description of Event

On 11/5/90, at 0830 hours, a leak in a backup instrument gas supply line developed which had the potential to degrade primary containment (EIIS:JM) in the event of a LOCA combined with a seismic event or a loss of offsite power. An Operator (Utility, non-licensed), in the process of replacing the compressed Nitrogen (N2) gas cylinder that supplies backup gas pressure to the AO-2505 valve, disturbed the N2 supply line to AO-2520 valve which caused it to leak. The Operator made a temporary repair and then immediately notified the Shift Supervisor (Utility, Licensed) in the control room that the leak was stopped but required maintenance. The Shift Supervisor initiated a Maintenance Request Form (MRF) which was to be worked the following day.

On 11/6/90, at 0950 hours, during performance of the daily surveillance of the gas supply bottle pressures, the cylinder which supplies AO-2520 was found to be empty. An Equipment Trouble Tag (ETT) was in place identifying the tubing leak. When the cylinder was replaced the Operator (Utility, nonlicensed), different from the previous day, noted that the leak was bleeding down the gas pressure rapidly and isolated the bottle. He then notified the Control Room Supervisor (Utility, Licensed) who then requested immediate repair. At this time the System Engineer (Utility, non-licensed) became involved and noted that the boot seal was deflated on the AO-2521A which is in line with the AO-2520.

The importance of the backup N2 supply was not well understood and the question of operability involved analysis. Once the determination was made, AO-2520 was declared inoperable and Tech Spec 3.7.D.2 was entered for an inoperable isolation valve at 1535 on 11/6/90. The tubing was repaired at 1545 and AO-2520 was declared operable.

Since an outboard valve, AO-2521A, was already considered an inoperable isolation valve for this penetration, Tech Spec 3.7.D.2 did not apply. Tech Spec 3.7.A.3, involving containment integrity, should have been entered instead. Tech Spec 3.7.A.3 allows 24 hours to reestablish containment integrity, or the reactor must be placed in cold shutdown within the next 24 hours. Therefore, in this event, Tech Spec compliance was met.

The valve operator and boot seal are supplied by the Instrument Air System (EIIS:LD) under normal operation. In the event of a loss of the instrument air, N2 is supplied

from a compressed gas cylinder to maintain boot seal pressure. For a Design Basis seismic event or a loss of offsite power, the normal instrument air supply to the AO valve would be lost, and the AO-2520 boot seal would be supplied by the gas cylinder to maintain containment integrity. Although instrument air was supplying the boot seal and primary containment integrity was never compromised, the backup N2 supply line was considered to be degraded and thus reportable. The NRC was notified of the event on 11/6/90 at 1603 hours.

Cause of Event

The cause of the event was a leak in the backup N2 supply tubing. The effect of loss of N2 bottle supply on AO valve operability was not clearly understood by the shift. The backup N2 system is not described in Tech Specs. Clear direction was not provided to the shift in the daily surveillance test as to the determination of operability of the valve. This contributed to the analysis required to determine operability, the inappropriate temporary repair made on the backup N2 tubing being considered acceptable, and the less than adequate priority placed on repair of the tubing.

A contributing factor of this event was that the act of changing N2 bottles can cause undue stress on the tubing causing leakage.

A related weakness identified during this event was that Tech Spec 3.7.D.2 was misinterpreted by several people in Shift Management and the Technical Staff. The correct Tech Spec was determined during the event investigation.

Analysis of Event

No actual safety consequences occurred as a result of this event. Although safety grade instrument N2 was lost to AO-2520, and AO-2521A was inoperable with its boot seal deflated, primary containment was never actually compromised. The boot seal for AO-2520 was inflated during the entire event by the normal instrument air system. However, if a design basis LOCA with a seismic event or a loss of offsite power had occurred during this event, the normal instrument air supply to the AO would have been lost and the boot seal for AO-2520 would not have been able to remain inflated. This could have created a leak path out of primary containment through the deflated boot seals of AO-2520 and AO-2521A. Historical data indicates that the leakage would be within 10CFR50 App J and Tech Spec limits.

Corrective Actions

The leak was repaired by 1545 hours on 11/6/90. The Operators have been informed of the significance of N2 bottles and associated operability concerns. The surveillance test has been temporarily changed to provide clear operability criteria. The Operators will be informed of the proper interpretation of TS 3.7.D.2.

Modification 1316 is scheduled to be installed during the upcoming Unit 2 Refueling Outage (1/91). This modification replaces the backup bottles with nitrogen supplied directly from the Containment Atmospheric Dilution System. If the daily N2 bottle Surveillance is still required following the modification it will be revised to include a per day leak rate acceptance criteria and clear operability criteria.

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

Previous Similar Events

One previous similar LER was identified (LER 2-80-30/1T-0) which involved a potential loss of primary containment involving the Backup Nitrogen System. In this event the backup N2 supply valve was found closed. No corrective action was taken other than reestablishing N2 supply. Therefore, the corrective actions taken would not have prevented this event.

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Peach Bottom Atomic Power Station Unit 2	0 5 0 0 0 2 7 7	9 0	— 0 3 2	— 0 0	0 5 OF 0 5

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

Containment Purge

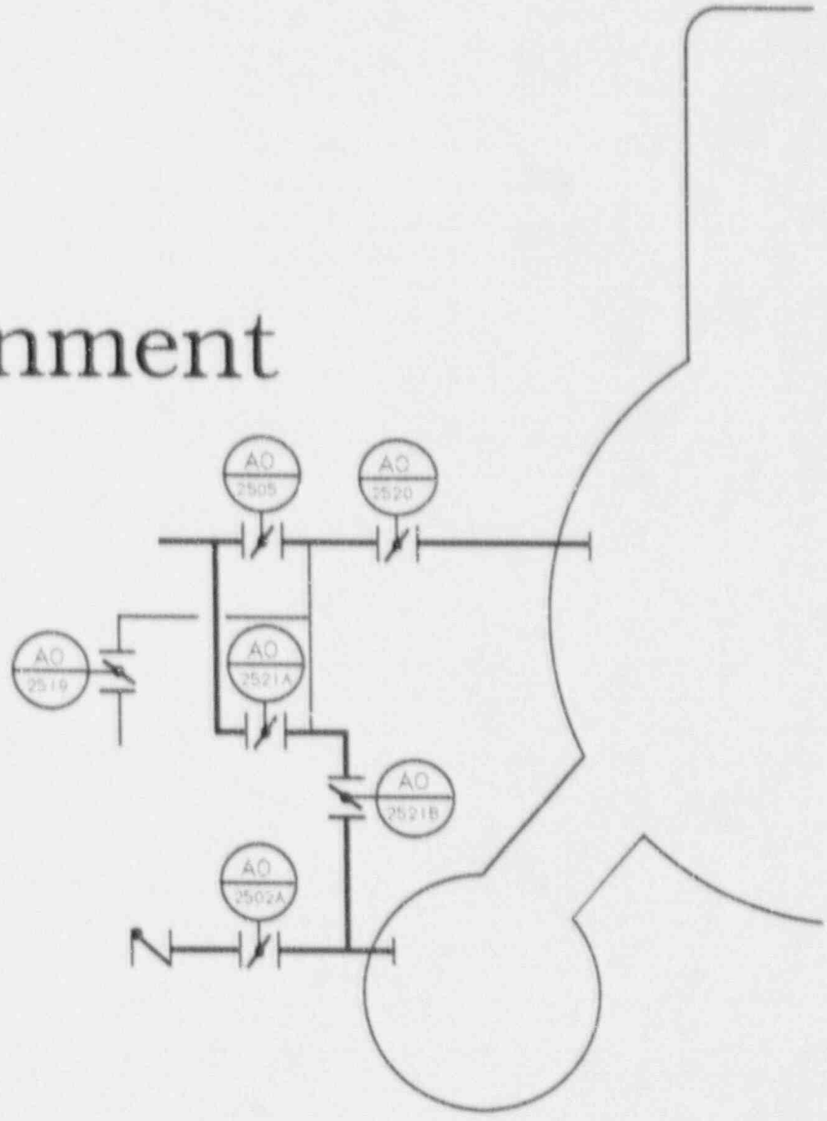

Figure 1