

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES - 8/31/95

FACILITY NAME (1) Peach Bottom Atomic Power Station - Unit 3										DOCKET NUMBER (2) 015010102178				PAGE (3) 1 OF 03		
TITLE (4) HPCI Turbine Exhaust Line Inner Rupture Disc (PSD3-23-6) Failure																
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 NAME				DOCKET NUMBER (8)			
01	26	85	85	004	00	01	25	85					0150101011			
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																
OPERATING MODE (9)		20.402(b) <input type="checkbox"/> 20.406(a) <input type="checkbox"/> 60.73(a)(2)(iv) <input type="checkbox"/> 73.71(b) <input type="checkbox"/>														
POWER LEVEL (10)		20.406(a)(1)(i) <input type="checkbox"/> 60.38(a)(1) <input type="checkbox"/> 60.73(a)(2)(v) <input type="checkbox"/> 73.71(a) <input type="checkbox"/>														
0, 9, 0		20.406(a)(1)(ii) <input type="checkbox"/> 60.38(a)(2) <input type="checkbox"/> 60.73(a)(2)(vi) <input type="checkbox"/> X OTHER (Specify in Abstract below and in Test, NRC Form 305A)														
		20.406(a)(1)(iii) <input type="checkbox"/> 60.73(a)(2)(i) <input type="checkbox"/> 60.73(a)(2)(vii)(A) <input type="checkbox"/> Voluntary Report														
		20.406(a)(1)(iv) <input type="checkbox"/> 60.73(a)(2)(ii) <input type="checkbox"/> 60.73(a)(2)(viii)(B) <input type="checkbox"/>														
		20.406(a)(1)(v) <input type="checkbox"/> 60.73(a)(2)(iii) <input type="checkbox"/> 60.73(a)(2)(ix) <input type="checkbox"/>														
LICENSEE CONTACT FOR THIS LER (12)																
NAME J. C. Nagle, Engineer - Special Projects										TELEPHONE NUMBER 2115 8411-151814						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC						
B	B, J	RP, D	C, 5, 85	Y												
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)												X NO				

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

Abstract: 3-85-004

While at power during surveillance testing, the HPCI turbine exhaust rupture diaphragm alarm annunciated following startup of the Unit 3 HPCI Turbine. Inspection revealed that the inner rupture disc, PSD3-23-6, had failed. The HPCI turbine was intentionally removed from service to replace the inner rupture disc. The systems required by Technical Specification 4.5.C.2 (RCIC, ADS, LPCI, and Core Spray) were verified to be operable. The rupture disc was replaced and HPCI was declared operable following surveillance test verification.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1) Peach Bottom Atomic Power Station - Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 2 7 8	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 5	— 0 0 4	— 0 0	0 2	OF	0 3

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

Description of the Event:

On January 26, 1985, Peach Bottom Atomic Power Station Unit 3 was operating under normal conditions at 85% power. At approximately 1:50 p.m., while conducting a surveillance test (ST-6.5, HPCI Pump, Valve Flow and Cooler Test) on the Unit 3 HPCI system, the turbine exhaust rupture diaphragm alarm annunciated following startup of the HPCI turbine. This alarm senses a pressure of greater than 10 psig between the inner and outer rupture discs located in series in a .16" line which taps off the turbine exhaust line and exhausts to the torus room. Investigation revealed that the inner rupture disc, PSD3-23-6 (manufactured by Continental Disc Corporation), had failed. The nominal setpoint of the rupture disc is 175 psig. The HPCI system was intentionally removed from service and declared inoperable at 2:15 p.m. to replace the inner rupture disc. The HPCI turbine was declared operable and returned to service at 8:45 p.m. the same day, following surveillance test (ST-6.5) verification.

Consequences of the Event:

The outer rupture disc, PSD3-23-7, was not affected; therefore, the HPCI system could have remained operable. After intentionally removing the HPCI system from service to replace the inner rupture disc, the Reactor Core Isolation Cooling System, Automatic Depressurization System, Low Pressure Coolant Injection System, and Core Spray systems were verified as operable as required by Technical Specification 4.5.C.2.

Cause of the Event:

Investigation following this event indicated the inner rupture disc to be fatigued from cyclic stress caused by alternating pressure and vacuum within the exhaust line.

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

This condition exists on quick starts of the HPCI system when the piping is cold. On cold quick starts, the vacuum has been observed to be ten inches of mercury. This momentary vacuum causes the inner rupture disk to flex inward, which it is not designed to do. Examination of rupture disks that failed previously have shown evidence of flexing. This flexing causes the disk to weaken and subsequently fail.

Corrective Actions:

ST 6.5 HPCI Pump, Valve, Flow, Cooler Test verified the operability of the HPCI system following replacement of the inner and outer rupture discs. The rupture discs were replaced with an improved designed disc (manufactured by Continental Disc Corporation) which has a structural backing to prevent flexing during exhaust line vacuum conditions.

On February 1, 1985, a cold quick start test (ST 6.5) of the HPCI system was performed with the system fully instrumented in order to verify the momentary vacuum condition in the turbine exhaust line when the turbine is started.

Performance of ST 6.5 on January 26, 1985 and February 1, 1985 resulted in no adverse consequences to the modified rupture discs.

Previous Similar Occurrences:

LER's: 3-83-15/3L-0, 3-82-23/3L-0, 3-84-001-00, 3-84-013-00, 3-84-015-00, 3-84-016-00.

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February 25, 1985

Docket No. 50-278

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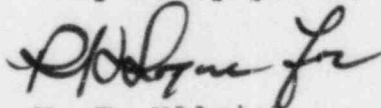
SUBJECT: Licensee Event Report
Peach Bottom Atomic Power Station - Unit 3

This LER concerns the failure of the Unit No. 3 HPCI turbine exhaust inner rupture disc, PSD3-23-6, while performing surveillance testing on the HPCI system.

Reference:	Docket No. 50-278
Report Number:	3-85-004
Revision Number:	00
Event Date:	January 26, 1985
Report Date:	February 25, 1985
Facility:	Peach Bottom Atomic Power Station
	RD #1, Box 208, Delta, PA 17314

Since the HPCI system could have remained operable following failure of the inner rupture disc, this LER is submitted as a voluntary report.

Very truly yours,



W. T. Ullrich
Superintendent
Nuclear Generation Division

cc: Dr. Thomas E. Murley, Administrator
Region I, USNRC

Mr. T. P. Johnson, Resident Inspector

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