NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

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 4

TITLE (4)
Reactor Scram Due to Failure of E-2 Diesel Generator

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 1	2 4	8 6	8 6	— 0 0 3	— 0 0	0 2	2 4	8 6		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 9 5	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		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)	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
W. C. Birely, Senior Engineer - Licensing Section	AREA CODE 2 1 5 — 8 4 1 — 5 0 1 8

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	
X	E K	B L O	C 4 7 0			X	S B	F S V	A 6 1 3		
X	S B	F S V	A 1 6 1 3								

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)

Abstract: 2-86-03

On January 24, 1986, with Unit 2 at 95% power, the Reactor Protection System (RPS) initiated a full reactor scram. The scram occurred as a result of high core flux caused by the inadvertent closure of outboard Main Steam Isolation Valves (MSIVs) AO-2-2-86B and AO-2-2-86D. The MSIVs failed closed as a result of loss of AC power to bus E-22 in conjunction with the failure of two redundant DC solenoids which are designed to allow the MSIVs to stay open during such a loss of AC power condition. Loss of power to E-22 occurred as a result of E-2 diesel generator failure. The diesel generator air intake blower failed which caused the diesel to trip. Additionally, Group II and Group III outboard isolations occurred on Unit 3, which is shutdown for refueling, as a result of loss of power to E-23 bus load center. The Unit 3 outboard isolation logic relays are normally powered via the E-23 bus. The air blower was replaced and E-2 diesel generator was satisfactorily tested and returned to service by February 3, 1986.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Peach Bottom Atomic Power Station - Unit 2	0 5 0 0 0 2 7 7	8 6	— 0 1 0 3	— 0 1 0	0 2 OF 0 4

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

Unit Conditions Prior to Event

Unit 2 was operating at 95% power level with E-2 diesel generator supplying buses E-22 and E-23 in preparation for a loss of power test on Unit 3.

Description of the Event:

On January 24, 1986, at 0612 hours, E-2 diesel generator automatically tripped thereby removing all power to E-22 and E-23 buses. Main steam isolation valves (MSIVs) AO-2-2-86B and AO-2-2-86D inadvertently closed following the diesel trip. Closure of these valves resulted in a high core flux condition which was sufficient to initiate a full reactor scram. Immediately following the scram, reactor water level decreased to -32 inches. Group II and Group III isolations occurred properly at zero inches water level. The speeds of all three reactor feedpumps automatically increased to recover reactor water level. At +45 inches the reactor feedpumps and the main turbine received high reactor water level trip signals. The feedpumps and main turbine tripped properly. Both reactor recirculation pumps tripped properly during the 13.2 KV bus fast transfer. At 0634 hours the 'C' reactor feedpump was reset from the high water level trip and placed in service to control reactor water level. Both recirculation pumps were returned to service by 0645 hours.

Additionally, Group II and Group III outboard isolations occurred on Unit 3 as a result of this event.

Cause of the Event:

Prior to the event, E-2 diesel generator was in service supplying E-22 and E-23 emergency buses in preparation for a loss of power test on Unit 3. At 0612 hours E-2 diesel generator tripped, thereby removing all power to E-22 and E-23 buses. Removal of power from E-22 bus de-energized the AC solenoids of all four outboard MSIVs. By design, a redundant DC solenoid remains energized to allow the MSIV to stay open during such a condition. Subsequent to the event, the DC solenoids for MSIVs AO-86B and AO-86D were found to be failed. These failed DC solenoids, in

conjunction with the loss of power to the AC solenoids, caused MSIVs AO-86B and AO-86D to fail closed thereby isolating two of the four main steam lines. Isolation of these lines produced a 13 PSI pressure spike in the reactor which, in turn, produced a 20% flux spike as detected by the in-core flux monitors. The flux spike was sufficient for the RPS to initiate the full scram.

Additionally, Group II and Group III outboard isolations occurred on Unit 3 as a result of loss of power to E-23 bus because the outboard isolation logic relays are powered via the E-23 bus load center.

The E-2 diesel generator had been in operation for approximately 51 hours prior to the event. The diesel was run at relatively low loads during that period (nominally 550 KW, although rated at 2600 KW). At low loads, all combustion air to the diesel is supplied by the diesel's air intake blower. When the air blower failed, the diesel became air starved and tripped.

Consequences of the Event:

All isolations occurred properly. No Emergency Core Cooling System initiations were necessary as a result of this event (nor did any occur) due to the effective operation of the reactor feedpumps. With the exception of E-2 diesel, all systems were promptly returned to normal after the event.

Corrective Actions:

RT-15.6 titled "MSIV Pilot Valve Solenoid Continuity Test" is performed on a monthly basis for the purpose of verifying MSIV solenoid coil continuity. A review of the most recently completed RT-15.6 indicated that all MSIV AC and DC coils had satifactory operating currents when tested on January 22, 1986, just two days prior to the event. The AO-86B and AO-86D DC solenoids were replaced on January 25, 1986. One of the failed solenoids has been sent to PECo Electrical Engineering Division for failure analysis.

The E-2 Diesel air blower was replaced and E-2 diesel was satisfactorily tested and returned to service by February 3, 1986. The failed diesel air blower has been sent to Colt/Fairbanks Morse for failure analysis and rebuilding.

Previous Similar Occurrences:

None.

PHILADELPHIA ELECTRIC COMPANY

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February 24, 1986

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 full reactor scram as a result of failure of E-2 diesel generator.

Reference:	Docket No. 50-277
Report Number:	2-86-03
Revision Number:	00
Event Date:	January 24, 1986
Report Date:	February 24, 1986
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)(iv).

Very truly yours,

W. T. Ullrich
Superintendent
Nuclear Generation Division

cc: Dr. Thomas E. Murley, Administrator, Region I, USNRC
T. P. Johnson, NRC Resident Inspector

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