



PEACH BOTTOM—THE POWER OF EXCELLENCE

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION
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Delta, Pennsylvania 17314
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August 5, 1991

Docket No. 50-278

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

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

This LER concerns a reactor scram following the failure of a block switch as a result of several lightning strikes.

Reference: Docket No. 50-278
Report Number: 3-91-010
Revision Number: 00
Event Date: 07/07/91
Report Date: 08/05/91
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).

Sincerely,

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

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Peach Bottom Atomic Power Station - Unit 3	DOCKET NUMBER (2) 0 5 0 0 0 2 7 8	PAGE (3) 1 OF 03
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TITLE (4): Reactor Scram as a Result of a Main Generator Load Reject due to a Deteriorated Generator Output Circuit Breaker Block Switch

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)
07	07	91	91	010	00	08	05	91			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 50 (Check one or more of the following) (11)									
POWER LEVEL (10) 0 9 7	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(a)	<input checked="" type="checkbox"/> 20.73(a)(2)(a)	<input type="checkbox"/> 20.73(b)						
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 20.38(a)(1)	<input type="checkbox"/> 20.73(a)(2)(a)	<input type="checkbox"/> 20.73(c)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 20.38(a)(2)	<input type="checkbox"/> 20.73(a)(2)(a)	OTHER (Specify in Abstract below and in Text NRC Form 366A)						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 20.73(a)(2)(i)	<input type="checkbox"/> 20.73(a)(2)(v)(iA)							
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 20.73(a)(2)(ii)	<input type="checkbox"/> 20.73(a)(2)(v)(iB)							
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 20.73(a)(2)(iii)	<input type="checkbox"/> 20.73(a)(2)(a)								

LICENSEE CONTACT FOR THIS LER (12)

NAME Albert A. Fulvio, Regulatory Engineer	TELEPHONE NUMBER AREA CODE: 7 1 7 4 5 6 - 7 0 1 4
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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

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 1750 single space typewritten lines) (16)

On 7/7/91 at 2312 hours, a reactor scram occurred on Unit 3 due to Turbine Control Valve fast closure on a Main Generator Load Reject trip signal. This trip was caused when the Generator output breaker position indication relays received a false signal due to a ground in a block switch. A Primary Containment Isolation System Group II/III isolation occurred as expected due to the reactor water level decrease after the scram. The cause of the event has been determined to be the result of lightning. The scram and isolations were reset, systems were returned to normal, and the damaged components were replaced. Engineering will evaluate the possibility of block switch removal, upgrade, or provisions to protect the Generator output breaker position indication relays from lightning strikes. Three previous similar LERs have been identified.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Peach Bottom Atomic Power Station Unit 3	DOCKET NUMBER (2) 0 15 0 0 0 2 7 8 9 1	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		— 0 1 0	— 0 0	0 2	OF	0 3	

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

Requirements for the Report

This report is submitted to satisfy the requirements of 10 CFR 50.73(a)(2)(iv) because of unplanned Engineered Safety Feature (Reactor Protection System (RPS)(EISS:JC)) Actuations.

Unit Conditions at Time of Event

Unit 3 was in the RUN mode at 97% of rated thermal reactor (EISS:RPV) power. There were no other systems, structures, or components that were inoperable that contributed to the event.

Description of Event

On 7/7/91 at 2312 hours, a reactor scram occurred due to Turbine Control Valve fast closure on a Main Generator Load Reject trip signal. This trip was caused when the Generator output breaker position indication relays received a false signal due to a ground in a block switch located in the substation. A Primary Containment Isolation System (PCIS)(EISS:JM) Group II/III isolation occurred as expected due to the reactor water level decrease after the scram.

Earlier that day at approximately 1100 and 1300 hours, severe thunder storms and lightning passed through the Peach Bottom area which resulted in various electrical disturbances observed in the plant.

The scram actuation and PCIS Group II/III isolations were reset by 2338 hours. The PCIS Group II/III isolation lasted for 26 minutes. The NRC was notified of the event via ENS on 7/8/91 at 0157 hours.

Cause of Event

The cause of the event has been determined to be failure of a block switch located in the Generator Output Circuit Breaker (CB-65). It is believed that lightning caused a ground in the block switch. The ground continued to deteriorate through the day until various wiring melted and shorted together. When the current flow from the short became severe enough, the position indication relays deenergized and caused the Generator lock out trip. The contacts on these relays are part of various protective relay schemes and initiate a Generator lockout trip if both output breakers are open or indicating open at the same time. The block switch is used to isolate the relays for maintenance purposes.

Analysis of Event

No actual safety consequences occurred as a result of this event. All isolations, initiations, and transfers functioned as designed. Fast closure of the Turbine Control Valves can cause a significant addition of positive reactivity and the scram counteracts this addition. The trip logic was chosen to identify the situation in which a reactor scram is required for fuel protection.

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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)

Corrective Action

Following the event, the scram and isolations were reset and the affected systems were restored to normal.

The damaged components were replaced.

Engineering will evaluate the possibility of block switch removal, upgrade, or provisions to protect the Generator output breaker position indication relays from lightning.

Previous Similar Events

Three previous similar LERs have been identified involving lightning strikes. LER 3-85-18 addressed a reactor scram with a Group II & III isolations. LER 2-87-12 and LER 2-90-27 addressed various PCIS isolations. As a result of these events, no corrective actions were taken other than resetting the appropriate isolations or performing specific work on individual pieces of equipment. Therefore, these corrective actions could not have been expected to prevent this event.