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 3	0 5 0 0 0 2 7 8	1 OF 0 5

TITLE (4) Two Primary Containment Isolation System Actuations Due to Overvoltage Trips of the RPS Alternate Feed Caused by Voltage Fluctuations on the 13 kV Bus

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
0 5	2 0	8 8	8 8	— 0 0 3	— 0 0	0 6	1	8 8		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)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	0 0 0	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 4 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	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 9	1 5	8 8

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

Abstract:

On May 20, 1988 and on May 22, 1988, a Unit 3 Primary Containment Isolation System Group III inboard isolation and a half reactor scram occurred as a result of an overvoltage condition on the Unit 3 Startup feed, which caused the trip of the Reactor Protection System (RPS) alternate feed breakers. The RPS alternate feed was in service at the time of both events because the 'A' RPS motor-generator (M-G) set was blocked out-of-service. There were no adverse consequences as a result of this event. All equipment operated as designed. Therefore, in the event of an accident, any radioactive release would have been precluded. Preliminary results of an investigation indicate that the cause of the events is the RPS, load center, and emergency auxiliary transformers being lightly loaded, thereby increasing the RPS sensitivity to fluctuations in the 13 kV voltages. This investigation is continuing and a revised report will be submitted to forward any additional findings. To prevent a recurrence of this event, the Nuclear Engineering Department has been requested to review the tap settings and operating voltages for the startup transformers, emergency transformers, load center transformers, and 480/120V safeguard bus transformers for plant operating and shutdown conditions. Adjustments will be made as necessary after the settings have been determined.

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NRC Form 366
(9-83)

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

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

Unit Conditions Prior to the Event:

Unit 3 was in the Cold Condition with the reactor mode switch in the 'REFUEL' position, and the fuel offloaded to the fuel pool.

The 'A' Reactor Protection System bus was being supplied by its alternate feed because the 'A' RPS motor-generator (M-G) set was blocked out-of-service.

Description of the Event:

On May 20, 1988 at 2316 hours, and again on May 22, 1988 at 0933 hours, a Unit 3 Primary Containment Isolation System (PCIS) Group III inboard isolation and a half reactor scram occurred as a result of an overvoltage condition on the Unit 3 startup bus which tripped the Reactor Protection System (RPS) alternate feed breakers. The unplanned actuation of an engineered safety feature (ESF) is reportable under 10 CFR 50.73 (a)(2)(iv). The RPS alternate feed was being used at the time of the event because the 'A' motor-generator (M-G) set was blocked out-of-service. The Group III isolation normally would have initiated the 'C' Standby Gas Treatment System (SBGTS) fan and the 'B' SBGTS filter. However, the 'C' SBGTS fan was blocked out-of-service. A complete list of equipment affected during these events is listed in Attachment A.

Consequences of the Event:

There were no adverse consequences of this event. All operable equipment actuated as designed (See Attachment A). The 'C' SBGTS fan normally initiates on a Unit 3 Group III inboard isolation signal. However, the fan was blocked, thus preventing it from starting on the receipt of the isolation signal. However, the 'B' fan was available and would have automatically started, if an outboard isolation had occurred. Therefore, in the event of an accident, any potential release of radioactivity would have been precluded. If this had occurred during fuel movement or during power operation, the ESF actuations would have occurred in the same manner to divert the ventilation flow of effluents through the SBGTS.

The RPS scram logic operates on a "one-out-of-two, twice" principle which requires a scram signal to occur on two channels of the logic for a full scram to occur. Because only one channel tripped no rod motion would have occurred.

Cause of the Event:

The cause of the event has been attributed to the RPS, load center, and emergency auxiliary transformers being lightly loaded at the time of the event, thus making the RPS sensitive to voltage fluctuations on the 13 kV bus. The normal RPS transformer load is 65 amps; however, the load was 20 amps at the time of the event. The corresponding RPS overvoltage trip for 20 amps was calculated at 492 V instead of the normal 500 V overvoltage trip. The load center transformer had no measurable load, while the emergency auxiliary transformer was approximately 15% loaded.

Subsequent to the second event (May 22), the load dispatcher was contacted and indicated that the 230 kV system voltage were normal (approximately 238kV at 0400 hours and 233 kV at 0930 hours, just prior to the event). The No. 343 Startup Transformer load tap changer maintained its set voltage range of 13.7 to 13.9 kV. With the emergency auxiliary transformer being lightly loaded, the 4 kV bus range was being maintained between 4.2 and 4.3 kV. With 13.8 kV on the No. 343 Startup Transformer, the RPS voltage was determined to be approximately 487 V. Therefore, minor system voltage changes could have resulted in the 492 V RPS overvoltage trip point being exceeded, initiating the isolation and half scram.

The investigation into this event is continuing. A revised report to forward any additional findings will be submitted upon completion of the investigation.

Corrective Actions:

The RPS alternate feed breakers were reclosed and the feed was returned to service within approximately 15 minutes. The isolations and the half scram were reset within an hour.

Ventilation was returned to it normal configuration within 1 1/2 hours.

On May 22, the No. 343 Startup load tap changer was placed in manual operation to accommodate lowering the 13.8 bus voltage to 13.6. This allowed the 4 kV bus voltage to be maintained at 4160 V, thus, making the RPS less sensitive to voltage changes.

Actions Taken to Prevent Recurrence:

Nuclear Engineering Department assistance has been requested to review the tap settings for the startup transformers, emergency transformers, load center transformers, and 480/120V safeguard bus transformers. Adjustments will be made as necessary after the proper tap settings and operating voltage have been determined.

EIIS Codes for Systems and Components:

The EIIS codes for the systems and components are as follows: Plant (reactor) Protection System (RPS) - JC; Containment Isolation Control System (PCIS) - JM; Emergency/Standby Gas Treatment System (SBGTS) - BH; isolation valves - ISV; fan - FAN; transformer - XFMR; rod (control) - ROD.

Previous Similar Occurrences:

LERs 3-87-06 and 3-88-01 addressed PCIS actuations as a result of overvoltage conditions resulting in RPS bus breaker trips.

ATTACHMENT A

Valve Number	Description	Valve Positions Before Isolation	Valve Positions After Isolation
SV-9100	N2 Compressor Suction	Closed	Closed
AO-3520	Air Purge Supply Inlet	Closed	Closed
AO-3521B	Torus Air Purge	Closed	Closed
SV-3671A-SV3671G	O2 Analyzer Samples	Closed	Closed
AO-3506	Drywell Vent Valve	Closed*	Closed
AO-3511	Torus Vent Valve	Open	Closed
AO-3509	Drywell 2"Vent Relief	Closed	Closed
AO-3513	Torus 2" Vent Relief	Closed	Closed
SV-5966A SV-5966F	CAD Gas Sample	Closed	Closed
AO-30641	Refuel Floor Exhaust	Open	Closed
AO-30453	Refuel Floor Supply	Open	Closed
AO-30463	Reactor Building Exhaust	Open	Closed
AO-30458	Reactor Building Supply	Open	Closed
AO-30467	Equipment Cell Exhaust	Open	Closed

* Valve blocked out-of-service at the time of the event.

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA 19101

(215) 841-4000

June 16, 1988

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 two events where Primary Containment Isolation System Group III inboard isolations occurred due to Reactor Protection System alternate feed trips.

Reference:	Docket No. 50-278
Report Number:	3-88-03
Revision Number:	00
Event Dates:	May 20 and May 22, 1988
Report Date:	June 16, 1988
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,

R. H. Logue
Assistant to the Manager
Nuclear Support Division

cc: W. T. Russell, Administrator, Region I, USNRC
T. P. Johnson, NRC Senior Resident Inspector
T. E. Magette, State of Maryland
INPO Records Center

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APPROVED OMB NO. 3150-0104
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NAME	TELEPHONE NUMBER
	AREA CODE
W. C. Birely, Senior Engineer - Licensing Section	2 1 5 8 4 1 - 5 0 4 8

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		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X	YES (If yes, complete EXPECTED SUBMISSION DATE)		0 9	1 5	8 8
	NO				

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* Valve blocked out-of-service at the time of the event.

10 CFR 50.73(a)(2)(iv)

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA. 19101

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COPY

June 16, 1988

Docket No. 50-278

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

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

Very truly yours,

R. H. Logue
Assistant to the Manager
Nuclear Support Division

LLM:mls

cc: W. T. Russell, Administrator, Region I, USNRC
T. P. Johnson, NRC Senior Resident Inspector
T. E. Magette, State of Maryland
INPO Records Center

bcc: D. M. Smith
J. F. Franz
G. F. Daebeler
D. Sherman, ANI
W. M. Alden/LLM
Manager, ISED
Supervisor, ISEG - PB
Supervisor, ISEG - LGS
T. E. Cribbe
Commitment Coordinator
DAC

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