CCN 91-14069

PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
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PEACH BOTTOM—THE POWER OF EXCELLENCE

May 20, 1991

Docket Nos. 50-277
50-278

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

SUBJECT: Licensee Event Report
Peach Bottom Atomic Power Station - Units 2 and 3

This LER concerns Primary Containment Isolation System isolation due to a failure of the No. 2 Startup Emergency Feed cable and a Unit 2 & 3 shutdown for cable replacement.

Reference:	Docket Nos. 50-277 50-278
Report Number:	2-91-009
Revision Number:	00
Event Date:	4/20/91
Report Date:	5/20/91
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) and 50.73(a)(2)(i)(A).

Sincerely,

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

IE22
1/1

bcc: R. A. Burricelli, Public Service Electric & Gas
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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): Primary Containment Isolation System Isolation Due to a Failure of the No. 2 Startup Emergency Feed Cable and a Unit 2 and 3 Shutdown for Cable Replacement

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 4	2 0	9 1	9 1	0 0 9	0 0	0 5	2 0	9 1	Peach Bottom Unit 3	0 5 0 0 0 2 7 8
										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 2 6	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)	X 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
	AREA CODE
A. A. Fulvio, Regulatory Engineer	7 1 7 4 5 6 - 7 0 1 4

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE 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 4/20/91 at 1015 hours, actuations occurred on the Unit 2 and 3 Primary Containment Isolation System (PCIS)(EIIS:JM). A failure of the No. 2 Startup Emergency Transformer (EIIS:XFMR) secondary side cables caused a fault which opened the No. 2 Startup Emergency Breaker (EIIS:BKR). The 4 KV Emergency Busses (EIIS:BU) associated with the No. 2 Startup Emergency Feed fast transferred to the No. 3 Startup Emergency Feed as designed. The PCIS logic momentarily de-energized during this fast transfer which resulted in a one half PCIS Group 2 and 3 isolation on both units. System isolations were reset immediately following the event. A review of other plant cable configurations have indicated that the Startup Emergency Feeds are the only cables requiring replacement at this time. Power supply cables on both units from the Startup Emergency Breaker down to the 4KV Emergency Busses have been replaced with a new type cable. The 4 KV Emergency Busses have been returned to their normal Startup Emergency Feeds. No actual safety consequences occurred as a result of these events and there were no previous similar events identified.

Requirements for the Report

This report is being submitted to satisfy the requirements of 10 CFR 50.73 (a)(2)(iv) due to automatic actuations of Engineered Safety Features on 4/20/91 and 10 CFR 50.73 (a)(2)(i)(A) since both units were shut down because the cable replacement would have exceeded the seven day Technical Specification Limiting Condition for Operation.

Unit Conditions at Time of Discovery

Unit 2 was in the RUN mode at 26% of rated thermal reactor (EIIS:RPV) power. Unit 3 was in the RUN mode at 62% of rated thermal reactor (EIIS:RPV) power. There were no other systems, structures, or components that were inoperable that contributed to the event.

Description of Event

On 4/20/91 at 1015 hours, actuations occurred on the Unit 2 and 3 Primary Containment Isolation System (PCIS)(EIIS:JM). A failure of the No. 2 Startup Emergency Transformer (EIIS:XFRM) secondary side cables caused a fault which opened the No. 2 Startup Emergency Breaker (EIIS:BKR). The 4 KV Emergency Busses (EIIS:BU) associated with the No. 2 Startup Emergency Feed fast transferred to the No. 3 Startup Emergency Feed as designed. The PCIS logic momentarily de-energized during this fast transfer which resulted in a one half PCIS Group 2 and 3 isolation on both units. This caused the Reactor Water Cleanup System (RWCU)(EIIS:CE) and the Drywell equipment/floor drain sump pump systems to isolate. Additionally, the Standby Gas Treatment System (SBGT)(EIIS:BH) initiated and the Reactor Building ventilation systems tripped.

Following this event, the 4 KV Emergency Busses were left aligned to the No. 3 Startup Emergency Feed and the isolations were reset. The RWCU, Drywell equipment/floor drain, and the ventilation systems were placed in service while the SBGT system was removed from service. Prompt notification was made to the NRC via the ENS at 1203 hours.

No. 2 Startup Emergency Feed cables (See Attached Drawing) were inspected which identified that one of the twenty-seven cables on the secondary side of the No. 2 Startup Emergency Transformer was damaged and one cable had indication of degradation. The decision was made to repair the one damaged cable with a splice and abandon the degraded cable in place as an interim repair. It was planned to pull new cables at the first opportunity. The repaired cable was tested satisfactorily and the Unit 2 Emergency Startup Feed was returned to service at 0250 hours on 4/26/91.

On 4/29/91 at 1030 hours, a Plant Operator identified smoke coming from a manhole on the Unit 2 Startup Emergency Transformer. All 4 KV Emergency Busses fed from the Unit 2 Startup Emergency Feed were immediately manually transferred to their Unit 3 Startup Emergency Feed.

The No. 2 4KV cables were inspected and accelerated insulation degradation was identified which is known as "Treeing". "Treeing" results when normally occurring voids and impurities from the manufacturing process degrades the cable insulation when energized at low current conditions and exposed to a damp environment.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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Peach Bottom Atomic Power Station Unit 2	0 5 0 0 0 2 7 7	9 1	— 0 0 9	— 0 0	0 3 OF 0 5

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

On 5/1/91, Station Management decided to shutdown both units since the Unit 3 cables were suspected to have a problem based on similar design and environmental conditions. Additionally, Unit 2 repairs could not be completed within the seven day Technical Specification Limiting Condition of Operation. Prompt notification was made to the NRC via the ENS at 2047 on 5/1/91. Unit 3 shutdown was started immediately on 5/1/91 while Unit 2 shutdown was started on 5/2/91 at 0105 hours. Both units were in the Cold Shutdown condition on 5/3/91.

A review of other plant cable configurations have indicated that the Startup Emergency Feeds are the only cables requiring replacement at this time. Startup Emergency Feed cables on both units from the Startup Emergency Breaker down to the 4 KV Emergency Busses have been replaced with a new cable.

The new No. 2 13kv and 4kv cables have been tested as specified by Engineering. The No. 2 Startup Emergency Feed was returned to service on 5/11/91 at 0614 hours.

The No. 3 Startup Emergency Feed was removed from service on 5/11/91 at 0725 hours to allow cable replacement. The No. 3 13kv and 4kv cables have been tested using the same methods as on the No. 2 source. The No. 3 Startup Emergency Feed has been returned to service.

Cause of the Event

The event was initiated when the No. 2 Startup Emergency Feed cable failure caused the opening of the No. 2 Startup Emergency Breaker. The accelerated insulation degradation identified is known as "Treeing". "Treeing" results when normally occurring voids and impurities from the manufacturing process degrades the cable insulation when energized at low current conditions and exposed to a damp environment.

Analysis of Event

No actual safety consequences occurred as a result of these events. In the unlikely event of complete failure of both Startup Emergency Feeds during a design basis event, emergency power would be provided from the Emergency Diesel Generators. Additionally, RWCU was out of service for a short amount of time which did not present a reactor water chemistry concern. Other isolations, initiations, and Startup Emergency Feed fast transfers functioned per design.

Corrective Actions

System isolations were reset on both units immediately following the event. The 13 KV and 4 KV cables on both sources from the Startup Emergency Breaker down to the 4 KV Emergency Busses have been replaced with a new type cable. The manufacturing process and the cable additives have been improved which significantly reduces the new cables vulnerability to "Treeing". The new cables and connections have been tested as specified by Engineering. The 4 KV Emergency Busses have been returned to their normal Startup Emergency Feeds.

A review of other plant cable configurations have indicated that the Startup Emergency Feeds are the only cables requiring replacement at this time.

Additionally, the Philadelphia Electric Company is in the process of developing a long term cable inspection/test program for other important to safety cables which are not exposed to the same environment that influences the growth of "Trees". This program will be discussed with the NRC prior to the next Unit 3 refueling outage.

Previous Similar Events

There were no previous similar events identified concerning power cable degradation.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Peach Bottom Atomic Power Station Unit 2	0 5 0 0 0 2 7 7	9 1	— 0 0 9	— 0 0	0 5 OF 0 5

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