

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

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J. DOERING, JR.
PLANT MANAGER
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July 16, 1992

Docket No. 50-353
License No. NPF-85

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

SUBJECT: Licensee Event Report
Limerick Generating Station - Unit 2

This LER reports the opening of a Reactor Enclosure Secondary Containment blowout panel that alone could have prevented the fulfillment of the safety function of Secondary Containment that is needed to control the release of radioactive material. The blowout panel opening resulted from degraded blowout panel washers due to a design deficiency in the blowout panel.

Reference:	Docket No. 50-353
Report Number:	2-92-006
Revision Number:	00
Event Date:	June 21, 1992
Report Date:	July 16, 1992
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA 19464-2300

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

Very truly yours,

J. A. Muntz for
J. Doering

DMS:cah

cc: T. T. Martin, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector, LGS

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LICENSEE EVENT REPORT (LER)

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TITLE (4) Loss of Reactor Enclosure Secondary Containment Integrity due to Blowout Panel Design Deficiency causing Blowout Panel to Actuate.

EVENT DATE (5)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (6)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
0 6	2 1	9 2	9 2	0 0 6	0 0	0 7	1 6	9 2			0 5 0 0 0
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OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)				
POWER LEVEL (10) 1 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.98(e)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)	
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.38(e)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)		
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)		
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)		
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(viii)			
<input type="checkbox"/> 20.405(a)(1)(vi)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(ix)			

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER	
	AREA CODE	NUMBER
G. J. Madsen, Regulatory Engineer, Limerick Generating Station	2 1 5 3	2 7 1 2 0 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS

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 fifteen single space typewritten lines) (16)

On June 21, 1992, at 2031 hours, while performing the Standby Gas Treatment System (SGTS) and the Reactor Enclosure Recirculation System monthly flow verification surveillance test, Operations personnel observed a failure of the 'A' SGTS fan to drawdown and maintain the Unit 2 Reactor Enclosure (RE) Secondary Containment at the required differential pressure. Operations personnel declared the RE Secondary Containment inoperable, and entered the appropriate Technical Specifications (TS) ACTION. An investigation of this event revealed that a RE blowout panel had actuated. The blowout panel was then reinstalled. At 2350 hours, work on the blowout panel was completed, the RE Secondary Containment was declared operable, and the TS ACTION was exited. The consequences of this event were minimal in that RE contamination levels were low and the release to the environment was limited to less than 0.01 percent of regulatory limits. The cause of this event was due to a design deficiency which resulted in the degradation of the blowout panel washers. A modification which raised the actuation setpoint pressure for the four Unit 1 RE blowout panels has been completed. This same modification will be completed for the four Unit 2 RE blowout panels during the second Unit 2 refueling outage. In the interim, increased inspection of the accessible Unit 2 blowout panels will be performed.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

Unit Conditions Prior to the Event:

Unit 2 was in Operational Condition 1 (Power Operation) at 100% power level. Operations personnel were performing the Standby Gas Treatment System (SGTS) (EIIIS:BH) and the Reactor Enclosure Recirculation System (RERS) (EIIIS:VA) monthly flow verification Surveillance Test (ST) procedure ST-6-076-250-2, "SGTS and RERS Flow Test." During performance of this ST procedure, the normal Reactor Enclosure (RE) Heating, Ventilation, and Air Conditioning (HVAC) system is shutdown in accordance with the System (S) operating procedure S76.2.B, "Shutdown of Reactor Enclosure HVAC," and the SGTS and the RERS are then manually started.

Description of the Event

On June 21, 1992, at 2031 hours, while performing procedure ST-6-076-250-2, Main Control Room (MCR) Operations personnel observed a failure of the 'A' SGTS fan to drawdown and maintain the Unit 2 RE Secondary Containment at the required differential pressure of negative 0.25 inches of water gauge. At 2031 hours, Operations personnel declared the RE Secondary Containment inoperable, and entered the Technical Specifications (TS) ACTION for the Limiting Condition for Operation (LCO) 3.6.5.1.1, "Reactor Enclosure Secondary Containment Integrity." The MCR Operations personnel implemented Off-Normal (ON) procedure ON-111, "Loss of Secondary Containment." In an attempt to restore the RE Secondary Containment differential pressure, per procedure, Operations personnel placed in operation the 'B' SGTS fan, which also failed to drawdown and maintain the RE Secondary Containment at its required differential pressure.

At 2100 hours, an investigation of this event revealed that a RE blowout panel located on elevation 217' inside the Safeguard Access Piping Room had actuated. At 2116 hours the blowout panel was temporarily reinstalled, the RE Secondary Containment differential pressure was restored, and the SGTS flow returned to its required flow rate. At 2350 hours, maintenance work on the blowout panel was completed, Operations personnel declared the RE Secondary Containment operable, and the TS LCO 3.6.5.1.1 ACTION was exited before a plant shutdown was required.

A four hour notification was made to the NRC at 0015 hours, on June 22, 1992, in accordance with the requirements of 10 CFR 50.72(b)(2)(iii)(C) since this event resulted in a condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material. This LER is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(v)(C).

Analysis of the Event:

The consequences of this event were minimal in that the offsite radioactive material release, and RE contamination levels were extremely low. The results of radioactive contamination surveys and air monitoring performed by Health Physics personnel after the event indicated that an insignificant amount of

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

radioactive material consisting of noble gases probably existed in the area of the open blowout panel, and would have been released to the environment during the time period when the blowout panel was open. The calculated radioactive release is limited to less than 0.01 percent of the Offsite Dose Calculation Manual (UDCM) limits.

If an accident condition had occurred with the blowout panel open, the RE negative differential pressure would not have been maintained by the SGTS. Therefore, if the accident resulted in an elevated radioactive material release to the RE, an unmonitored release of the radioactive material to the environment could have occurred with the blowout panel open. In response to this type of equipment malfunction during an accident, the operators would have initiated procedure ON-111, and Transient Response Implementing Plan (TRIP) procedures T-103, "Secondary Containment Control," and T-104, "Radioactivity Release Control," for directions to mitigate a radioactive material release. Licensed operators receive requalification training to review and practice responses to simulated plant transients of this type. The procedures, operator training, and operator actions would have mitigated the consequences of this type of accident.

Cause of the Event:

The cause of this event is a design deficiency in the RE blowout panels. An investigation determined that normal RE HVAC system pressure transients, caused by normal shutdown and startup of the system for testing and maintenance purposes, results in increased flexing and degradation of the individual blowout panel washers.

A series of bolts through the blowout panel are retained against a bracket, which is attached to the RE wall, by the washers. As the differential pressure increases in the RE Secondary Containment, the washers flex, then bend, thereby allowing the bolts to pull through the holes in the bracket to open the blowout panel. This increased flexing of the washers during normal RE HVAC pressure transients causes the washers to eventually degrade, therefore resulting in a reduction of the blowout panel differential pressure actuation setpoint.

A modification that raised the actuation setpoint pressure of the Unit 1 RE blowout panels from 6.9 inches to 13.8 inches of positive water gauge was completed during the fourth Unit 1 refueling outage, which ended on July 9, 1992. During this outage, the Unit 1 blowout panels were refurbished with new washers and gaskets, and as a result of the modification, additional washers were added to provide the setpoint increase. A further evaluation of this modification revealed that with the additional washers installed, overall flexing of the individual washers is reduced and the potential for washer degradation is significantly decreased, thereby restoring the blowout panel reliability. This information assisted in concluding the cause of this event.

A contributing factor to the cause of this event was that the Unit 1 and Unit 2 blowout panels are inspected every eighteen months under the Routine Test (RT)

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TEXT (If more space is required, use additional NRC Form 305A's) (17)

procedures RT-1-076-900-1 and 2, "Blowout Panel Inspection," and the degradation of the washers was not detected at this frequency of surveillance.

Corrective Actions:

The following corrective actions will be implemented to prevent the recurrence of a similar event.

1. The Unit 1 and the Unit 2 REs each have four blowout panels. Two of the three remaining accessible Unit 2 RE blowout panels were inspected. This inspection identified that one blowout panel had five washers that indicated minor degradation, and the washers were replaced as a preventive measure. The third inaccessible Unit 2 blowout panel which is located on elevation 239' inside the Steam Chase area was not inspected due to radiation concerns. Since only one blowout panel indicated minor washer degradation and the Unit 2 Secondary Containment air inleakage was being maintained below the TS Limit of 1250 standard cubic feet per minute, inspection of the third inaccessible blowout panel will be deferred until the next scheduled Unit 2 load reduction of greater than 50% power.
2. The modification that raised the actuation setpoint pressure for the four Unit 1 RE blowout panels will be implemented for the four Unit 2 RE blowout panels during the second Unit 2 refueling outage, which is scheduled to start in January 1993. Until the Unit 2 RE blowout panels are modified, inspection of the accessible panels will be performed every month utilizing procedure RT-1-076-900-2. After the modification is completed, procedure RT-1-076-900-2 will be revised, and the inspection of the accessible blowout panels will be performed on a six month frequency. Inspection of the inaccessible blowout panel will be performed on a six month frequency when radiation levels permit inspection.
3. Procedure RT-1-076-900-1, which is utilized to inspect the Unit 1 blowout panels, is expected to be revised by July 31, 1992, to increase the surveillance frequency of the accessible blowout panels from eighteen months to six months. Inspection of the inaccessible blowout panel will be performed on a six month frequency when radiation levels permit inspection.

Previous Similar Occurrences:

Limerick Generating Station IERs 1-88-020, 1-88-030, 2-90-011, 1-91-001, 1-91-012, and 1-92-004 reported the loss of RE Secondary Containment due to actuations of blowout panels. The causes of these previous events were unrelated to the cause of this event, and therefore the corrective actions for these previous events would not have prevented this event from occurring.

Tracking Codes: B - Design, manufacturing, construction/installation deficiency