

## PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

P. O. BOX A

SANATOGA, PENNSYLVANIA 19464

(215) 327-1200 EXT. 2000

J. DOERING, JR.  
PLANT MANAGER  
LIMERICK GENERATING STATION

April 10, 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 discovery of the Unit 2 High Pressure Coolant Injection (HPCI) system in a degraded condition that alone could have prevented the fulfillment of its safety function needed to maintain the reactor in a safe shutdown condition and mitigate the consequences of an accident. The HPCI system engineer discovered a leak from a line that supplies operating oil to the turbine stop valve.

Reference:	Docket No. 50-353
Report Number:	2-91-017
Revision Number:	01
Event Date:	November 15, 1991
Report Date:	April 10, 1992
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA 19464-0920

This revised LER is being submitted to provide the conclusions of further investigation into the cause of the leak and associated corrective actions. Changes to this LER are indicated by revision bar markers in the right hand margin. The original LER was submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(v).

Very truly yours,

JLP: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)

FACILITY NAME (1) Limerick Generating Station, Unit 2 DOCKET NUMBER (2) 0 5 0 0 0 3 5 3 3 OF 0 3 PAGE (3)

TITLE (4) High Pressure Coolant Injection system discovered in a degraded condition, because of a leak in an oil line to the turbine stop valve.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME(S)	DOCKET NUMBER(S)	
11	15	91	91	017	01	04	10	92		0 5 0 0 0 0 0 0 0 0 0 0	

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § 101.11 (c) - one or more of the following: (1)

OPERATING MODE (9)	20 402(a)	20 405(a)	50 72(a)(2)(i)	73 71(a)
1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
POWER LEVEL (10)	20 405(a)(1)(i)	50 72(a)(1)(i)	50 72(a)(2)(ii)	73 71(a)
100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	20 405(a)(1)(ii)	50 72(a)(1)(ii)	50 72(a)(2)(iii)	OTHER (Specify in Remarks - Reference to Title 10 CFR Part 2004)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	20 405(a)(1)(iii)	50 72(a)(1)(iii)	50 72(a)(2)(iv)	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	20 405(a)(1)(iv)	50 72(a)(1)(iv)	50 72(a)(2)(v)	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	20 405(a)(1)(v)	50 72(a)(1)(v)	50 72(a)(2)(vi)	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LICENSEE CONTACT FOR THIS LER (12) NAME: G. J. Madsen, Regulatory Engineer, Limerick Generating Station TELEPHONE NUMBER: 211 5 2 12 17 1-11 12 0 0 AREA CODE: 211 5 2 12 17 1-11 12 0 0

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) YES (if not, complete EXPECTED SUBMISSION DATE):  NO

EXPECTED SUBMISSION DATE (15) MONTH: DAY: YEAR:

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

On November 15, 1991, the High Pressure Coolant Injection (HPCI) system engineer discovered an oil leak, during a routine system walkdown, that alone could have prevented the HPCI system from fulfilling its safety function needed to maintain the reactor in a safe shutdown condition and mitigate the consequences of an accident. The actual consequences of this event were minimal because an accident condition did not occur during the time in which the HPCI system was inoperable or could have been degraded and because sufficient Emergency Core Cooling Systems were available. The period of time in which the HPCI system may have been degraded due to the oil leak is limited to the time between November 13, 1991, when the HPCI system was verified to be operable and November 15, 1991, when the oil leak was discovered by the HPCI system engineer. The leak was caused by a local defect in a section of the tube placed in tension by the manufacturing process. Based on a review of Limerick Generating Station maintenance history, as well as industry databases, this failure has been determined to be an isolated occurrence. The line was replaced with a hard pipe line similar to the lines on the Unit 1 HPCI system. The two remaining braided stainless steel hose lines in the Unit 2 HPCI system were inspected and confirmed to not be leaking oil. The HPCI system was declared operable on November 18, 1991.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	BUCKET NUMBER (2)	LER NUMBER (5)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Limerick Generating Station, Unit 2	0   5   0   0   0   3   5   3	9   1	-   0   1   7	-   0   1	0   2	OF	0   3

TEXT (If more space is required, use additional NRC Form 366A (1/77))

Unit Conditions Prior to the Event:

Unit 2 was in Operational Condition 1 (Power Operation) at 100% power level.

There were no structures, systems, or components out of service or being tested which contributed to this event.

Description of the Event:

On November 15, 1991, at 1137 hours during a routine system walkdown, the High Pressure Coolant Injection (HPCI) system (EIIS:BJ) engineer discovered a leak from a line that supplies operating oil to the HPCI turbine stop valve (EIIS:SHV). This oil leak alone could have prevented the HPCI system from fulfillment of its safety function needed to maintain the reactor in a safe shutdown condition and mitigate the consequences of an accident. As a result, the HPCI system was declared inoperable and a four hour notification to the NRC was made in accordance with the requirements of 10CFR50.72(b)(2)(iii) at 1313 hours on November 15, 1991. This report is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(v).

Analysis of the Event:

The actual consequences of this event were minimal in that an accident condition did not occur during the time in which the HPCI system was inoperable or could have been degraded, and therefore the HPCI system was not called upon to perform its intended safety function. The period of time in which the HPCI system may have been degraded due to the oil leak is limited to the time between November 13, 1991, when the HPCI system was verified to be operable by successful performance of ST-6-055-230-2 "HPCI Pump, Valve and Flow Test," and November 15, 1991, when the oil leak was discovered by the HPCI system engineer. If an accident had occurred while the HPCI system was in this degraded condition, sufficient Emergency Core Cooling Systems were available to maintain safe shutdown of the reactor and mitigate the consequences of an accident. Additionally, the Main Steam Relief Valves (EIIS:RV) and the Reactor Core Isolation Cooling system (EIIS:BN) were available to provide reactor pressure and level control.

Cause of the Event:

The leak in the line supplying oil to the HPCI turbine stop valve was caused by a local defect in a section of the tube placed in tension by the manufacturing process. This resulted in an intergranular fatigue failure. Based on a review of Limerick Generating Station maintenance history, as well as industry databases, this failure has been determined to be an isolated occurrence.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Limerick Generating Station, Unit 2	DOCKET NUMBER (2)  0   5   0   0   0   3   5   3   9   1	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		91	017	01	03	OF	03

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

Corrective Actions:

The line with the leak was replaced on November 17, 1991, with a hard pipe line similar to the lines on the Unit 1 HPCI system. The two remaining braided stainless steel hose lines in the Unit 2 HPCI system were inspected and confirmed to not be leaking oil. After successful performance of an automatic fast start to rated pressure and flow per system operating procedure S55.1.D, "HPCI System Full Flow Functional Test," the HPCI system was declared operable on November 18, 1991, at 1635 hours. Review of the original vendor drawings verified that the use of either hard pipe or braided stainless steel flexible hose is acceptable. Recent documentation from the manufacturer confirmed this. The Unit 1 HPCI system was constructed with hard pipe while the Unit 2 HPCI system was constructed with braided stainless steel flexible hose. Because of the acceptability of braided stainless steel flexible hose, the two remaining lines in the Unit 2 HPCI system are not being replaced at this time.

Previous Similar Occurrences:

None

Tracking Codes: B - Design, manuf., constr./install deficiency