

## PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

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SANATOGA, PA 19464-2300

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J. DOERING, JR.  
PLANT MANAGER  
LIMERICK GENERATING STATION

January 8, 1993  
Docket No. 50-352  
License No. NPF-39

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

SUBJECT: Licensee Event Report  
Limerick Generating Station - Unit 1

This LER reports the closure of a primary containment isolation valve, an Engineered Safety Feature actuation, caused by a stuck microswitch and a deficient Surveillance Test procedure that did not include verification that the microswitch was reset after calibration.

Reference:	Docket No. 50-352
Report Number:	1-92-018
Revision Number:	00
Event Date:	December 9, 1992
Discovery Date:	December 11, 1992
Report Date:	January 8, 1993
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)(iv).

Very truly yours,

MCM:cah

120090

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)										DOCKET NUMBER (2)										PAGE (3)				
Limerick Generating Station, Unit 1										0 1 5 0 0 0 3 5 2 1										1 OF 0 1 5				
TITLE (4) Closure of a Primary Containment Isolation Valve in the Instrument Gas System due to a Stuck Microswitch within a Pressure Differential 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 (3)									
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1	2	0	9	9	2	9	2	0	1	8	0	0	0	1	0	8	9	3	0 1 5 0 0 0 0					
OPERATING MODE (8)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																					
1			20.402(b)			20.405(e)			X			50.73(a)(2)(iv)			73.71(b)									
POWER LEVEL (10)			20.405(a)(1)(i)			50.36(c)(1)						50.73(a)(2)(v)			73.71(c)									
1 1 0 1 0			20.405(a)(1)(ii)			50.36(c)(2)						50.73(a)(2)(vi)			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)(vii)(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)(ix)												
LICENSEE CONTACT FOR THIS LER (12)																								
NAME												TELEPHONE NUMBER												
												AREA CODE												
Gil 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 NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC					
X	L	E	P	D	S	I	2	0	4	YES														
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)						MONTH	DAY	YEAR				
YES (If yes, complete EXPECTED SUBMISSION DATE)												X						NO						

ABSTRACT (1 point for 1400 spaces, i.e. approximately fifteen single space typewritten lines) (16)

On December 11, 1992, the Licensed Unit 1 Reactor Operator noticed the normally open Unit 1 long term gas supply to the Automatic Depressurization System (ADS) Primary Containment Isolation Valve (PCIV) in the closed position. The exact time of valve closure could not be determined due to an inoperable Emergency Response Facility Display System. Instrumentation and Controls (I&C) Technicians initiated troubleshooting on the Pressure Differential Switch (PDS) which is provided to close the PCIV. Technicians found a stuck microswitch within the PDS. Following the switch cleaning and exercising, the PDS was calibrated in accordance with a Surveillance Test (ST) procedure and found to be within acceptable limits. Based upon the acceptable ST results, the PCIV was declared operable. The most probable cause for the PCIV closure was a microswitch internal to the PDS that became stuck during a calibration conducted on December 9, 1992. The affected STs will be revised to assure the PDS is fully reset by recording the final position of the PCIV. The adverse consequences were minimal and no release of radioactive material occurred as a result of the condition. The condition was determined as reportable on December 11, 1992, since this was an Engineered Safety Feature actuation. Therefore, this report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(iv).

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APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

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

Unit Conditions Prior to the Event:

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

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

Description of the Event:

On December 11, 1992, at 0705 hours, during a Unit 1 Main Control Room (MCR) shift turnover walkdown, the licensed Unit 1 Reactor Operator (RO) noticed the normally open Unit 1 Primary Containment Isolation Valve (PCIV, EIIS:JM) HV-059-151A, in the closed position. The PCIV is associated with the Primary Containment Reactor Vessel Isolation Control System (PCRVICES, EIIS:BD), an Engineered Safety Feature (ESF). Closure of this valve constitutes an ESF actuation.

At 1103 hours, it was determined that the closed PCIV could have been the result of an ESF actuation. Instrumentation and Controls (I&C) technicians were notified and troubleshooting was initiated utilizing a Troubleshooting Control Form to determine the cause for the valve closure. The RO attempted to open the valve using the MCR handswitch. The valve opened and then automatically reclosed. The I&C technicians investigated the pressure differential switch (PDS) (PDS-059-106A, EIIS:PDS) that initiated the closure of the valve and found one of two microswitches, internal to the PDS, stuck in the tripped position. The PCIV closes when the PCIG supply pressure decreases to approximately 2 psig above primary containment pressure as sensed by the PDS. Investigation showed that there were no recorded Primary Containment Instrument Gas (PCIG, EIIS:LE) system perturbations, so actual differential pressure conditions for the microswitch actuation did not exist for the PCIV to receive a close signal. Since there is no alarm associated with the closure of the valve, and the Emergency Response Facility Display System (ERFDS) was inoperable, the exact time of the PCIV closure could not be determined.

During troubleshooting the I&C technicians cleaned and exercised the microswitch within PDS-059-106A. The microswitch then worked correctly. At 1345 hours, on December 11, 1992, the PDS was then functionally tested under a Surveillance Test (ST) procedure ST-2-059-602-1, "Channel A Calibration/Functional Test of the Primary Containment Instrument Gas Isolation Low Differential Pressure (PDS-59-106A, HV59-151A)." The PDS was found to be functioning properly and no other adjustments were made. At approximately 1500 hours, PCIV HV-059-151A was declared operable based on the satisfactory results of the functional ST procedure.

A four hour notification was made to the NRC at 1325 hours, on December 11, 1992, within four hours of the determination of reportability of the event, in accordance with the requirements of 10CFR50.72(b)(2)(ii), since this event

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resulted in an automatic actuation of an ESF. This report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(iv).

Analysis of the Event:

The actual consequences of this event were minimal. There was no release of radioactive material to the environment as a result of this event. No actual loss of pressure differential condition existed prior to or during this event. The PCIV responded as directed by the PDS. The closure of HV-059-151A isolated the 'A' Loop backup and the Long Term Instrument Gas Supply to three of the five ADS valves. The 'B' loop normal gas supply and the individual PCIG Accumulators to each of the three ADS valves were unaffected by the closure. The other two ADS valves, supplied by the 'A' loop of PCIG, and the 'B' loop backup, were unaffected by the PCIV closure (See Figure 1). Therefore, the ADS valves remained operable throughout the event. In the event of an accident requiring the operation of the solenoid valves to open the ADS valves, the normal PCIG supply and the normal PCIG supply and PCIG accumulators were available.

Cause of the Event:

Based upon investigation and interviews with the I&C technician and the RO, the most probable cause was determined to be a microswitch within the PDS that became stuck at the end of a calibration check performed two days prior to the event date. On December 9, 1992 at 1554 hours, a functional check on PDS-059-106A was successfully completed by the performance of procedure ST-2-059-602-1. Test data revealed that the PDS was left within acceptable limits. The I&C technician observed the RO open the valve. However, we concluded that due to the failure of the microswitch internal to the PDS at the end of the performance of ST procedure on December 9, 1992, the PCIV reclosed after opening. This was not observed by either the RO or the I&C technicians. The I&C calibration/functional ST procedure was deficient in that the procedure did not have the I&C technician verify the PDS instrument was fully reset by assuring the PCIV was restored to the open position.

Corrective Actions:

1. The Unit 1 and Unit 2 ST procedures, ST-2-059-602-1 and -2, will be revised by February 9, 1993 to clarify RO and I&C technician actions to insure the PDS is fully reset by recording the final position of HV-059-151A and HV-059-251A.
2. All appropriate calibration/functional ST procedures were reviewed and clarifications on restoration after testing are required. As a result of this review, procedures ST-2-059-603-1 and -2 will be revised by February 9, 1993 to clarify RO and I&C technician actions to insure the PDS is fully reset by recording the final position of HV-059-151B and HV-059-251B.



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

3. Based upon a review of previous Limerick Generating Station maintenance history and industry information, I&C has determined that the sticking of the microswitch within the PDS is an isolated occurrence. Additional corrective actions to prevent recurrence will be determined if further microswitch sticking is observed.

Previous Similar Occurrences:

None

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## FIGURE 1 SIMPLIFIED DRAWING OF PRIMARY CONTAINMENT INSTRUMENT GAS

