

## 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 9, 1991

Docket Nos. 50-352

50-353

License Nos. NPF-39

NPF-85

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

SUBJECT: Licensee Event Report  
Limerick Generating Station - Units 1 and 2

This LER reports a condition prohibited by Technical Specifications (TS) in that eight butterfly type Primary Containment (PC) Isolation valves associated with the PC Purge and Exhaust system and PC Hydrogen Recombiner were inoperable and the associated TS "Actions" were not taken in the specified time period. This condition was the result of inadequate testing performed on the valves' motor-operators during the Unit 1 and Unit 2 startup test programs.

Reference: Docket Nos. 50-352  
50-353  
Report Number: 1-91-008  
Revision Number: 00  
Event Date: March 8, 1991  
Report Date: April 9, 1991  
Facility: Limerick Generating Station  
P.O. Box A, Sanatoga, PA 19464

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B). Additionally, this LER is being submitted one day to ensure adequate review and approval prior to submittal. We regret inconvenience this may have caused.

Very truly yours,

WGS/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 1										DOCKET NUMBER (2) 0 5 0 0 0 3 5 2										PAGE (3) 1 OF 0 4	
TITLE (4) This LER reports a condition prohibited by TS in that eight Primary Containment Isolation valves were inoperable due to inadequate torque switch settings.																					
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 Unit 2						DOCKET NUMBER(S) 0 5 0 0 0 3 5 3						
0 3	0 8	9 1	9 1	0 0 8	0 0	0 4	0 9	9 1							0 5 0 0 0						
OPERATING MODE (9) 1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 6. (Check one or more of the following) (11)																			
POWER LEVEL (10) 1 0 0		20.402(b)				20.405(a)				60.73(a)(2)(iv)				73.71(b)							
		20.405(a)(1)(i)				60.38(a)(1)				60.73(a)(2)(v)				73.71(c)							
		20.405(a)(1)(ii)				60.38(a)(2)				60.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)							
		20.405(a)(1)(iii)				X 60.73(a)(2)(ii)				60.73(a)(2)(viii)(A)											
		20.405(a)(1)(iv)				60.73(a)(2)(iii)				60.73(a)(2)(viii)(B)											
		20.405(a)(1)(v)				60.73(a)(2)(iii)				60.73(a)(2)(ix)											
LICENSEE CONTACT FOR THIS LER (12)																					
NAME G. J. Madsen, Limerick Generating Station, Regulatory Engineer										TELEPHONE NUMBER AREA CODE 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											
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)				MONTH	DAY	YEAR					
X YES (If yes, complete EXPECTED SUBMISSION DATE)										NO				0 5	0 8	9 1					

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

On March 8, 1991, Limerick Generating Station maintenance personnel performed diagnostic testing to support the design basis engineering review for Generic Letter 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance." This testing was performed on a Unit 2 Primary Containment (PC) motor-operated butterfly valve (MOBV) associated with the PC Purge and Exhaust system. However, maintenance personnel discovered that this valve and seven other similar type valves had torque switch settings that would result in the MOBV tripping on high torque before the valve could adequately close and seat in the event these valves were required to close during a differential pressure condition. These eight MOBVs were declared inoperable and the applicable Unit 1 and Unit 2 PC penetrations were isolated by deactivating and securing the redundant PC isolation valves in the closed position. The consequences of this condition were minimal and there was no release of radioactive material to the environment. The cause of this event was due to inadequate testing performed for MOBVs during the Unit 1 and Unit 2 startup test programs. Further investigation of the cause is ongoing and a supplement will be provided to clarify the cause, address generic implications and include any additional corrective actions. The torque switch settings for the eight affected MOBVs are expected to be adjusted by June 15, 1991, and the appropriate penetrations will remain closed until the MOBVs are operable.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/86

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (3)

PAGE (3)

Limerick Generating Station, Unit 1

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

Unit Conditions Prior to the Event:

Unit 1 Operational Condition was 1 (Power Operation) at 100% Power Level.

Unit 2 Operational Condition was 1 (Power Operation) at 100% Power Level.

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

Description of the Event:

On March 8, 1991, Limerick Generating Station maintenance personnel were performing diagnostic testing to support the design basis engineering review for NRC Generic Letter 89-1, "Safety-Related Motor-Operated Valve Testing and Surveillance." This testing was performed on a Unit 2 Primary Containment (PC) isolation valve, HV-057-215, associated with the PC Purge and Exhaust system. This valve is a motor operated butterfly valve (MOBV). The purpose of this diagnostic testing was to determine the type of spring pack that was installed in this MOBV. However, during the diagnostic testing of HV-057-215, maintenance personnel discovered that the "as found" torque switch setting would result in the motor-operator tripping on high torque before the valve could adequately close and seat in the event this valve was required to close during a differential pressure condition (e.g., 44 psig during a design basis loss of Coolant Accident (LOCA)).

Further testing by maintenance personnel indicated that the actual motor-operator torque output for HV-057-215 was limited to 992 ft-lbs due to the low torque switch setting rather than the design torque output requirement of 4584 ft-lbs of torque. As a result of this condition, HV-057-215 was not capable of performing its PC isolation design function, thereby, making this valve inoperable. Therefore, at 1448 hours, on March 8, 1991, HV-057-215 was declared inoperable and the Unit 2 PC penetration X-26 was isolated in accordance with the ACTION of Technical Specifications (TS) Section 3.6.3 by deactivating and securing HV-057-215 in the closed position.

Maintenance personnel then performed a review of the original startup test packages for all MOBVs (i.e., 22 total for Unit 1 and Unit 2). The scope of this review was limited to motor-operated valves that were tested with a similar test method utilized on MOBV HV-057-215. This review identified that the following MOBVs did not meet torque design specifications for adequate valve seating in the event of a differential pressure condition or did not have test data available to support adequacy of MOBV testing.

Unit 1 MOBVsPent. #

HV-057-112

X-202

PC Exhaust Line

HV-057-115

X-26

PC Exhaust Line

HV-057-166

X-202

'A' PC Hydrogen Recombiner Return Line



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)  Limerick Generating Station, Unit 1	DOCKET NUMBER (2)  0 5 0 0 0 3 5 2	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 1	0 0 3	0 0	0 3	OF	0 4

TEXT (If record space is required, use additional NRC Form 200A's) (17)

Unit 2 MOBVs	Pent. #	
HV-057-212	X-202	PC Exhaust Line
HV-057-215	X-26	PC Exhaust Line
HV-057-247	X-201A	PC Purge Supply Line
HV-057-261	X-26	'A' PC Hydrogen Recombiner Supply Line
HV-057-266	X-202	'A' PC Hydrogen Recombiner Return Line

Therefore, on March 8, 1991, the above listed PC isolation valves were also declared inoperable and the redundant PC isolation valves associated with Unit 1 PC penetrations X-26 and X-202 and Unit 2 PC penetrations X-201A and X-202 were deactivated and secured in the closed position.

Based upon the review of the original MOBV test packages, we have concluded that this condition has existed since October 26, 1984, and July 10, 1989, the dates of the issuance of the Unit 1 and Unit 2 Low Power Operating Licenses, respectively. The ACTIONS required by Unit 1 and Unit 2 TS Section 3.6.3 were not taken within the specified time period constituting a condition prohibited by TS. This report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(i)(B).

#### Analysis of the Event:

The consequences of this condition were minimal in that at no time during operation of the PC Purge and Exhaust system or the Recombiner did an event occur producing a differential pressure condition requiring the MOBVs to close and seal. Additionally, there was no release of radioactive material to the environment as a result of this condition.

Because the PC purge and vent valves are opened during Operational Conditions 1, 2, and 3 (i.e., Power Operation, Startup, and Hot Shutdown) for only a limited period of time (restricted to less than 90 hours per year), it is unlikely that a LOCA would occur while the valves are open. Although, if a LOCA were to occur during this time, the PC isolation valves would close rapidly (less than 6 seconds after receipt of isolation signal) but would not adequately seat due to insufficient motor-operator torque. However, the redundant PC isolation valves for each of the affected MOBVs would have performed their design function and would have isolated the PC as designed in the event of an accident.

In the event that a redundant PC isolation valve failed to adequately close, valve seat leakage could occur with the potential for some radioactive release from either Unit 1 or Unit 2 PC penetrations. Additionally, the potential exists for the downstream Standby Gas Treatment System duct-work to be damaged by pressurization resulting from the inadequate closure of the MOBVs. However, the pressure surge would be limited by the near full closure of the MOBVs and any radioactive release resulting from this condition would be contained within the secondary containment.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/88

FACILITY NAME (1)  Limerick Generating Station, Unit 1	DOCKET NUMBER (2)  0 5 0 0 0 3 5 2	LER NUMBER (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 1	0 0 8	0 0	0 4	OF 0 4

TEXT (If more space is required, use additional NRC Form 266A's) (17)

Cause of the Event:

The preliminary results of our investigation indicates that the cause of this event was due to inadequate testing performed for the identified MOBVs during the Unit 1 and Unit 2 startup test programs.

Maintenance personnel reviewed the original startup test packages for all Unit 1 and Unit 2 MOBVs. This review has preliminarily identified that the MOBVs discussed previously either were not adequately tested to ensure proper torque switch settings necessary to attain the design specified values of torque, or did not have sufficient documentation to confirm adequate testing of the MOBVs. Further investigation is necessary and is currently ongoing to more clearly define the causes which lead to insufficient documentation and inadequate testing of the MOBVs. A supplement to this LER will be provided upon completion of this investigation to clarify the cause and will address any identified generic implications.

Corrective Actions:

The MOBVs for Unit 2, previously discussed, will have their torque switch settings adjusted prior to the restart from the Unit 2 refuel outage to achieve proper motor-operator output torque. Restart of Unit 2 is expected to be May 29, 1991. The Unit 1 MOBV, HV-057-166, torque switch setting has been adjusted and the remaining two Unit 1 MOBVs are expected to be adjusted by June 15, 1991. Additionally, during Operational Conditions 1, 2, and 3, the associated Unit 1 PC penetrations will remain isolated (i.e., deactivated and secured) in accordance with the ACTION of TS Section 3.6.3 until the torque switch settings are adjusted. A supplement to this LER will be provided to address any additional corrective actions, if appropriate, based upon the completion of the investigation into the cause and generic implications.

Previous Similar Occurrences:

None

Tracking Codes: (B1) Construction/Installation Deficiency (i.e., inadequate testing)