

## PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION  
 P. O. BOX A  
 SANATOGA, PENNSYLVANIA 19464

(215) 327-1200 EXT. 2000

M. J. MCCORMICK, JR., P.E.  
 PLANT MANAGER  
 LIMERICK GENERATING STATION

December 24, 1990  
 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 the manual isolation of the Main Control Room Ventilation System and the actuation of the Control Room Emergency Fresh Air Supply system, both Engineered Safety Features, due to an equipment malfunction.

Reference: Docket Nos. 50-352 and 50-353  
 Report Number: 1-90-029  
 Revision Number: 00  
 Event Date: November 28, 1990  
 Report Date: December 24, 1990  
 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)(iv).

Very truly yours,

WGS:cah

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

9101030284 901224  
 PDR ADOCK 05000352  
 S PDR

IE22

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   3
--	--	----------------------------

TITLE (4) Manual Isolation of the Main Control Room Ventilation system due to a malfunction of the 'B' Toxic Gas Analyzer System Memory.

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)																
1	1	2	8	9	0	9	0	0	0	2	9	0	0	1	2	2	4	9	0	LGS Unit 2	0	5	0	0	0	3	5	3

OPERATING MODE (9) 4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.73 (Check one or more of the following) (11)									
POWER LEVEL (10) 0   0   0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 50.38(a)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(b)	<input type="checkbox"/> 50.38(a)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)							
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)

NAME G. J. Madsen, Regulatory Engineer, Limerick Generating Station	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 NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

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 November 28, 1990, Main Control Room (MCR) personnel received a MCR annunciator alarm associated with the Toxic Gas Detection System. MCR personnel then entered Special Event procedure SE-2, "Toxic Gas," by donning self-contained breathing apparatus and manually initiated a MCR ventilation system isolation, an Engineered Safety Feature (ESF). In conjunction with the MCR ventilation system isolation, the Control Room Emergency Fresh Air Supply (CREFAS) system, also an ESF, initiated as designed and provided total recirculation of the MCR air without any intake from the outside atmosphere. The 'B' train of CREFAS started and the redundant 'A' train of CREFAS remained in standby. Chemistry personnel were notified and air samples from the MCR were obtained. No toxic gas concentrations were detected. The consequences of this event were minimal in that there was no toxic gas intake to the MCR. This event was caused by the failure of 'B' Toxic Gas Analyzer memory and resulted in a MCR annunciator alarm. The manufacturer of the Toxic Gas Analyzer system was contacted to acquire additional actions that can be implemented to limit this equipment malfunction from occurring in the future.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

TEXT (if more space is required, use additional NRC Form 306A 2/173)

Unit Conditions Prior to the Event:

Unit 1 operating condition was 4 (Cold Shutdown) at a 0% Power Level.

Unit 2 operating condition was 1 (Power Operation) at a 100% Power Level.

In addition, the Main Control Room Ventilation System was aligned in its normal operating mode with the supply from the outside atmosphere. There were no structures, systems or components out of service which contributed to this event.

Description of the Event:

On November 28, 1990, at approximately 0958 hours, licensed Main Control Room (MCR) personnel received a MCR annunciator alarm associated with the Toxic Gas Detection System (EIIIS:VI). A licensed MCR operator then attempted to verify the validity of the alarm and found the 'B' Toxic Gas Analyzer unable to supply the requested information due to a system processing error. MCR operations personnel switched to the 'A' Toxic Gas Analyzer which indicated that no toxic gas levels were present. Licensed MCR operations personnel then immediately entered Special Event procedure SE-2, "Toxic Gas," by donning self-contained breathing apparatus and at 1000 hours manually initiated a MCR ventilation system isolation, an Engineered Safety Feature (ESF). In conjunction with the manual MCR ventilation system isolation the Control Room Emergency Fresh Air Supply (CREFAS) System, also an ESF, initiated as designed and provided total recirculation of the MCR air without any air intake from the outside atmosphere. The 'A' train of CREFAS remained in the automatic standby mode.

The toxic gas analyzers function to provide indication of high toxic gas concentrations in the MCR outside air intake plenum. A manual isolation of the MCR ventilation system is required by procedure SE-2, in the event that toxic chemicals are detected by these toxic gas analyzers.

Chemistry personnel then donned SCBAs, entered the MCR, and obtained air samples. The results of the air sample analysis indicated that there was no detectable toxic gas concentrations present in the MCR. At 1050 hours, licensed MCR personnel removed their SCBAs and declared the 'B' Toxic Gas Analyzer inoperable. On November 30, 1990, troubleshooting of the 'B' Toxic Gas Analyzer was performed. This troubleshooting identified that the operating parameters within the memory of the 'B' Toxic Gas Analyzer had been lost. The 'B' Toxic Gas Analyzer was repaired by loading the operating parameters back into the analyzer. The 'B' Toxic Gas Analyzer was then left in its analyze mode of operation to monitor its performance and ensure a repeat failure would not occur. On December 4, 1990, a functional surveillance test was performed and completed satisfactorily for the 'B' Toxic Gas Analyzer which was then declared operable and returned to service.

A four hour notification to the NRC was made in accordance with the requirements of 10CFR50.72(a)(2)(ii) at 1147 hours on November 28, 1990, since this event

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Limerick Generating Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 5 2	LER NUMBER (6)			PAGE (3)		
		YEAR 9 0	SEQUENTIAL NUMBER 0 2 9	REVISION NUMBER 0 0			
					0 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 366A 1) (17)

resulted in a manual actuation of an ESF. This written report is being submitted in accordance with 10CFR 50.73 (a)(2)(iv).

Analysis of the Event:

The consequences of this event were minimal in that no toxic gas actually existed. There was no release of radioactive material to the environment as a result of this event. The MCR ventilation system was isolated, and the 'B' train of CREFAS started and operated as designed. The redundant 'A' train of CREFAS was in the automatic standby mode and was available for operation in the event the 'B' train failed to properly function.

In addition, if an actual concentration of toxic gas had been present, the 'A' Toxic Gas Analyzer was available to indicate toxic gas concentration levels to MCR personnel as designed.

Cause of the Event:

The MCR ventilation system isolation and initiation of the 'B' train of CREFAS was initiated by the MCR operator in accordance with procedure SE-2 when the actual toxic chemical concentrations could not be verified by both the 'A' and 'B' Toxic Gas Analyzer. The operator was not able to determine the toxic chemical concentration due to an equipment malfunction associated with the 'B' Toxic Gas Analyzer. When the malfunction occurred, the high toxic chemical concentration annunciator alarmed and the operators entered procedure SE-2.

Limerick Generating Station Instrument and Control (I&C) personnel contacted the manufacturer of the Toxic Gas Analyzers and determined that errors were introduced into the system memory due to possible power supply fluctuations. This memory error resulted in a loss of system operating parameters and setpoints leading to the 'B' Toxic Gas Analyzer not being able to complete its analyzing function and thus alarmed in the MCR.

Corrective Actions:

This event is currently considered to be an isolated occurrence. However, the vendor associated with the Toxic Gas Analyzer system was contacted to provide additional actions that can be taken to further limit this malfunction from occurring again.

Previous Similar Occurrences:

LER's 85-90, 86-22, 86-28, 88-43, and 89-29, reported manual isolations of the MCR ventilation system due to high toxic chemical concentration signals. However, these events did not occur as a result of a system memory failure and therefore previous corrective actions could not have prevented this event.

Tracking Code: B 99 (Other Deficiency)