

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) **Limerick Generating Station - Unit 1** DOCKET NUMBER (2) **050003521** PAGE (3) **1 OF 04**

TITLE (4) **Control Room Emergency Fresh Air Supply Actuation Resulting from a Procedural Error During a Chlorine Analyzer Functional Test**

EVENT DATE (6)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (9)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER (5)
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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)

20.402(b)	<input type="checkbox"/>	20.406(a)	<input checked="" type="checkbox"/>	20.73(a)(2)(iv)	<input type="checkbox"/>	73.71(b)	<input type="checkbox"/>
20.406(a)(1)(i)	<input type="checkbox"/>	20.73(a)(1)	<input type="checkbox"/>	20.73(a)(2)(v)	<input type="checkbox"/>	73.71(c)	<input type="checkbox"/>
20.406(a)(1)(ii)	<input type="checkbox"/>	20.73(a)(2)	<input type="checkbox"/>	20.73(a)(2)(vi)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Text, NRC Form 305A)	<input type="checkbox"/>
20.406(a)(1)(iii)	<input type="checkbox"/>	20.73(a)(2)(i)	<input type="checkbox"/>	20.73(a)(2)(vii)(A)	<input type="checkbox"/>		
20.406(a)(1)(iv)	<input type="checkbox"/>	20.73(a)(2)(ii)	<input type="checkbox"/>	20.73(a)(2)(vii)(B)	<input type="checkbox"/>		
20.406(a)(1)(v)	<input type="checkbox"/>	20.73(a)(2)(iii)	<input type="checkbox"/>	20.73(a)(2)(viii)	<input type="checkbox"/>		

LICENSEE CONTACT FOR THIS LER (12)

NAME **Charles A. Mengers, Senior Engineer, Licensing Section** TELEPHONE NUMBER **215 841-5184**

AREA CODE **215**

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 yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

**Abstract: 87-069**

On December 30, 1987 at 1855 hours, the control room ventilation system isolated and the 'A' train of the Control Room Emergency Fresh Air Supply (CREFAS) system, an Engineered Safety Feature, initiated as designed. The 'C' chlorine analyzer, which functions to isolate the control room ventilation system in the event the chlorine concentration in the Control Enclosure Intake Plenum exceeds 0.4 ppm, momentarily spiked to 0.5 ppm. The remaining two operable chlorine analyzers showed no increase in chlorine concentration. The 'C' analyzer was inspected and a small amount of white powdery substance was found on the analyzer probe's plastic casing. The analyzer probe was replaced with a spare probe at 1730 hours on December 31, 1987. The white powder was analyzed and determined to contain sodium chloride. The cause of this event was a procedural deficiency which resulted in an error during the performance of a previous routine functional test. The test required the placement of a bottle of sodium hypochlorite solution under the analyzer probe and the error allowed some test solution to deposit on the probe casing. The test procedure will be revised to require the use of a large mouth solution container to ensure solution does not contact the probe. There were no adverse consequences resulting from this event.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

TEXT IF more space is required, use additional NRC Form 3054 (117)

Unit Conditions Prior to the Event:

Operating Mode 1 (Power Operation)

Reactor Power 99.9%

Description of the Event:

On December 30, 1987 at 1855 hours, the control room ventilation system isolated and the 'A' train of the Control Room Emergency Fresh Air Supply (CREFAS) system initiated as designed and is reportable as an Engineered Safety Feature actuation. The 'C' chlorine analyzer, which functions to isolate the control room ventilation system in the event the chlorine concentration in the Control Enclosure Intake Plenum exceeds 0.4 ppm, momentarily spiked to 0.5 ppm. The 'C' channel indication oscillated between 0.3 and 0.5 ppm for approximately ten minutes following the isolation. The remaining two operable chlorine analyzers showed no increase in chlorine concentration. Upon receipt of the 'C' channel control room ventilation isolation, the control room operators manually tripped the remaining three channels in accordance with System Procedure S.78.0.B, "Verification of Control Room Isolation Signal". The Instrumentation and Controls (I&C) Group inspected the 'C' analyzer and found a small amount of white powdery substance on the analyzer probe's plastic casing. The Chemistry Section took a sample of the white substance for analysis. The analyzer probe was replaced with a spare probe at 1730 hours on December 31, 1987. The isolation was reset at 1743 hours and the control room ventilation system was returned to service. The duration of the control room isolation was 22 hours and 48 minutes.

Prior to the event, at 1600 hours the 'C' analyzer successfully passed Routine Test RT-2-078-600-0 which verifies the function of the analyzer.

Consequences of the Event:

There were no adverse consequences and no release of radioactive material as a result of this event. The control room ventilation and CREFAS systems responded as designed. Continuous monitoring

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FACILITY NAME (1)  
Limerick Generating Station  
Unit 1

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of the control room ventilation intake air was provided by the operable 'D' chlorine analyzer. The consequences of a chlorine analyzer failure are minimal because the analyzer fails in a safe mode with high chlorine indication.

Cause of the Event:

The cause for the 'C' analyzer's false high chlorine concentration signal was a procedural deficiency which resulted in an error during the performance of a previous monthly Routine Functional Test. The routine functional test utilizes a Chemistry Section procedure which requires the placement of a bottle of sodium hypochlorite solution under the analyzer probe to simulate a high chlorine condition. It is believed that the bottle contacted the probe's plastic casing and deposited some sodium hypochlorite solution during performance of a previous test. The chemistry analysis identified the presence of sodium chloride in the sample of white powder. Evaporation of the sodium hypochlorite solution resulted in the formation of sodium chloride crystals on the surface of the probe's plastic casing which later flaked off and contacted the sensing element of the analyzer probe. The procedure did not specify the use of a large mouth container to minimize the possibility of the container contacting the probe.

Corrective Actions:

At 1730 hours on December 31, the 'C' analyzer probe was replaced and tested and the control room ventilation was reset at 1743 hours in accordance with System Procedure S 78.7.A, "Control Room HVAC System Restoration to Normal Operation After Isolation." The Chemistry Section analyzed the sample of the white dust found on the probe casing and determined it to contain sodium chloride. The redundant 'D' chlorine analyzer's probe has been verified to not have any similar white dust on the casing surface.

Actions Taken to Prevent Recurrence:

Plant modification 85-502, which is scheduled for completion by March 30, 1988, has been designed to help prevent further CREFAS

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
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actuations due to false high chlorine concentration signals. The modification will change the control room ventilation system isolation logic from the current one-out-of-two once logic to a one-out-of-two twice logic.

The Chemistry Section procedure utilized by the chlorine analyzer functional test procedures will be revised by February 29, 1988 to include a cautionary note requiring the use a large mouth test solution container and careful attention to avoid any contact of the test solution and/or solution container with the analyzer probe.

Previous Similar Occurrences:

Previous Limerick LERs have reported CREFAS actuations due to chlorine analyzer malfunctions but no event was the result of a test solution contacting a probe.

Code: Procedural Deficiency (D2)

EIIS Code:

The EIIS code for the control room ventilation and CREFAS systems is VI. The code for the affected component, chlorine analyzer, is AE.

PHILADELPHIA ELECTRIC COMPANY

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January 29, 1988

Docket No. 50-352

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

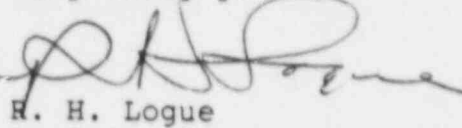
SUBJECT: Licensee Event Report  
Limerick Generating Station - Unit 1

This LER reports an automatic actuation of the Control Room Emergency Fresh Air Supply (CREFAS) system, an Engineered Safety Feature, resulting from a false high chlorine concentration signal.

Reference:	Docket No. 50-352
Report Number:	87-069
Revision Number:	00
Event Date:	December 30, 1987
Report Date:	January 29, 1988
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,

  
R. H. Logue  
Assistant to the Manager  
Nuclear Support Division

cc: W. T. Russell, Administrator, Region I, USNRC  
E. M. Kelly, Senior Resident Site Inspector

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