NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/88

LICENSEE EVENT REPORT (LER)

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

TITLE (4) Reactor Enclosure Secondary Containment Isolation on Low Differential Pressure due to a Severed Instrument Air Line Tube

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)
0 5	2 1	8 8	8 8	— 0 2 0	— 0 1	0 9	0 1	8 8		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 9 0	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	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)(viii)(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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Charles A. Mengers, Senior Engineer, Licensing Section	AREA CODE 2 1 5 — 8 4 1 — 5 1 8 4

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

Abstract: 88-020 Rev. 1

On May 21, 1988 at 1847 hours, a "B" channel Reactor Enclosure Secondary Containment isolation occurred and the "B" trains of the Standby Gas Treatment System (SGTS) and Reactor Enclosure Recirculation System (RERS), Engineered Safety Features, started as designed. The isolation occurred when differential pressure between the Reactor Enclosure (RE) and outside atmosphere decreased below the setpoint of negative 0.1 inches water gauge. The "B" train of the SGTS restored and maintained Reactor Enclosure differential pressure at less than negative 0.1 inches water gauge, thus preventing the initiation of an "A" channel Reactor Enclosure isolation signal. The SGTS maintained Secondary Containment during the event as designed. The cause of the event was a severed instrument air line servicing the "B" Reactor Enclosure exhaust air fan blade pitch device. The cause of the severed instrument air line tubing was vibration induced fatigue. The instrument air line was repaired, the Reactor Enclosure isolation reset, and normal Reactor Enclosure ventilation was restored at 2000 hours. Similar instrument air line tubing was inspected, with no vibration problems noted. There was no release of radioactive material as a result of this event.

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

Unit Conditions Prior to the Event:

Operating Mode 1 (Power Operation)

Reactor Power 90%

Description of the Event:

On May 21, 1988 at 1847 hours, a "B" channel Reactor Enclosure Secondary Containment isolation occurred and the "B" trains of the Standby Gas Treatment System (SGTS) and Reactor Enclosure Recirculation System (RERS), Engineered Safety Features, started as designed. The isolation occurred when differential pressure between the Reactor Enclosure and outside atmosphere decreased below the negative 0.1 inch water gauge setpoint. The "B" train of the SGTS restored and maintained Reactor Enclosure differential pressure at less than negative 0.1 inches water gauge, thus preventing the initiation of an "A" channel Reactor Enclosure isolation signal. The SGTS maintained Secondary Containment during the event as designed.

Prior to the isolation, Operations personnel discovered a severed instrument air line servicing the "B" Reactor Enclosure exhaust air fan blade pitch positioner. Instrumentation and Controls (I&C) personnel were attempting to repair the severed tubing; however, air pressure dropped low enough to cause the blade positioner to readjust the "B" exhaust fan blades to a minimum setting limiting the fan's exhaust capacity. Reactor Enclosure to outside atmosphere differential pressure decreased, and the isolation occurred. The isolation was reset and normal Reactor Enclosure ventilation was restored by 2000 hours. The Reactor Enclosure Secondary Containment remained isolated for 1 hour, 13 minutes.

Consequences of the Event:

Normal Reactor Enclosure ventilation tripped, and the Reactor Enclosure isolated as designed on low differential pressure. The "B" trains of SGTS and RERS initiated as designed and the redundant "A" trains of SGTS and RERS were available for operation. There was no release of radioactive material to the environment as a result of this event.

Cause of the Event:

The cause of the event was vibration induced fatigue of the tubing, resulting in a severed instrument air line at a Swagelok

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

fitting servicing the "B" Reactor Enclosure exhaust air fan blade pitch positioner. The Reactor Enclosure air pressure is automatically maintained by a pressure sensing device which supplies a pneumatic signal to the exhaust air fan's blade pitch positioner to vary the Reactor Enclosure exhaust air flow rate. Due to the severed instrument air line, air pressure decreased shutting off the air supply to the exhaust air fan's blade pitch positioner. The exhaust air fan blades went to a minimum pitch reducing exhaust air fan capacity. As a result, the required differential pressure could not be maintained.

Corrective Actions:

The severed instrument air line tubing was repaired, the Reactor Enclosure isolation reset, and normal Reactor Enclosure ventilation was restored at 2000 hours.

Actions Taken to Prevent Recurrence:

The severed air line was sent to the metallurgical laboratory for failure mode analysis. The results of the metallurgical laboratory analysis confirmed that the mode of failure was vibration induced fatigue. The Technical Group and Engineering are currently investigating actions to be taken which will protect the tubing from future vibrational damage.

EIIS Codes:

VB - Reactor Enclosure Ventilation
AD - RERS
BH - SGTS
FM - Positioner
FAN - Fan
DUCT - Duct

Previous Similar Occurrences:

Limerick LERs 87-50 and 88-002 reported Reactor Enclosure Secondary Containment isolations due to a leak in the instrument air line tubing servicing the "B" Reactor Enclosure exhaust air fan.

Tracking Codes: (B2) Equipment failure due to Abnormal Wear
(B9) Construction/Installation error

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E. P. FOGARTY
MANAGER
NUCLEAR SUPPORT DIVISION

10 CFR Part 50
Section 73

September 1, 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 revised LER concerns an isolation of the Reactor Enclosure Secondary Containment on low differential pressure due to the inability of the exhaust air fans to maintain differential pressure as a result of a severed instrument air line tube.

Reference:	Docket No. 50-352
Report Number:	88-020
Revision Number:	01
Event Date:	May 21, 1988
Report Date:	September 1, 1988
Facility:	Limerick Generating Station P.O. Box A, Sanatoga, PA 19464

This revised LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv) to provide the laboratory analysis results for determining the cause of the instrument air line tubing failure. The changes are identified by a vertical bar in the right margin.

Very truly yours,

E P Fogarty

E. P. Fogarty
Manager
Nuclear Support Division

cc: W. T. Russell, Administrator, Region 1, USNRC
T. J. Kenny, USNRC Senior Resident Inspector
INPO Records Center

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