



10CFR50.73

LG-15-099  
July 30, 2015

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Limerick Generating Station, Unit 2  
Renewed Facility Operating License No. NPF-85  
NRC Docket No. 50-353

Subject: LER 2015-003-00, Condition That Could Have Prevented Fulfillment of the  
Reactor Enclosure Secondary Containment Integrity Safety Function

This Licensee Event Report (LER) addresses a condition that could have prevented fulfillment of the reactor enclosure secondary containment integrity safety function. Both airlock doors on one reactor enclosure airlock were briefly opened simultaneously. The airlock design does not prevent simultaneous door opening. This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(v)(C).

There are no commitments contained in this letter.


If you have any questions, please contact Robert B. Dickinson at (610) 718-3400.

Respectfully,

Original signed by David P. Lewis for

Richard W. Libra  
Vice President – Limerick Generating Station  
Exelon Generation Company, LLC

cc: Administrator Region I, USNRC  
USNRC Senior Resident Inspector, LGS

<b>NRC FORM 366</b> (01-2014)		<b>U.S. NUCLEAR REGULATORY COMMISSION</b>		<b>APPROVED BY OMB: NO. 3150-0104</b>		<b>EXPIRES: 01/31/2017</b>								
 <b>LICENSEE EVENT REPORT (LER)</b> (See Page 2 for required number of digits/characters for each block)		Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.												
<b>1. FACILITY NAME</b>  Limerick Generating Station, Unit 2				<b>2. DOCKET NUMBER</b>  05000353		<b>3. PAGE</b>  1 OF 4								
<b>4. TITLE</b>  Inoperable Reactor Enclosure Secondary Containment Integrity Due to Open Airlock														
<b>5. EVENT DATE</b>			<b>6. LER NUMBER</b>			<b>7. REPORT DATE</b>			<b>8. OTHER FACILITIES INVOLVED</b>					
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER				
06	03	2015	2015	- 003	- 00	07	30	2015	FACILITY NAME	DOCKET NUMBER				
										05000				
										05000				
<b>9. OPERATING MODE</b>			<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>											
1			<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(i)(C)			<input type="checkbox"/> 50.73(a)(2)(vii)		
			<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(viii)(A)		
			<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)			<input type="checkbox"/> 50.73(a)(2)(viii)(B)		
			<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(iii)			<input type="checkbox"/> 50.73(a)(2)(ix)(A)		
100			<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(iv)(A)			<input type="checkbox"/> 50.73(a)(2)(x)		
			<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(A)			<input type="checkbox"/> 73.71(a)(4)		
			<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(v)(B)			<input type="checkbox"/> 73.71(a)(5)		
			<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)(A)			<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)			<input type="checkbox"/> OTHER		
			<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(v)(D)			Specify in Abstract below or in NRC Form 366A		
<b>12. LICENSEE CONTACT FOR THIS LER</b>														
FACILITY NAME Robert B. Dickinson, Manager - Regulatory Assurance									TELEPHONE NUMBER (Include Area Code) 610-718-3400					
<b>13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT</b>														
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX					
<b>14. SUPPLEMENTAL REPORT EXPECTED</b>						<b>15. EXPECTED SUBMISSION DATE</b>			MONTH	DAY	YEAR			
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO														
<b>ABSTRACT</b> (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)														
<p>Three workers were transporting a laundry cart through an airlock from the reactor enclosure to the refuel floor when the cart bumped the inboard door crash bar which opened the door. The three workers and the cart were inside the airlock when both doors were open. The airlock was closed in less than 10 seconds. This event resulted in a brief inoperability of reactor enclosure secondary containment integrity. The cause of the event was the breakdown of two human performance barriers. The failed barriers were situational awareness and inadequate risk perception. The workers failed to assess the risk associated with overcrowding the airlock with three workers and a laundry cart. This event was not prevented by the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors. The airlock doors were closed to restore reactor enclosure secondary containment integrity. The workers were coached regarding the recognition and management of the risk associated with airlock use. Performance management actions were taken by the workers' management. The work group implemented a limit of two workers simultaneously using the airlock. The lessons learned were communicated to the site.</p>														

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**NARRATIVE****Unit Conditions Prior to the Event**

Unit 2 was in Operational Condition (OPCON) 1 (Power Operation) at 100% power. There were no structures, systems or components out of service that contributed to this event.

**Description of the Event**

On Wednesday June 3, 2015, Limerick Unit 2 was operating at 100% power. At approximately 1108 hours, the main control room supervisor was notified that both doors (EIIS:DR) on one reactor enclosure airlock had been briefly opened. The reactor enclosure low pressure alarm (EIIS:ALM) setpoint is 0.20 inches of vacuum water gauge (WG) and the reactor enclosure low pressure alarm did not actuate during the event. The airlock was open for less than 10 seconds; therefore, the main control room airlock open alarm did not actuate. The reactor enclosure secondary containment (EIIS:NH) integrity was declared inoperable for the period when both doors were open.

An investigation confirmed that three workers transporting materials in a cart had used the airlock to traverse from the reactor enclosure to the refuel floor. The workers entered the airlock using the inboard door and verified the door was closed and latched. The workers then opened the outboard door to enter the refuel floor. The cart bumped the inboard door crash bar and the inboard door opened while the outboard door was open. The local alarm actuated, the worker immediately reclosed the open doors, and the breach of secondary containment was terminated. The airlock was open for a period of less than 10 seconds. The worker notified Operations shift management of the containment breach.

TS 3.6.5.1.1 Reactor Enclosure Secondary Containment Integrity surveillance requirement 4.6.5.1.1.a requires verification that reactor enclosure pressure is greater than or equal to 0.25 inches of vacuum water gauge on a 24-hour frequency. The TS surveillance requirement 4.6.5.1.1.b.2 requires at least one door in each access to the reactor enclosure be verified closed on a 31-day frequency. TS 3.6.5.1.1 is applicable in operational conditions (OPCON) 1, 2, and 3.

This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(v)(C) for a condition that could have prevented the fulfillment of the safety function of structures or systems needed to control the release of radioactive material.

NEI 99-02 (Revision 7), Regulatory Assessment Performance Indicator Guideline, section 2.2 Mitigating Systems Cornerstone, Safety System Functional Failures, Clarifying Notes, states the following:

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**NARRATIVE**

Engineering analyses: events in which the licensee declared a system inoperable but an engineering analysis later determined that the system was capable of performing its safety function are not counted, even if the system was removed from service to perform the analysis.

This event will not be reported in the NRC performance indicator (PI) for safety system functional failures (SSFF) since an engineering analysis (technical evaluation) was performed which determined that the system was capable of performing its safety function during events when the airlock was open for less than 10 seconds. The post-LOCA dose calculation does not credit reactor enclosure secondary containment integrity for mitigation of on-site and off-site doses for the first 15.5 minutes of the event. Therefore, this event is bounded by the existing dose calculation.

**Analysis of the Event**

There was no actual safety consequence associated with this event. The potential safety consequences of this event were minimal. Both doors on the airlock were open simultaneously for less than 10 seconds.

To prevent a breach of secondary containment each reactor enclosure airlock is equipped with door open indicating lights that are used to locally verify the door status. If both doors are opened simultaneously a local alarm is actuated. If both doors remain open for greater than 10 seconds, an alarm is actuated in the main control room and operators are dispatched to verify that the airlock doors are closed.

UFSAR 6.2.3.2.1 describes the secondary containment design. The reactor enclosure secondary containment (Zones I and II) is designed to limit the inleakage to 200% of their zone free volume per day, and the refueling area secondary containment (Zone III) is designed to limit the inleakage to 50% of its zone free volume per day. These inleakage rates are based on a negative interior pressure of 0.25 inches wg, while operating the standby gas treatment system (SGTS). Following a LOCA the affected zone is maintained at this negative pressure by operation of the SGTS.

**Cause of the Event**

The cause of the event was the breakdown of two human performance barriers. The failed barriers were situational awareness and inadequate risk perception. The workers failed to assess the risk associated with overcrowding the airlock with three workers and a laundry cart. This event was not prevented by the design of the reactor enclosure airlocks since there is no mechanical interlock and the door open indicating light does not prevent simultaneous opening of both airlock doors.

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**NARRATIVE**

**Corrective Action Completed**

The airlock doors were closed to restore reactor enclosure secondary containment integrity.

The workers were coached regarding the recognition and management of the risk associated with airlock use.

Performance management actions were taken by the workers' management.

The work group implemented a limit of two workers simultaneously using the airlock.

The lessons learned were communicated to the site.

**Previous Similar Occurrences**

Unit 2 LER 2014-007, Unit 2 LER 2014-004, Unit 2 LER 2014-003, Unit 1 LER 2014-003, Unit 2 LER 2014-002, Unit 2 LER 2014-001, Unit 1 LER 2014-002, Unit 1 LER 2014-001, and Unit 2 LER 2013-003 were submitted due to reactor enclosure airlock breaches allowed by the airlock design. Unit 2 LER 2013-002 was submitted due to a reactor enclosure airlock breach caused by a non-functional airlock door open indicating light not providing the correct door status. Unit 2 LER 2014-006 was submitted due to a reactor enclosure airlock breach caused by a door improperly latched closed.