

10CFR50.73

October 26, 2009

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

Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Subject: LER 2009-003-00, Both Isolation Actuation Instrumentation Channels
Inoperable

This Licensee Event Report (LER) addresses a condition prohibited by Technical Specifications due to an inoperable isolation actuation instrumentation function. An error in a computation resulted in a nonconservative setpoint for the high pressure coolant injection system equipment room high differential temperature isolation. The trip systems were inoperable for a period that exceeded the Technical Specification allowed outage time.

This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(vii).

There are no commitments contained in this letter.

If you have any questions, please contact the Regulatory Assurance Manager at 610-718-3400.

Sincerely,

Original signed by

Christopher H. Mudrick
Vice President – Limerick Generating Station
Exelon Generation Company, LLC

cc: S.J. Collins, Administrator Region I, USNRC
E.M. DiPaolo, USNRC Senior Resident Inspector, LGS

NRC FORM 366 (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104		EXPIRES 08/31/2010			
LICENSEE EVENT REPORT (LER) (See reverse 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 Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.					
1. FACILITY NAME Limerick Generating Station, Unit 1				2. DOCKET NUMBER 05000352		3. PAGE 1 of 5				
4. TITLE: Both Isolation Actuation Instrumentation Channels Inoperable										
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
08	27	2009	2009	- 003	- 00	10	26	2009	Limerick Unit 2	05000353
									FACILITY NAME	DOCKET NUMBER
										05000
9. OPERATING MODE 1		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: <i>(Check all that apply)</i>								
10. POWER LEVEL 100		<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input checked="" 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)					
		<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 type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER					
		<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" 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					
12. LICENSEE CONTACT FOR THIS LER										
NAME John G. Hunter III, Manager – Regulatory Assurance							TELEPHONE NUMBER (Include Area Code) 610-718-3400			
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT										
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	
14. SUPPLEMENTAL REPORT EXPECTED					15. EXPECTED SUBMISSION DATE			MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)					<input checked="" type="checkbox"/> NO					
ABSTRACT <i>(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)</i> <p>A review of steam leak detection setpoint calculations identified a nonconservative isolation actuation setpoint for the high pressure coolant injection system equipment room high differential temperature isolation. The event was caused by inadequate design controls that allowed less than adequate documentation of design analysis and less than adequate transmittal of design information during a modification and Technical Specification change in 1994. This resulted in an error during the environmental qualification temperature computation for the high pressure coolant injection system equipment room.</p> <p>Upon issue discovery a temporary configuration change was implemented to lower the high pressure coolant injection system equipment room high differential temperature setpoints. This issue is historical. Technical rigor of calculation issues have been addressed by implementation of the post-merger Exelon configuration change process procedures in 2002 and technical task risk/rigor assessments that were implemented in 2004. A license amendment request will be submitted to lower the Technical Specification 3.3.2 high pressure coolant injection system equipment room high differential temperature setpoint.</p>										

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Unit Conditions Prior to the Event

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

Description of the Event

On Thursday August 27, 2009, an engineer was reviewing calculations associated with the steam leak detection (SLD) (EIS:IJ) isolation setpoints for the Unit 1 and Unit 2 high pressure coolant injection (HPCI) (EIS:BJ) system equipment rooms. The engineer identified that the setpoints for the equipment room high differential temperature were nonconservative in that a 25 gpm HPCI steam line leak would result in an automatic start of the two room coolers which would prevent the room ventilation differential temperature from increasing to the isolation setpoint. Operations shift management was notified of the condition at 2310 hours and declared the affected channels inoperable.

Technical Specification (TS) 3.3.2 Isolation Actuation Instrumentation action "c" was entered on both units due to both trip systems being inoperable which required restoration of the affected channels within 1 hour. The HPCI room coolers were placed in "off". The Unit 2 trip systems were declared operable at 2319 hours, and the TS action was exited. The Unit 1 trip systems were declared operable at 2320 hours and the TS action was exited. A temporary configuration change was implemented to lower the isolation setpoints from 126 degrees Fahrenheit differential to 75 degrees Fahrenheit differential and the HPCI room coolers were restored to service.

An investigation determined that an error occurred during a modification in 1994 that increased the environmental qualification temperature in the HPCI equipment room. The modification did not fully account for winter operation of the HPCI room coolers when determining the setpoint for the HPCI equipment room differential temperature isolation. A license amendment request (LAR) based on the modification was submitted which increased the setpoint from less than or equal to 80 degrees Fahrenheit differential to less than or equal to 126 degrees Fahrenheit differential.

The 1994 modification also increased the environmental qualification temperature for the reactor core isolation cooling (RCIC) (EIS:EN) system equipment room. The RCIC room isolation setpoints were verified to be conservative for both units.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A) (17)*

The 8-hour ENS report (#45307) required by 10CFR50.72(b)(3)(v)(C) for a condition that could have prevented fulfillment of the safety function of the isolation actuation instrumentation system was completed on Friday August 28, 2009 at 0113 hours. It was later determined that the safety function was maintained by the other HPCI equipment room temperature sensors which would have initiated the isolation on a 25 gpm leak. An ENS retraction was submitted on Tuesday October 20, 2009.

This event resulted in the nuclear power plant being in a condition prohibited by Technical Specifications and a condition that caused two independent channels to become inoperable in a single system designed to control the release of radioactive material. Therefore, this LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(vii).

Analysis of the Event

There was no actual safety consequence associated with this event. The potential safety consequences of this event were minimal. The operators would have been alerted to an unisolated HPCI steam line leak by the room cooler inlet high temperature alarms at 114 degrees Fahrenheit. The procedure directs the operator to check for steam leaks if a high temperature exists. If the temperature exceeds 120 degrees then entry into procedure T-103 Secondary Containment Control is required. T-103 directs isolation of all systems discharging into the area. The Control Room Supervisor would have directed the Reactor Operator to manually isolate the HPCI steam line to terminate the leak. In addition, the other HPCI equipment room high temperature isolation sensors would have initiated an isolation on a 25 gpm HPCI steam line leak.

The original plant TS specified less than or equal to 80 degrees Fahrenheit as the setpoint for the HPCI equipment room differential temperature isolation. In 1994 a modification increased the environmental qualification limits of the HPCI and RCIC systems to allow the systems to remain operable when equipment room cooling is unavailable. This was the basis for a license amendment request that was submitted to the NRC on July 20, 1994 which requested increasing the HPCI and RCIC equipment room high differential temperature isolation setpoints to less than or equal to 126 and 109 degrees Fahrenheit, respectively. The license amendment request also requested an increase in the HPCI and RCIC room temperature isolation setpoints to 225 and 205 degrees Fahrenheit, respectively. The setpoint changes were approved by the NRC via license amendments 85 (Unit 1) and 46 (Unit 2) on January 20, 1995.

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The HPCI steam line has inboard and outboard primary containment isolation valves (PCIVs). The inboard PCIV has Division 4 power and isolation logic. The outboard PCIVs have Division 2 power and isolation logic. Each isolation logic trip system includes HPCI pipeway temperature, HPCI equipment room temperature, and HPCI equipment room differential temperature sensors. If any of these temperature sensors exceeds its setpoint it initiates automatic isolation of either the inboard or outboard HPCI steam line PCIVs.

During this event both the inboard and outboard isolation trip systems were not capable of initiating an isolation on room ventilation high differential temperature for a HPCI steam line leak of 25 gpm since the automatic start of the HPCI room coolers would have prevented room differential temperature from exceeding the 126 degrees Fahrenheit setpoint. However, the isolation would have been initiated on room high temperature at the 225 degrees Fahrenheit setpoint during a 25 gpm leak. The design of the isolation system is based on isolating steam leaks that exceed 25 gpm.

Cause of the Event

The event was caused by inadequate design controls that allowed less than adequate documentation of design analysis and less than adequate transmittal of design information to and from the third party performing the computations supporting the TS change in 1994. This resulted in an error during the environmental qualification temperature computation for the HPCI equipment room.

Corrective Action Completed

A temporary configuration change was implemented to lower the HPCI equipment room high differential temperature setpoints on both units.

Technical rigor of calculation issues have been addressed by implementation of the post-merger Exelon configuration change process procedures in 2002 and technical task risk/rigor assessments that were implemented in 2004.

Corrective Action Planned

A license amendment request will be submitted to lower the TS 3.3.2 HPCI equipment room high differential temperature setpoint.

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Previous Similar Occurrences

There were no previous similar events during the last three years where isolation actuation instrumentation was rendered inoperable due to an error in the setpoint calculation.

Component data:

System: Plant Leak Detection
 Component: TIS Switch, Indicating, Temperature
 Component Number: TIS-025-101B(D)
 Manufacturer: G080 General Electric Company
 Model number: 304A3714G004