



10 CFR 50.73

LG-17-128
September 25, 2017

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 2017-006-00, HPCI Inoperability during Post Maintenance Testing

Enclosed is a Licensee Event Report (LER) which addresses HPCI Inoperability during Post Maintenance Testing at Limerick Generating Station (LGS), Unit 2.

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(v)(D), any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

There are no commitments contained in this letter.

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

Respectfully,

A handwritten signature in black ink, appearing to read "Rich Libra".

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

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

**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nureqs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOF-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 2

2. DOCKET NUMBER

05000353

3. PAGE

1 OF 3

4. TITLE

HPCI Inoperability during Post Maintenance Testing

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
07	27	17	2017	- 006	- 00	09	25	17	FACILITY NAME	DOCKET NUMBER
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
1			<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
			<input type="checkbox"/> 20.2203(a)(2)(i)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
10. POWER LEVEL			<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
			<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.36(c)(2)		<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.77(a)(1)	
			<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)(D)		<input type="checkbox"/> 73.77(a)(2)(i)	
			<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(ii)	
					<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> OTHER		Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Robert B. Dickinson, 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
D	BJ	ISV	A391	Y	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 27, 2017, during Post Maintenance Testing (PMT) following a relay replacement activity, the Unit 2 High Pressure Coolant Injection (HPCI) system was inoperable when an undesirable valve alignment was established as per the PMT instructions resulting in a loss of suction path for the HPCI pump. Work was stopped and Operations and Instrument & Controls (I&C) supervision were notified. HPCI was inoperable for approximately 20 minutes until Operations restored a HPCI suction path to the Unit 2 Suppression Pool. This event is significant because it resulted in an unplanned inoperability of a single train safety system. An eight (8) hour ENS notification to the NRC was completed on July 27, 2017 at 1854 hours.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Limerick Generating Station, Unit 2	05000353	2017	- 006	- 00

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

Limerick Generating Station (LGS) Unit 2 was operating in Operational Condition (OPCON) 1 at 100 percent power at the time of the event. There were no other structures, systems, or components inoperable at the time of the event that contributed to the event.

II. Description of the Event

On July 27, 2017, during Post Maintenance Testing (PMT) following a relay replacement activity, the Unit 2 High Pressure Coolant Injection (HPCI) system was inoperable when an undesirable valve alignment was established as per the PMT instructions resulting in a loss of suction path for the HPCI pump. Work was stopped and Operations and I&C supervision were notified.

On July 27, 2017 at 1335 hours, Operations personnel restored a HPCI suction path to the Unit 2 Suppression Pool. HPCI was inoperable for approximately 20 minutes. This event is significant because it resulted in an unplanned inoperability of a single train safety system. An eight (8) hour ENS notification to the NRC was completed on July 27, 2017 at 1854 hours.

A condition existed that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident and is reportable under 10 CFR 50.73(a)(2)(v)(D).

III. Analysis of the Event

In 2004 a modification was implemented for both Unit 1 and Unit 2 to increase margin for the HPCI suction Primary Containment Isolation Valve (PCIV) stroke time. This modification had taken a normally de-energized relay and changed the relay to a normally energized relay for the HPCI suction valves. Preventative Maintenance tasks were created to replace the normally energized relays. Similar work packages were developed for both the Unit 1 and Unit 2 Preventative Maintenance tasks.

The Unit 1 relay replacement was completed in June 2015 during a HPCI system outage window (SOW) with the system inoperable. The PMT closed the suction valves which isolated both HPCI suction sources. The Unit 2 relay replacement was planned to be performed with HPCI inoperable; however, the work was rescheduled to perform the relay replacement with HPCI operable.

In July 2017, prior to performing the work, Station Maintenance and Operations personnel performed a review of the work package. The review identified that the work package required revision to maintain the system operable during the relay replacement. The review did not identify that the PMT also required a revision.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Limerick Generating Station, Unit 2	05000353	2017	- 006	- 00

NARRATIVE

On July 27, 2017, following the relay replacement per the PMT, Operations personnel closed the Suppression Pool suction valve with the Condensate Storage Tank suction valve already closed resulting in Unit 2 HPCI being inoperable. Operations personnel realized the inoperability and reestablished the HPCI suction source from the Suppression Pool. HPCI was made operable approximately 20 minutes after being initially isolated.

IV. Cause of the Event

A Root Cause Investigation was performed to determine the cause of Unit 2 HPCI being placed in a condition that prevented the fulfillment of the safety function. The investigation concluded that Maintenance Planning personnel developed incorrect written instructions for performing post maintenance testing of the relay.

The following contributing causes were identified:

- The PMT written instructions were not reviewed by Operations
- There was inadequate technical review of a first-time preventative maintenance activity.
- There was inadequate Operations shift review of the work activity during work execution.

V. Corrective Actions Completed/Planned

The following actions are in place or are planned:

- Conduct a Technical Human Performance (THU) workshop with the Maintenance Planning Department to increase awareness of THU tools.
- Include THU behavior discussion topics during weekly Maintenance Planning Department all hands meetings.
- The Operations Department will assist the Maintenance Planning Department in developing post maintenance tests.

VI. Previous Similar Occurrences

There have been no previous similar occurrences of inoperability of a system due to errors in PMT written instructions at LGS.