



Exelon Generation Company, LLC

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Timothy C. Peter
Plant Manager – JAF

JAFP-17-0051
June 5, 2017

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Subject: LER: 2017-003, Inadvertent Isolation of the High Pressure Coolant Injection System
James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
License No. DPR-59

Dear Sir or Madam:

This report is submitted in accordance with 10 CFR 50.73(a)(2)(v)(D), as a condition that could have prevented fulfillment of a safety function.

There are no new regulatory commitments contained in this report.

Questions concerning this report may be addressed to Mr. William Drews, Regulatory Assurance Manager, at (315) 349-6562.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy C. Peter".

Timothy C. Peter
Plant Manager

TCP/WD/ds

Enclosure: LER: 2017-003, Inadvertent Isolation of the High Pressure Coolant Injection System

cc: USNRC, Region I Administrator
USNRC, Project Manager
USNRC, Resident Inspector
INPO Records Center (ICES)



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/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 FOIA, Privacy and Information Collections Branch (T-5 F53), 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 James A. FitzPatrick Nuclear Power Plant	2. DOCKET NUMBER 05000333	3. PAGE 1 OF 4
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4. TITLE
Inadvertent Isolation of the High Pressure Coolant Injection System

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
4	4	2017	2017	- 003	- 00	6	5	2017	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

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)				
100	<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 Mr. William Drews, Regulatory Assurance Manager	TELEPHONE NUMBER (Include Area Code) 315-349-6562
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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
A	BJ			N					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE MONTH: DAY: YEAR:
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On April 4, 2017 at 0735, with the James A. FitzPatrick Nuclear Power Plant operating in Mode 1 at 100 percent power the High Pressure Coolant Injection System (HPCI) was inadvertently isolated during the performance of I&C testing. Technicians were in the process of performing instrument surveillance tests for low pressure emergency core cooling systems when a trip signal was applied to the incorrect instrument. This caused a HPCI System isolation signal on High Area Temperature, resulting in the closure of the HPCI steam isolation valves. The surveillance testing was aborted and the HPCI system was restored.

HPCI is a single-train system; therefore, the inadvertent isolation is being reported as an event or condition that could have prevented fulfillment of the safety function of a system needed to mitigate the consequences of an accident per 10 CFR 50.73(a)(2)(v)(D).



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

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NARRATIVE

Background

The High Pressure Coolant Injection (HPCI) System [EIS Identifier: BJ] is part of the Emergency Core Cooling System (ECCS); HPCI provides and maintains an adequate coolant inventory inside the Reactor Pressure Vessel [RPV] to prevent damage to the reactor core under postulated accident scenarios. The system is comprised of various components which include a turbine, pumps, valves, piping, and instrumentation. The HPCI System may be initiated by automatic or manual means; although, manual initiation requires manipulation of individual pump and valve control switches. Automatic initiation occurs for conditions of Reactor Vessel Water Level – “Low Low” or Drywell Pressure – “High.” Automatic isolation occurs upon receipt of the following signals: high steam flow, high temperature in the HPCI equipment area, low steam supply pressure, high turbine exhaust pressure, and high suppression pool area temperature.

HPCI area temperatures are provided to detect a leak from the associated system steam piping. The isolation occurs when a leak has occurred and is diverse to the high flow instrumentation. If the leak is allowed to continue without isolation, offsite dose limits may be reached. The HPCI area isolation function is not assumed in any UFSAR transient or accident analysis since bounding analyses are performed for large breaks such as recirculation or main steam line breaks. Area Temperature-High signals are initiated from resistance temperature detectors (RTDs) that are appropriately located to protect the system that is being monitored. Two instruments monitor each area for a total of 16 channels for HPCI. All channels for each HPCI Area Temperature - High Function are available and are required to be operable to ensure that no single instrument failure can preclude the isolation function. The Allowable Values are set high enough above normal operating levels to avoid spurious operation but low enough to provide timely detection of a steam leak.

Event Description

On April 4, 2017, I&C technicians were performing ISP-175B1, Reactor and Containment Cooling Instrument Functional Test / Calibration, when the HPCI System was inadvertently isolated. ISP-175B1, Step 9.4.5 directs the connection of a DC voltage source on 02-3MTU-252B (Reactor Pressure Interlock CSP/RHR/RHR SDC Master Trip Unit). While performing the Core Spray test, the technician at the trip unit mistakenly connected the energized voltage source to the adjacent trip unit, 23MTU-217B (HPCI Area Temp Hi Master Trip Unit), after the lead had become disconnected. Flagging was used at the start of the test but when the lead became disconnected it removed the installed flagging. The worker identified the incorrect component and installed the test lead into the HPCI trip unit. The error was immediately identified by the unexpected receipt of annunciators. The test was stopped, the technician at the 09-96 panel was removed from the field and a plan was developed and executed to abort the test and restore conditions to normal for HPCI.

The following is a timeline of pertinent events on April 4, 2017:

- 0730 – Commencement of ISP-175B1, Reactor and Containment Cooling Instrument Functional Test/Calibration
- 0735 – HPCI inoperable due to inadvertent isolation; Reactor Core Isolation Cooling (RCIC) [BN] verified operable and protected per procedure
- 1038 – Isolation verification and recovery complete; Hi-Hi Temperature Isolation restored to normal
- 1132 – Completed NRC Notification ENS 52664, and informed resident
- 1238 – HPCI restored to operable status



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Cause

The active error and event were the result of the I&C technician mistakenly connecting the energized voltage source to an adjacent trip unit, 23MTU-217B (HPCI Area Temp Hi Master Trip Unit). The error was immediately identified by the unexpected receipt of control room annunciators which indicated the HPCI system had isolated. The Senior I&C technician in the Control Room subsequently questioned the I&C technician at Panel 09-96 in the Relay Room as to what action had just been performed, and directed all work to be stopped immediately.

The apparent cause was identified as failure to implement the required human performance tools. The I&C technician failed to stop and reverify the correct component prior to re-landing the test lead and proceeding with the task after conditions had changed.

Similar Events

Browns Ferry Nuclear Plant, Unit 3: LER 2016-006-00, High Pressure Coolant Injection System Found to be Inoperable During Testing

Limerick Generating Station, Unit 2: LER 2015-005-00, Condition that Could Have Prevented Fulfillment of the High Pressure Coolant Injection (HPCI) System Safety Function

Corrective Actions

Completed Actions

- All work immediately stopped; RCIC verified operable, and protected per procedure
- HPCI operability restored per OP-15, High Pressure Coolant Injection
- NRC notified via ENS 52664
- I&C technician qualifications removed
- Increased observations, peer checks, and validation of I&C activities

Safety Significance

Nuclear Safety

Actual Consequences

There were no actual nuclear safety consequences during this period as a result of this event.

Potential Consequences

This event resulted in the inoperability of the single train HPCI system for approximately five (5) hours. The HPCI System is provided to ensure that the reactor is adequately cooled to limit fuel clad temperature in the event of a small break in the Reactor Coolant System piping with a loss-of-coolant which does not result in rapid depressurization of the reactor vessel. The HPCI System permits the plant to be shut down while maintaining sufficient reactor vessel water inventory until the reactor vessel pressure is below the pressure at which either the Low Pressure Coolant Injection (LPCI) [BO] or Core Spray [BM] System can maintain core cooling.

Several alternate methods were available to Operations personnel in the event of an emergency to provide core cooling, and mitigation of the consequences of an accident. In the event of HPCI inoperability during a design basis accident, adequate core cooling is ensured by the operability of the other ECCS injection/spray subsystems in conjunction with the Automatic Depressurization System (ADS). The JAF Operations Log was reviewed to determine if the ADS or the low pressure ECCS were inoperable during the period of the HPCI



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system inoperability. The ADS, Core Spray and LPCI were confirmed to be operable during the period of HPCI inoperability.

In addition, the approximate five (5) hours of HPCI inoperability is well below the TS LCO 3.5.1.C completion time of fourteen (14) days. Based on the above, during the period that the HPCI system was inoperable, sufficient systems were available to provide the required safety functions to protect the health and safety of the public. Therefore, no significant reduction in the health and safety of the public or plant personnel is associated with this event.

Radiological Safety

There was no radiological safety impact associated with this event.

Industrial Safety

There was no industrial safety impact associated with this event.

References

- Issue Report No. 03993791, Connection of Test Equipment to Incorrect Component
- JAF Technical Specifications