



James A. FitzPatrick NPP
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Timothy C. Peter
Site Vice President- JAF

JAFP-22-0034
June 28, 2022

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

James A. FitzPatrick Nuclear Power Plant
Renewed Facility Operating License No. DPR-059
NRC Docket No. 50-333

Subject: LER: 2022-001, Exhaust Drain Pot Line Filled with Water up to HPCI
Turbine due to Relay Failure

Dear Sir or Madam:

This report is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(D).

There are no new regulatory commitments contained in this report.

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

Sincerely,


A handwritten signature in black ink, appearing to read "T. Peter", written over a horizontal line.

Timothy C. Peter
Site Vice President

TCP/RS

Enclosure: LER: 2022-001, Exhaust Drain Pot Line Filled with Water up to HPCI
Turbine due to Relay Failure

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

NRC FORM 366 (08-2020)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB: NO. 3150-0104		EXPIRES: 08/31/2023				
		LICENSEE EVENT REPORT (LER) (See Page 3 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, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.Resource@nrc.gov , and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk all: oira_submission@omb.eop.gov . The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.						
1. Facility Name James A. FitzPatrick Nuclear Power Plant					2. Docket Number 05000333		3. Page 1 OF 3				
4. Title LER: 2022-001, Exhaust Drain Pot Line Filled with Water up to HPCI Turbine due to Relay Failure											
5. Event Date			6. LER Number			7. Report Date		8. Other Facilities Involved			
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name N/A Docket Number N/A		
04	29	2022	2022 -	001	- 00	06	28	2022	Facility Name N/A Docket Number N/A		
9. Operating Mode 1						10. Power Level 100					
11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)											
10 CFR Part 20		<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.36(c)(2)		<input type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)			
<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(v)(A)		10 CFR Part 73			
<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input type="checkbox"/> 50.69(g)		<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(4)			
<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input type="checkbox"/> 50.73(a)(2)(i)(A)		<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.71(a)(5)			
<input type="checkbox"/> 20.2203(a)(2)(i)		10 CFR Part 21		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(1)			
<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 21.2(c)		<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(i)			
<input type="checkbox"/> 20.2203(a)(2)(iii)		10 CFR Part 50		<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)		<input type="checkbox"/> 73.77(a)(2)(ii)			
<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<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)(v)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)					
<input type="checkbox"/> OTHER (Specify in Abstract below or in NRC Form 366A).											
12. Licensee Contact for this LER											
Licensee Contact Mr. Richard Sullivan, Regulatory Assurance Manager							Telephone Number (Include Area Code) 315-349-6562				
13. Complete One Line for each Component Failure Described in this Report											
Cause	System	Component	Manufacturer	Reportable to IRIS		Cause	System	Component	Manufacturer	Reportable to IRIS	
B	BJ	RLY	G080	Y							
14. Supplemental Report Expected							15. Expected Submission Date		Month	Day	Year
<input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission date)									
Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)											
<p>At 1251 EDT on April 29, 2022, while troubleshooting the failure of the High Pressure Coolant Injection (HPCI) Exhaust Drain Pot High Level Alarm to clear, it was discovered that the High Pressure Coolant Injection exhaust line condensate drain system was not functioning as designed to support removal of condensate from the turbine exhaust. Troubleshooting determined that a logic relay failed to start the HPCI Gland Seal Condensate pump. This resulted in some water accumulation in the turbine casing.</p> <p>Subsequently, the High Pressure Coolant Injection System was declared inoperable. The turbine casing was manually drained and the failed relay was replaced. The system was restored to Operable.</p> <p>As a result, this condition is being reported under 10 CFR 50.72(b)(3)(v)(D) as a condition that could have prevented fulfillment of the safety function at the time of discovery.</p>											

**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 FOIA, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; email: oira_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
James A. FitzPatrick Nuclear Power Plant	05000 – 333	2022	– 001	– 00

NARRATIVE**Background**

The High Pressure Coolant Injection (HPCI) System [EIS Identifier: BJ] at James A. FitzPatrick Nuclear Power Plant (JAF) is a 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 pumps, valves, piping, and instrumentation. The HPCI system is powered by a steam turbine using steam from the reactor. Steam is pressurized up to the admission valve 23MOV-14 which will open to admit steam to the HPCI turbine on a system initiation signal.

HPCI has a Gland Exhaust System to collect steam leakage from the turbine shaft seals, turbine control & stop valve stems, and turbine exhaust casing drains. The system works with the HPCI exhaust Drain Pot to collect condensation from the bonnets of several valves and the HPCI turbine casing. The condensation is collected in the Gland Seal Condenser, and then pumped to Radwaste while in a standby lineup.

23LS-98 senses level in the Exhaust Drain Pot, causes Annunciator ARP-09-3-3-18 (HPCI Exhaust Drain Pot Level High) and opens a valve to allow the Drain Pot to drain to the Gland Seal Condenser.

23LS-100 senses level in the Gland Seal Condenser, energizes 23A-K31, and auto starts the 23P-141 (HPCI Gland Seal Condensate Pump) to pump the Gland Seal Condenser to Radwaste.

Event Description

On April 28, 2022, at 2245, control room annunciator ARP-09-3-3-18, HPCI drain pot water level alarm was received. Troubleshooting determined that HPCI logic relay 23A K31 failed to activate the HPCI Gland Seal Condensate pump to remove condensate from the turbine exhaust. As a result, water from 23MOV-14 steam leakby had accumulated in the HPCI turbine casing.

The crew placed the HPCI auxiliary oil pump in Pull to Lock to mitigate any potential impact to personnel while draining the HPCI exhaust. The Pull to Lock switch position prevents the HPCI turbine from starting. The HPCI Exhaust Drain Pot was manually drained by Operations. Following draining, the HPCI system was declared operable.

The condition was reported as a condition which could have prevented fulfillment of a safety function to mitigate the consequences of an accident per 10 CFR 50.72(b)(3)(v)(D), as submitted by ENS 55871.

Event Analysis

Level switch 23LS-100 senses water level in the HPCI gland seal condenser. On a high level, the level switch actuates relay 23A-K31 which alarms in the control room and starts the HPCI gland seal condenser pump (23P-141). The pump removes the condensate by pumping the water to the radwaste system. Troubleshooting determined that 23A-K31 had failed, preventing the auto start of 23P-141. This caused the HPCI exhaust drain pot to fill with condensate and subsequently a volume of condensate also accumulated in the HPCI turbine casing.

The potential effects of water in the HPCI turbine casing is that a slug of water could cause a HPCI exhaust rupture disk diaphragm to be damaged upon HPCI initiation. Another potential effect of water in the turbine



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exhaust line is that it could cause abnormal turbine operation due to high exhaust pressure. The backup of water into the HPCI turbine is a condition that could have prevented the operation of HPCI and is reportable per 10 CFR 50.73(a)(2)(v)(D).

Cause

The direct cause of this event was a failure of 23A-K31 from actuating 23P-141 to pump down the condensate water before it filled the HPCI exhaust drain pot.

Similar Events

Condition Report: AR 04381156, Suspected leakage past 23MOV-14, dated October 31, 2020

FAILED COMPONENT IDENTIFICATION:

Manufacturer:	General Electric
Manufacturer Model Number:	CR2820B SERIES A
Manufacturer Code:	G080
Component Code:	RLY
FitzPatrick Component ID:	23A-K31

Corrective Actions

Completed Actions

Operators manually drained the HPCI Drain Pot

The HPCI Logic Relay 23A-K31 was replaced

Planned Actions

Evaluate PM strategy for affected relay and condensate drain system.

Perform further analysis on impacts of water in HPCI turbine casing.

Operations refresher training on Abnormal Condition Monitoring Plans.

Safety Significance

Nuclear safety – There were no actual consequences caused by this condition. The potential consequence during a postulated accident scenario is when HPCI actuates, the water present in the turbine could damage or prevent the system operation. While HPCI is operating, the ability to drain water through the drain pot is not required for continued system operation since excess water accumulation is pushed out with steam exhaust. The risk for this event is restricted to the period when the relay failed to automatically actuate the pump to remove water which was determined to be less than 14 hours.

References

Issue Report - IR 04496616, HPCI Exhaust Drain Pot Level Hi Troubleshooting, dated April 29, 2022