



*Energy Harbor Nuclear Corp
Perry Nuclear Power Plant
10 Center Road
Perry, Ohio 44081*

Rod L. Penfield
Site Vice President, Perry Nuclear

*440-280-5382
724-462-0816 (cell)*

August 17, 2022
L-22-173

10 CFR 50.72(b)(3)(v)(D)

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

SUBJECT:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
Licensee Event Report Submittal

Enclosed is Licensee Event Report (LER) 2022-001, "Low Pressure Core Spray Inoperable due to Loss of Minimum Flow Valve." There are no regulatory commitments contained in this submittal.

If there are any questions or if additional information is required, please contact Mr. Glendon Burnham, Manager – Regulatory Compliance, at (440) 280-7538.

Sincerely,

A handwritten signature in black ink, appearing to read "Rod L. Penfield", written over a horizontal line.

Rod L. Penfield

Enclosure:
LER 2022-001

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III Regional Administrator

Enclosure
L-22-173

LER 2022-001



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 alt: aira_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
Perry Nuclear Power Plant2. Docket Number
05000 004403. Page
1 OF 34. Title
Low Pressure Core Spray Inoperable due to Loss of Minimum Flow Valve

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	Docket Number
06	24	2022	2022	- 001 -	00	08	17	2022		05000
										05000

9. Operating Mode

1

10. Power Level

100

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

<input type="checkbox"/> 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)(i)
<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)	

☐ OTHER (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact
George Dujanovic, Regulatory CompliancePhone Number (Include area code)
440-280-5200

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	BM	FCV	L200	Y					

14. Supplemental Report Expected

15. Expected Submission Date

☒ No ☐ Yes (If yes, complete 15. Expected Submission Date)

Month Day Year

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On June 24, 2022, at 1257 hours, the Low Pressure Core Spray (LPCS) system was declared INOPERABLE due to a loss of power to the pump minimum flow valve. Since LPCS is a single train safety system as specified in site procedures, LPCS inoperability is considered a loss of safety function and is reportable.

The cause for LPCS inoperability is the failure of the minimum flow valve actuator to valve bonnet bolts. The most probable cause of the failed adapter to actuator bolts was fatigue failure. The bolting and the fuses have been sent to a laboratory for further analysis. Corrective actions included replacement of the valve actuator motor and the mounting bolts. Laboratory analysis may necessitate additional corrective actions once the results are known, in which case an LER revision will be submitted.

The safety significance of this event is considered to be very small. This event is being reported in accordance with 10 CFR 50.73(a)(2)(v)(D) as an event or condition that could have prevented the fulfillment of a safety function needed to mitigate the consequences of an accident.

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

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Perry Nuclear Power Plant	05000-00440	2022	001	00

NARRATIVE

Energy Industry Identification System (EIIIS) codes are identified in the text as [XX].

INTRODUCTION

The inoperability and loss of safety function of Low Pressure Core Spray (LPCS) [BM] system occurred as a result of a loss of electrical power to the LPCS pump minimum flow valve [FCV] based upon the receipt of unexpected alarms in the Control Room, during surveillance testing. Subsequent investigation of the LPCS minimum flow valve revealed that the mounting bolts for the motor operated valve actuator were broken, and the fuses [FU] in the disconnect for the actuator were found to be blown. With LPCS being a single train safety system, this resulted in a loss of safety function resulting in a 10 CFR 50.72 notification and a 10 CFR 50.73 report.

EVENT DESCRIPTION

On June 24, 2022, at 1257 hours, and with the reactor in MODE 1 at 100 percent rated thermal power, a surveillance was being performed to verify the operation of the LPCS system. During performance of the surveillance, it was observed that the LPCS minimum flow valve experienced a loss of position indication while stroking closed. Upon investigation of the Motor Control Center (MCC) disconnect [DISC] for the LPCS minimum flow valve, it was determined that two of three main-line power fuses were blown. Examination of the LPCS minimum flow valve revealed that the motor-operated actuator had become separated from the valve. This resulted in the LPCS system being declared inoperable.

LPCS is described as a single train safety system in accordance with site procedures. As such, when LPCS has an unplanned inoperability, it is reportable to the NRC under 10 CFR 50.72(b)(3)(v)(D) and 10 CFR 50.73(a)(2)(v)(D) as a Loss of Safety Function.

On June 24, 2022, at 1628 hours, Event Notification (EN 55962) was made under 10 CFR 50.72(b)(3)(v)(D) to the NRC. This Licensee Event Report is being reported under 10 CFR 50.73(a)(2)(v)(D) as a loss of safety function.

New actuator to valve bolts, a new actuator motor, and new disconnect fuses were installed for the LPCS minimum flow valve. The system performed satisfactorily during post maintenance testing. LPCS was declared OPERABLE on June 27, 2022, at 1300 hours.

CAUSE OF EVENT

The most probable cause of the failed adapter to actuator bolts was fatigue failure. The bolting and the fuses have been sent to a laboratory for further analysis. Based upon the information from the analyses, an LER revision may need to be submitted.

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

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1. FACILITY NAME

Perry Nuclear Power Plant

2. DOCKET NUMBER

05000-

00440

3. LER NUMBER

YEAR

2022

SEQUENTIAL
NUMBER

001

REV
NO.

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NARRATIVE**EVENT ANALYSIS**

A Probabilistic Risk Assessment (PRA) evaluation was performed for the June 24, 2022, LPCS Minimum Flow Valve Inoperability event. Fire and other external hazards were qualitatively addressed to be of low risk. The analysis of this event results in delta CDF and delta LERF values that are below the acceptable thresholds of $1.0E-06/\text{yr}$ and $1.0E-07/\text{yr}$, as discussed in Regulatory Guide 1.174. Sensitivities performed that varied the exposure window to the maximum possible exposure window of one year did not change these conclusions. The risk of this event is therefore considered very small in accordance with the Regulatory Guidance.

CORRECTIVE ACTIONS

The valve actuator was re-installed to the valve with new bolts. The actuator motor was also replaced. New fuses were installed in the electrical disconnect. The failed bolts and fuses have been sent out for laboratory analysis.

PREVIOUS SIMILAR EVENTS

None

COMMITMENTS

None