

David B. Hamilton
Vice President

440-280-5382

February 13, 2018
L-18-019

10CFR50.73(a)(2)(v)(D)

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001SUBJECT:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
Licensee Event Report Submittal

Enclosed is Licensee Event Report (LER) 2017-007, "High Pressure Core Spray Inoperability due to System Leak." There are no regulatory commitments contained in this submittal.

If there are any questions or if additional information is required, please contact Mr. Nicola Conicella, Manager – Regulatory Compliance, at (440) 280-5415.

Sincerely,

David B. Hamilton
Vice PresidentEnclosure:
LER 2017-007cc: NRC Region III Administrator
NRC Resident Inspector
NRR Project Manager

Enclosure
L-18-019

LER 2017-007

**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 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

Perry Nuclear Power Plant

2. DOCKET NUMBER

05000-440

3. PAGE

1 OF 3

4. TITLE:

High Pressure Core Spray Inoperability due to System Leak

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		
12	22	2017	2017	007	00	02	13	2018	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:

George Dujanovic – Regulatory Compliance

TELEPHONE NUMBER (Include Area Code)

440-280-5200

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
B	BG	PSP	X999	Y					

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 December 22, 2017 at 2348 hours, the High Pressure Core Spray (HPCS) system was declared inoperable due to a through-wall leak on the minimum flow line piping. The leak was on the outside bend of the first elbow downstream of the minimum flow restricting orifice and was leaking approximately 60 drops per minute. Technical Specification (TS) Limiting Condition of Operation (LCO) 3.5.1 Condition B was entered. The piping was repaired, the TS LCO exited, and HPCS was declared operable on December 25, 2017 at 2213 hours.

The cause was pipe wall loss due to a combination of cavitation and mechanical erosion wear.

The safety significance of this event is considered to be very small. This event is being reported in accordance with 10CFR50.73(a)(2)(v)(D) as an event or condition that could have prevented the fulfillment of a safety function.



LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
Perry Nuclear Power Plant Unit 1	05000-440	YEAR 2017	SEQUENTIAL NUMBER - 007	REV NO. - 00

NARRATIVE

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

INTRODUCTION

On December 22, 2017 at 2348 hours, the High Pressure Core Spray (HPCS) [BG] system was declared inoperable due to a piping [PSP] leak. Limiting Condition of Operation (LCO) 3.5.1 Condition B was entered for HPCS inoperability. This resulted in a loss of safety function for a single train system.

EVENT DESCRIPTION

On December 22, 2017 at 2348 hours, the HPCS system was declared inoperable due to discovery of a through-wall leak on the minimum flow line piping. The leak was on the outside bend of the first elbow downstream of the minimum flow restricting orifice [OR] and was leaking at approximately 60 drops per minute. TS LCO 3.5.1 Condition B was entered for HPCS inoperability.

On December 23, 2017 at 0500 hours, event notification EN# 53137 was made to the NRC Operations Center in accordance with 50.72(b)(3)(v)(D).

The flaw was characterized as thinning across an approximately one square inch area. Pipe wall thickness outside the thinned area was at or above nominal wall thickness of 0.438 inches for a 4-inch diameter schedule 120 pipe. High water flow concentrated to the center-line of the upstream piping (caused by the restricting orifice) would impact directly to the thinned area of the elbow.

A weld overlay (approximately 3-inch circle and 0.50 inches thick) was added over the thinned elbow area in accordance with ASME Code Case N-561-2, "Alternative Requirements for Wall Thickness Restoration of Class 2 and High Energy Class 3 Carbon Steel Piping Section XI, Division 1." The TS LCO was exited and the HPCS system was declared operable on 12/25/2017 at 2213 hours.

CAUSE

The cause was pipe wall loss due to a combination of cavitation and mechanical erosion wear.

EVENT ANALYSIS

A Probabilistic Risk Assessment (PRA) evaluation was performed. While the associated maintenance activity resulted in unplanned unavailability hours and was assessed via 10 CFR 50.65 (a)(4) requirements, a bounding analysis to account for "the event or condition that could have prevented the fulfillment of a safety function" condition conservatively indicates that the given event resulted in a very small change to overall plant risk with a change (delta) in core damage frequency (CDF) of 6.11E-07/yr, and a change (delta) in the large early release frequency (LERF) of 3.52E-09/yr. The delta CDF and delta LERF values are well below the acceptable thresholds of 1.0E-06/yr and 1.0E-07/yr, respectively, as discussed in Regulatory Guide 1.174.

The risk of this event is therefore considered very small in accordance with the Regulatory Guidance.



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CONTINUATION SHEET**

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NARRATIVE

CORRECTIVE ACTIONS

The permanent repair will be implemented by the end of the next refueling outage. Ultrasonic testing (UT) thickness readings will be performed on the HPCS minimum flow line first elbow downstream of restricting orifice at an initial periodicity of four years. For extent of condition, UT readings will be performed on similar elbow configurations for the minimum flow lines in the Reactor Core Isolation Cooling (RCIC) [BN], Low Pressure Core Spray (LPCS) [BM] systems, and an additional elbow in the HPCS minimum flow line.

PREVIOUS SIMILAR EVENTS

A review of LERs and the Corrective Action database for the past three years identified no similar events.

COMMITMENTS

There are no regulatory commitments contained in this report. Actions described in this document represent intended or planned actions, are described for the NRC's information, and are not regulatory commitments.