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L-PI-18-004  
10 CFR 50.73

January 11, 2018

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-001

Prairie Island Nuclear Generating Plant Unit 2  
Docket 50-306  
Renewed License No. DPR-60

Licensee Event Report 50-306/2017-003-00, Both Containment Spray Pump Control  
Switches in Pull-Out in Mode 4

Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), encloses Licensee Event Report (LER) 50-306/2017-003-00, Both Containment Spray Pump Control Switches in Pull-Out in Mode 4.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

A handwritten signature in black ink, appearing to read 'Scott Sharp', with a large, flowing loop at the end.

Scott Sharp  
Site Vice President, Prairie Island Nuclear Generating Plant  
Northern States Power Company – Minnesota

Enclosure

cc: Regional Administrator, Region III, USNRC  
Project Manager, Prairie Island Nuclear Generating Plant, USNRC  
Resident Inspector, Prairie Island Nuclear Generating Plant, USNRC  
State of Minnesota

**ENCLOSURE 1**

**Licensee Event Report 50-306/2017-003-00**



## 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 Prairie Island Nuclear Generating Plant Unit 2						2. DOCKET NUMBER 05000 306			3. PAGE 1 OF 3		
4. TITLE Both Containment Spray Pump Control Switches in Pull-out in Mode 4											
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
11	12	2017	2017	- 003	- 00	1	11	2018	FACILITY NAME		DOCKET NUMBER
											05000
											05000
9. OPERATING MODE Unit 2 Mode 4			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)								
			<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"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(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"/> 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"/> 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"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(B)		
			<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"/> 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"/> 20.2203(a)(2)(vi)			<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(vii)		
						<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 Frank Sienczak									TELEPHONE NUMBER (Include Area Code) (612) 342-8987		
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		
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
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)											
<p>On November 12, 2017 at 2119, a Control Room board walkdown discovered that both of the Unit 2 Containment Spray Pump control switches had been left in pull-out, when operators transitioned Unit 2 from Mode 5 to Mode 4. With the control switches in pull-out, the pumps would not automatically start as required. Technical Specification (Tech Specs) 3.0.3 was entered as a result of not complying with Technical Specification 3.6.5, Containment Spray and Cooling systems, which required both trains of Containment Spray to be Operable while in Mode 4. This event is reportable under 10 CFR 50.73(a)(2)(i)(B), Condition Prohibited by Technical Specification and 10 CFR 50.73(a)(2)(v)(D), Event or Condition that Could Have Prevented Fulfillment of a Safety Function.</p> <p>The root cause determined that Surveillance Procedure SP 2099, Unit 2 Main Steam Isolation Valve Logic Test, was not adequately designed to account for outage schedule variation. Contributing causes included that the Unit 2 Startup to Mode 4 procedure does not contain adequate process barriers such that plant configuration meets Technical Specification requirements for Mode 4 entry. Operations personnel failed to uphold standards for panel walkdown requirements.</p> <p>Corrective actions include revising SP 2099, Unit 2 Main Steam Isolation Valve Logic Test to include steps to reposition Containment Spray Switches to the "as found" configuration and revise Unit 2 start-up procedure to add additional HOLD to have the Shift Manager perform Control Board Walkdown to verify equipment required in Mode 4 is aligned and Operable. Develop and implement an operations improvement plan specifically targeted to improve Operator standards in the performance of Control Board Walkdowns.</p>											

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

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1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
Prairie Island Nuclear Generating Plant Unit 2		05000-306	YEAR	SEQUENTIAL NUMBER	REV NO.
			2017	- 003	- 00

**NARRATIVE****DESCRIPTION OF EVENT**

On November 12, 2017, at 2119, a Control Room board walkdown discovered that both of the Unit 2 Containment Spray Pump control switches [CS-46560 (21 Containment Spray Pump) and CS-46561 (22 Containment Spray Pump)] had been left in pull-out, when operators transitioned Unit 2 from Mode 5 to Mode 4. With the control switches in pull-out, the pumps would not automatically start as required. Technical Specifications (Tech Specs) Limiting Conditions for Operation (LCO) 3.0.3 was entered at 2119 as a result of not complying with LCO 3.6.5, Containment Spray<sup>1</sup> and Cooling Systems, which required both trains of Containment Spray to be Operable while in Mode 4. Unit 2 had entered Mode 4 at 0303 on November 12, 2017. LCO 3.0.3 was exited at 2127 on November 12, 2017, when both Containment Spray Pump control switches were placed in automatic restoring Operability. Preliminary investigation determined that while Unit 2 was in Mode 5, Surveillance SP 2099, Main Steam Isolation Valve Logic Test, had taken the Containment Spray Pump control switches to pull-out but did not re-align the control switches to automatic after the test was completed. This was an 8-hour Non-Emergency report per 10 CFR 50.72(b)(3)(v)(D), Event or Condition that Could Have Prevented Fulfillment of a Safety Function.

**EVENT ANALYSIS**

The event is being reported under 10 CFR 50.73(a)(2)(i)(B), Condition Prohibited by Technical Specification, and 10 CFR 50.73(a)(2)(v)(D), Event or Condition that Could Have Prevented Fulfillment of a Safety Function. This condition meets the reporting criteria because Prairie Island Nuclear Generating Plant (PINGP) Unit 2 was not in full compliance with LCO 3.6.5, Containment Spray<sup>1</sup> and Cooling Systems, which required both trains of Containment Spray to be Operable while in Mode 4. Both trains of Containment Spray Pump control switches had been left in pull-out, which defeated the automatic start function for approximately 18 hours and 24 minutes. Entry into Mode 4 while not meeting LCO 3.6.5 was contrary to LCO 3.0.4.

The primary purpose of the Containment Vessel Internal Spray System is to spray cool water into the containment atmosphere, in the event of a loss-of-coolant accident (LOCA) and thereby ensure that containment pressure does not exceed its design value of 46 psig at 268 degrees Fahrenheit.

**SAFETY SIGNIFICANCE**

A Westinghouse LOCA analysis concludes that the containment design pressure of 46 psig would not have been challenged by the blowdown of a design basis double-ended rupture of the primary loop piping while Prairie Island Unit 2 operated in Mode 4 with both CS pumps locked out. Further, the nominal spray setpoint of 23 psig would not have been reached. Also, two (2) trains of Containment Fan Coolers, operating with service water as high as 95 degrees Fahrenheit (well above actual conditions), would have been able to remove more than enough heat to offset the decay heat rate at 29 days after shutdown.

The Westinghouse Main Steam Line Break (MSLB) analysis also concluded that in the case of a full double-ended rupture MSLB at the SG discharge nozzle, the 46 psig Containment design pressure and the nominal spray setpoint 23 psig valves would not have been reached, while Unit 2 operated in Mode 4 with both CS pumps locked out.

The Westinghouse analysis that was performed demonstrated this event did not constitute a Safety System Functional Failure (SSFF). (Reference NEI 99-02, Revision 7, Regulatory Assessment Performance Indicator Guideline, Section 2.2,

<sup>1</sup> EIS Component Code - BE

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Mitigating Systems Cornerstone, Safety System Functional Failures, Purpose.) As such, this event will not be reported in the NRC Performance Indicator (PI) for safety system functional failure since an engineering analysis was performed which determined that the long term Containment pressure would have remained below the design pressure, and automatic actuation of the containment spray system would not have been needed to mitigate the consequences of an accident, even though Prairie Island Unit 2 was not in full compliance with Tech Spec 3.6.5 for the Containment Spray and Cooling Systems.

There were no radiological, environmental, or industrial impacts associated with this event, and PINGP did not adversely affect the health and safety of the public.

**CAUSE(S)****Root Cause**

- Surveillance Procedure SP 2099, Unit 2 Main Steam Isolation Valve Logic Test, is not adequately designed to account for outage schedule variation.

**Contributing Causes**

- Startup procedure 2C1.2-M4, Unit 2 Startup to Mode 4, does not contain adequate process barriers such that plant configuration meets LCO requirements for Mode 4 entry.
- Operations personnel failed to uphold standards such that the panel walkdown requirements are met to ensure that abnormal conditions and deviations from expected values/positions are communicated evaluated and understood by the Control Room Team.

**CORRECTIVE ACTION(S)**

- SP 2099 will be updated to include steps to reposition Containment Spray Switches to the "as found" configuration.
- Revise procedure 2C1.2-M4 to add additional HOLD in section 5.1.7 to have the Shift Manager perform Control Board Walkdown to verify equipment required in Mode 4 is aligned and Operable.
- Develop and Implement an operations improvement plan specifically targeted to improve Operator standards in the performance of Control Board Walkdowns.

**PREVIOUS SIMILAR EVENTS**

A review of the Corrective Action Program (CAP) and Licensee Event Reports (LERs) for PINGP revealed no results that involved having both control switches in pull out causing a reportable condition. The time frame for this review was eight years.