



April 26, 2011

L-PI-11-028  
10 CFR 50.73

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

Prairie Island Nuclear Generating Plant Units 1 and 2  
Dockets 50-282 and 50-306  
License Nos. DPR-42 and DPR-60

LER 50-282/2011-001-00, Unplanned Actuation of 121 Motor Driven Cooling Water Pump

Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, herewith encloses Licensee Event Report (LER) 50-282/2011-001-00.

Summary of Commitments

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

A handwritten signature in black ink, appearing to read 'Mark Schimmel'.

Mark Schimmel  
Site Vice President, Prairie Island Nuclear Generating Plant  
Northern States Power Company - Minnesota

Enclosure

cc: Administrator, Region III, USNRC  
Project Manager, Prairie Island Nuclear Generating Plant (PINGP), USNRC  
Resident Inspector, PINGP, USNRC  
Department of Commerce, State of Minnesota

**ENCLOSURE**

**LICENSEE EVENT REPORT 50-282/2011-001-00**

**4 Pages Follow**

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)

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 Records and FOIA/Privacy Service Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects.resource@nrc.gov](mailto:infocollects.resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0066), 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 1	2. DOCKET NUMBER 05000 282	3. PAGE 1 OF 4
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4. TITLE Unplanned Actuation of 121 Motor Driven Cooling Water Pump
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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	23	2010	2011	- 001 -	00	04	26	2011	Prairie Island Unit 2	05000 306
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE  Mode 1	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"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.71(a)(4)	<input type="checkbox"/> 73.71(a)(5)
10. POWER LEVEL  100%	Specify in Abstract below or in NRC Form 366A																																	

## 12. LICENSEE CONTACT FOR THIS LER

NAME Jon Anderson	TELEPHONE NUMBER (Include Area Code) 651.388.1121 x7309
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## 13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

## 14. SUPPLEMENTAL REPORT EXPECTED

<input checked="" type="radio"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE).	<input type="radio"/> NO	15. EXPECTED SUBMISSION DATE	MONTH 06	DAY 27	YEAR 2011
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## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On March 3, 2011, an evaluation determined that the 121 Motor Driven Cooling Water Pump (MDCLP) when not aligned as a safeguards replacement pump is included in the list of systems in 10 CFR 50.73(a)(2)(iv)(B). As a result, an actuation of the 121 MDCLP on 12/23/2010 was determined to be reportable under 10 CFR 50.73(a)(2)(iv)(A).

The 121 MDCLP autostart was due to low header pressure. This low pressure condition was due to the failure of a header gasket on a non-safeguards chiller. The gasket failure was due to an over-torque condition, gasket material, and the conditions under which the chiller was operating at the time of the failure. Corrective actions to resolve the issue include using more rigid gasket material, applying correct torque values in accordance with existing Prairie Island Nuclear Generating Plant procedures, and providing additional training on refrigeration principles.

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EVENT DESCRIPTION

At the Prairie Island Nuclear Generating Plant (PINGP), the Cooling Water (CL) System<sup>1</sup> is a shared system common to both Units 1 and 2 that provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident or transient. During normal operating and shutdown, the CL System also provides this function for various safety related and non-safety related components.

The CL System consists of a common CL pump discharge header for the five CL pumps (two non-safeguards, two safeguards, and 1 interchangeable) that direct flow into two separate CL headers. Normal operation utilizes two non-safeguards horizontal pumps with the vertical motor-driven cooling water pump (121 MDCLP) as a standby. In addition, two safeguards vertical diesel driven cooling water pumps (DDCLPs) are provided for emergency operation. The vertical motor-driven pump will start upon a safety injection signal, but will trip off when both diesel driven pumps reach operating speed.

The 121 MDCLP may also function as a safeguards replacement when a diesel driven pump is taken out of service. In this configuration, the pump is aligned manually to the appropriate train of safeguards power and motor operated valves are administratively disabled in accordance with technical specifications.

On December 23, 2010, 121 MDCLP was not aligned as a safeguards replacement pump. Units 1 and 2 were operating at 100% power in MODE 1. An autostart of 121 MDCLP occurred due to a loss of train 'A' header pressure. The loss of header pressure was initiated by a sudden increase in flow demand when the 11 Auxiliary Building and Containment Chiller<sup>2</sup> tripped off line, causing the Containment Fan Coil Units (CFCUs) and Control Rod Drive Mechanism Cooling Coils (CRDM) to shift to Cooling Water. Additional evaluation of the chiller trip is underway to determine whether the failure is reportable to EPIX. A supplement to this LER will be provided to provide the equipment failure information.

During a January 2011 review of MSPI Unavailability data, the CL system engineer noted that the autostart of the 121 MDCLP occurred in December 2010. Due to recent changes in the understanding of the PINGP licensing basis for the CL system associated with postulated high energy line break (HELB) scenarios, the system engineer questioned whether the autostart might constitute a reportable event and initiated a corrective action request. During the subsequent evaluations, on March 3, 2011, the autostart was determined to be reportable.

The reported condition represents an automatic actuation of emergency service water systems that do not normally run and that serve as ultimate heat sinks. This is reportable under 10 CFR 50.73(a)(2)(iv)(A).

<sup>1</sup> EIS System Code: BI

<sup>2</sup> EIS System Code: KM

NRC FORM 366A (10-2010)		<b>LICENSEE EVENT REPORT (LER)</b>		U.S. NUCLEAR REGULATORY COMMISSION	
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## EVENT ANALYSIS

The determination that an autostart of the 121 MDCLP, when not aligned as a safeguards replacement pump, should be reported under 10 CFR 50.73(a)(2)(iv)(A) is a change from previous station position. This is due to recent changes in the understanding of what equipment is required to mitigate a HELB at PINGP. The 121 MDCLP is an extra pump that is available to supplement the two safeguards DDCLPs. Previously, unless the pump was aligned as a safeguards replacement pump, it was not required to mitigate accident scenarios.

In 2010, additional analysis determined that the 121 MDCLP would be needed to mitigate the consequences of a HELB even when it is not aligned as a safeguards replacement pump. LER 50-282/2010-001-01 (Accession Number ML101830384) was submitted to the NRC on July 2, 2010 regarding this postulated HELB scenario.

Since the 121 MDCLP pump is now required to mitigate this HELB scenario, on March 3, 2011, PINGP determined that the December 23, 2010 autostart of the pump meets the criterion for NRC reporting under 10 CFR 50.73(a)(2)(iv)(A).

The reported condition demonstrated that the 121 MDCLP is capable of performing its Specified Function. Thus, the condition described in this LER does not represent a Safety System Functional Failure.

## SAFETY SIGNIFICANCE

In the event of a loss of offsite power, the loss of the motor driven pumps would result in a rapid loss of discharge header pressure. At a low pressure setpoint, the 121 MDCLP and two DDCLPs would start. The start setpoint of the 121 MDCLP is slightly raised to ensure that it will automatically start before the DDCLPs. For this reported event, the 121 MDCLP started on the low pressure signal as expected. The 121 MDCLP and other equipment operated as intended during the event.

## CAUSE

Equipment supplied by the 11 Containment and Auxiliary Chiller on December 23, 2010 included Containment Fan Coil Units (CFCUs) and Control Rod Drive Mechanism Cooling Coils (CRDMs). In the event of a SI or failure of the chillers, the chilled water supply to the CFCUs and CRDMs automatically isolates. This equipment is then automatically aligned to the CL system.

The trip of the 11 Containment and Auxiliary Chiller was due to a no flow condition in the chiller evaporator. The no flow condition was primarily due to a leak in the evaporator water box head gasket which allowed water to bypass the evaporator. This leak was due to the materials used for the evaporator head gasket and the gasket being over-torqued. The tripping of the chiller is to prevent freezing of the chiller evaporator tubes due to the no flow condition. When the CFCUs and CRDMs

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chilled supply transferred to the CL system, a low cooling water pressure resulted. This low pressure caused the autostart of the 121 MCDLP.

The apparent cause for the 11 Containment and Auxiliary Chiller trip was the gasket material and over-torquing of the evaporator head gasket. In addition to the no flow condition in the chiller evaporator, a low chiller loading condition was also recognized as a contributing cause.

**CORRECTIVE ACTION**

Procedural changes have been initiated to change the evaporator head gasket to a more rigid material. Torque values will be assigned in accordance with existing PINGP procedures. Additional training on refrigeration is also requested for Operations personnel.

**PREVIOUS SIMILAR EVENTS**

LER 1-09-02 was submitted on May 18, 2009. This LER reported the automatic actuation of 121 MDCLP when it was aligned as a safeguards pump.

The actuation occurred following planned maintenance of the 12 DDCLP. During post maintenance testing, 12 DDCLP was tripped per procedure. This resulted in a transient of the cooling water system pressure. The momentary drop in pressure was large enough to automatically start the 121 MDCLP while it was aligned for safeguards service.