



September 29, 2008

L-PI-08-077
10 CFR 50.73

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

Prairie Island Nuclear Generating Plant Unit 1
Docket 50-282
License No. DPR-42

LER 1-08-03, Loss of Auxiliary Feedwater Safety Function and Condition Prohibited by Technical Specifications Due to Mispositioned Isolation Valve

Northern States Power Company, a Minnesota corporation (NSPM) herewith encloses Licensee Event Report (LER) 1-08-03. The LER describes a condition where one train of the auxiliary feedwater (AFW) system was inadvertently rendered inoperable by a mispositioned isolation valve on a pump discharge pressure switch. The condition resulted in one train of AFW being inoperable longer than allowed by technical specifications and in a loss of all AFW function when the opposite train of AFW was concurrently inoperable due to surveillance testing. Please contact us if you require additional information related to this event.

Summary of Commitments

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

Michael D. Wadley
Site Vice President
Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Prairie Island, USNRC
Resident Inspector, Prairie Island, USNRC
Department of Commerce, State of Minnesota

ENCLOSURE

LICENSEE EVENT REPORT 1-08-03

4 Pages Follow

NRC FORM 366 (9-2007)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104		EXPIRES: 08/31/2010			
<h2>LICENSEE EVENT REPORT (LER)</h2>					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 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 05000282		3. PAGE 1 of 4			
4. TITLE Loss of AFW Safety Function and Condition Prohibited by Technical Specifications Due to Mispositioned Isolation Valve										
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
7	31	2008	2008	003	00	09	29	2008	FACILITY NAME	DOCKET NUMBER
9. OPERATING MODE 3		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)								
10. POWER LEVEL 0		<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)					
		<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)					
		<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<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)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(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)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)					
		<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)					
		<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)					
		<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER					
		<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)(v)(D)	Specify in Abstract below or in NRC Form 366A					
12. LICENSEE CONTACT FOR THIS LER										
NAME Jeff Kivi					TELEPHONE NUMBER (Include Area Code) 651.388.1121					
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						15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
<input type="radio"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE). <input checked="" type="radio"/> NO										
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)										
<p>On July 31, 2008, Prairie Island Nuclear Generating Plant (PINGP) Unit 1 was operating at 100 percent power. At 0817 CDT Unit 1 reactor tripped (see LER 1-08-02 for details). Subsequent to the trip, the Unit 1 turbine-driven auxiliary feedwater pump (11 TDAFWP) auto started as designed, but tripped 42 seconds later on low discharge pressure. Local and remote indications did not indicate any abnormal operating conditions. A prompt investigation into 11 TDAFWP trip revealed the discharge pressure switch (PS-17700) was isolated. A time delay in the pump protective circuitry is designed to trip the pump on a continuing low discharge pressure condition. Monthly surveillances to test the operability of the 11 TDAFWP do not test the low discharge pressure trip function of the pump as the pump is in manual, which bypasses the low discharge pressure trip. The 12 motor-driven auxiliary feedwater pump (12 MDAFWP) started as designed and ran as needed throughout the event.</p> <p>Valve lineups were verified, the 11 TDAFWP was tested and restored to operable status. The subject valve was lock wired into the open position. Action will be taken to identify any similar components that can affect operability of safety systems and to revise procedures for locking and blocking.</p>										

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EVENT DESCRIPTION

On July 31, 2008, Prairie Island Nuclear Generating Plant (PINGP) Unit 1 was operating at 100 percent power. At 0817 CDT Unit 1 reactor¹ tripped (see LER 1-08-02 for details). Subsequent to the trip, the Unit 1 turbine-driven auxiliary feedwater² pump³ (11 TDAFWP) auto started as designed, but tripped 42 seconds later on low discharge pressure. Local and remote indications did not indicate any abnormal operating conditions. A prompt investigation into 11 TDAFWP trip revealed the discharge pressure switch⁴ (PS-17700) was isolated. A time delay in the pump protective circuitry is designed to trip the pump on a continuing low discharge pressure condition. The 12 motor-driven auxiliary feedwater pump (12 MDAFWP) started as designed and ran as needed throughout the event.

At the end of the Unit 1 outage (1R25) in February 2008, surveillance SP 1234A was performed on 11 TDAFWP to calibrate the discharge pressure switch on the pump. The final position of the isolation valve⁵ to the switch was open and independently verified. A valve lineup verified the position on March 11, 2008. Surveillance SP 1301 was performed to test all trip and safety related functions of 11 TDAFWP and SP 1376 was performed to verify operation of system valves. SP 1103 was performed to verify post-outage AFWP flow. During each of the four subsequent months, SP 1102 was also performed to test manual pump operation (with the pump in manual, the low discharge pressure trip is bypassed, so SP 1102 would not be expected to identify the as-found condition). None of the monthly procedures manipulated the PS-17700 isolation valve, but all required the operation of isolation valves in close proximity and of the same type as the isolation valve to the discharge pressure switch.

EVENT ANALYSIS

PINGP Technical Specification (TS) 3.7.5 requires both trains of the auxiliary feedwater system (AFW) to be operable in Modes 1, 2, 3, and Mode 4 when the steam generator is relied upon for heat removal. TS 3.7.5 Condition B requires that an inoperable train is to be restored in 72 hours. If Condition B is not met, Condition C requires the unit be shut down to Mode 3 in six hours and to Mode 4 in 12 hours. Sometime between March 11, 2008, and July 31, 2008, the isolation valve for PS-17700 was closed rendering the 11 TDAFWP inoperable. The available evidence indicates the valve was likely mispositioned during one of the periodic surveillances before the reactor trip, which would indicate Unit 1 remained in Mode 1 with one train of AFW inoperable for greater than 78 hours. Thus, the as-found condition of the 11 TDAFWP is reportable as a condition prohibited by TS, per 10 CFR 50.73(a)(2)(i)(B).

¹ EIS Component Identifier: RCT

² EIS System Code: BA

³ EIS Component Identifier: P

⁴ EIS Component Identifier: PS

⁵ EIS Component Identifier: ISV

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Additionally, the available evidence indicates it is likely the period the 11 TDAFWP was inoperable (due to the isolation of PS-17700) overlapped one of the occasions that the 12 MDAFWP was inoperable for monthly surveillance testing. The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The periods of overlapping inoperability of both trains of AFW are reportable as a condition that could have prevented the fulfillment of a safety function needed to remove residual heat per 10 CFR 50.73(a)(2)(v)(B).

SAFETY SIGNIFICANCE

The exact amount of time the 11 TDAFWP was inoperable due to the isolated PS-17700 is not known, but can be bounded from the last time position of the isolation valve was independently verified. For most of this time, the redundant 12 MDAFWP was available to meet the safety function. For the periods that both trains of AFW were inoperable, operators could have restored one or both trains had an actual system demand occurred. Either the 12 MDAFWP could have been restored from its surveillance testing configuration or the 11 TDAFWP could have been restored per the alarm response procedures. Thus, this event did not affect the health and safety of the public and the safety significance of this event is considered minimal.

CAUSE

An evaluation of the cause of the isolation of the 11 TDAFWP discharge pressure switch revealed the root cause was a failure of the site to adequately control components that affect safety related equipment.

- The mispositioned valve was not labeled, bypassing barriers to make identification more likely.
- The procedure for safeguards hold cards and component blocking or locking contains a definition of what components should not be controlled, but does not contain a definition of which components should be controlled per the safeguards hold card program.
- The mispositioned valve was not locked in the required position, making mispositioning more likely. The procedure does not define which valves shall have locks, blocks or lock wires installed.

The root cause evaluation identified a contributing cause of an unrecognized operator burden that created an error likely situation. To correct a condition during specific conditions that over-range the turbine driven pump suction pressure gage⁶, several procedures were changed that kept the gage isolated, except when needed. This action required additional valve manipulations in the vicinity of the PS-17700 manifold isolation valve.

As part of the initial investigation into this event, the site determined that tampering was not evident with this incident.

⁶ EIS Component Identifier: PI

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YEAR	SEQUENTIAL	REV										
2008	NUMBER	NO										
-	003	- 00										

CORRECTIVE ACTION

Surveillance procedures were completed to verify AFW system operability. The positions of other valves with similar functions in AFW system have been checked. The suction and discharge pressure switch manifold isolation valves for all four AFW pumps were lock-wired in the open position. A sample of valves on other systems was walked down to verify the positions of valves with similar functions – no discrepancies were noted.

Additional corrective actions include:

1. Conduct a review to find all other components that could affect operability of safety related systems. Components to be included in equipment database and drawings, locking devices be installed and components to be labeled in the field.
2. Revise the procedure for component locking and blocking.

PREVIOUS SIMILAR EVENTS

LER 1-06-02 and LER 1-08-01 report instances of inoperability of a train of AFW. The causes of these previous events were substantially different from the event of this LER, thus, the corrective actions from the previous events would not be expected to prevent the event of this LER.