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July 16, 2010

L-PI-10-072
10 CFR 50.73

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

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

LER 50-306/2010-003-00, Unit 2 Fuel Oil Transfer Pumps Are Vulnerable To A Potential Common Mode Failure

Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, herewith encloses Licensee Event Report (LER) 50-306/2010-003-00.

Prairie Island Nuclear Generating Plant (PINGP) Unit 2 has four Fuel Oil Storage Tanks (FOSTs) to provide fuel oil to the D5 and D6 Emergency Diesel Generators (EDG). Each EDG FOST has an electric fuel oil (FO) transfer pump. The FO transfer pumps were installed as part of the installation of D5 and D6 in 1992.

The Unit 2 FO transfer pumps are vulnerable to a common mode failure. On May 21, 2010, it was determined this condition existed and was reportable. FO was transferred to meet the required mission time and an Engineering Change Request has been written to correct the common mode failure mechanism.

Summary of Commitments

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

Brad J. Sawatzke
Director Site Operations, 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

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ENCLOSURE

LICENSEE EVENT REPORT 50-306/2010-003-00

4 Pages Follow

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES: 08/31/2010

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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Prairie Island Nuclear Generating Plant Unit 2	05000306	1 of 4

4. TITLE
Unit 2 Fuel Oil Transfer Pumps Are Vulnerable To A Potential Common Mode Failure

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
05	21	2010	2010	– 003 –	00	07	16	2010	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE
Mode 3

10. POWER LEVEL
000%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☑ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☑ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Sam J DiPasquale, P.E.	651.388.1121 x7350

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
O YES (If yes, complete 15. EXPECTED SUBMISSION DATE). ⊙ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

Prairie Island Nuclear Generating Plant (PINGP) Unit 2 has four Fuel Oil Storage Tanks (FOSTs) to provide fuel oil to the D5 and D6 Emergency Diesel Generators (EDG). Each EDG FOST has an electric fuel oil (FO) transfer pump. The FO transfer pumps were installed as part of the installation of D5 and D6 in 1992.

The Unit 2 FO transfer pumps are vulnerable to a common mode failure. On May 21, 2010, it was determined this condition was reportable. FO was transferred to meet the required mission time and an Engineering Change Request has been written to correct the common mode failure mechanism.

EVENT DESCRIPTION

Prairie Island Nuclear Generating Plant (PINGP) Unit 2 has four Fuel Oil Storage Tanks[1] (FOSTs) to provide fuel oil (FO) to the D5 and D6 Emergency Diesel Generators[2] (EDG). The EDGs and support systems were installed in 1992.

Both FO transfer pumps for D5 (21 and 23) are powered from 480V Bus 211 by the single main supply breaker 211 K. Similarly, both FO transfer pumps for D6 (22 and 24) are powered from 480V Bus 221 by the single main MCC supply breaker 221 K.

Additionally, the D5 FO Transfer Pump auto control circuitry for both D5 pumps is powered from the 125V DC Panel 27 Circuit 2 by a single breaker, *8/FTP/D5.* Similarly, the D6 FO Transfer pump control circuitry for both D6 pumps is powered from the 125V DC Panel 28 Circuit 2 by a single breaker, *8/FTP/D6.*

The EDGs and support systems were designed to meet the requirements of Regulatory Guide (RG) 1.137, (Fuel Oil Systems for Standby Diesel Generators, Revision 1, October 1979). RG 1.137 endorses the requirement in ANSI N195-1976 that "sufficient on-site oil storage shall be provided to operate the required number of diesel-generators for seven (7) days or the time required to replenish the oil for sources outside the plant site following any limiting design basis event or accident."

In 2004, a Corrective Action Process action request (CAP) was written (CAP 566095) to document the potential common mode failure of 21 and 23 FO Transfer Pumps since both are powered by a common 480 VAC electrical bus. The evaluation of the CAP concluded that manual action would be available to transfer FO out of the FOST if this condition occurred. However, if the FO Transfer Pumps fail, there is no manual line up of the system that would have been able to transfer the FO out of the 21 or 23 FOST. In addition, the CAP did not recognize that the 125 VDC control power for the FO Transfer Pumps was also supplied from a common source.

On May 12, 2010, CAP 01232408 questioned the control power for each set (21 and 23, 22 and 24) of the FO Transfer Pumps came from the same DC power panel via the same breaker. CAP 1232504 was also written on the same day to document a concern that each set of FO Transfer pumps power came from the same 480 VAC bus via a single breaker.

On May 21, 2010, it was determined this condition existed and was reportable. Engineering determined that D5 FOSTs had an adequate volume of FO. However the D6 FOSTs volume was inadequate and D6 was declared inoperable until a TS sufficient volume of FO was transferred.

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[1] EIIS System Code: DE
[2] EIIS System Code: EK

EVENT ANALYSIS

Technical Specifications LCO 3.8.3 states "The stored Emergency Diesel Generator (EDG) fuel oil supply shall be within limits". LCO 3.8.3, Condition A requires the Unit 2 Fuel Oil supply to be greater than 75,000 gallons. If less than 75,000 gallons, but more than 65,000 gallons, the specification allows 48 hours to recover fuel above 75,000 gallons. With less than 65,000 gallons available, the Unit 2 Diesel Generators (both D5 and D6) must be declared inoperable immediately.

The Unit 2 FO system has four Safeguards tanks to maintain the required inventory. Each tank has approximately 30,800 available gallons. With one tank out of service, three fuel oil storage tanks have the available capacity of approximately 90,000 gallons (providing the three available fuel oil storage tanks are full). Two tanks filled to 100% cannot by themselves satisfy the 75,000 gallons as required by TS. It was determined that at least 39,000 gallons of FO were required to be available for each EDG.

On May 21, 2010, with Unit 2 in Mode 3, it was determined this condition was reportable since the Unit 2 FO Transfer Pumps were potentially vulnerable to a common mode failure since:

1. Both FO transfer pump motors for D5 (D6) were powered from the same 480 VAC bus via a single breaker.

2. The FO Transfer Pump Auto Control Circuitry for both pumps for D5 (D6) is powered from the same 125 VDC DC Panel via a single breaker.

No equipment actually failed; however if any of the potential failures actually occurred, two FOSTs would have been unavailable and there would have been inadequate FO to meet the TS inventory requirement. The Unit 2 EDGs may not have fulfilled their required mission time; therefore this condition does represent a safety system functional failure. This condition is reportable as a common-cause inoperability of independent trains or channels under 10 CFR 50.73(a)(2)(vii) and as a safety system functional failure under 10 CFT 50.73(a)(2)(v)(A).

SAFETY SIGNIFICANCE

This issue had no nuclear, radiological, industrial, or environmental impact. The FO transfer pumps common mode breakers did not fail so the required TS FO inventory was available. Therefore, this event did not affect the health and safety of the public.

CAUSE

The causal evaluation determined that the apparent cause is inadequate design for the power supplies and control power for the Unit 2 FO transfer pumps.

CORRECTIVE ACTION

1. FO was transferred between 21, 22, 23, and 24 FOSTs to ensure that each EDG would have at least 39,000 gallons. This is the amount, determined in Operability Recommendation 1233935-01, needed to meet the seven day mission time of the Unit 2 FO system.

2. Changes were made to the Unit 2 daily control room logs (SP 2001 B, C, D, E, and F) to administratively control the D5 and D6 FO inventory to ensure that there is at least 39,000 gallons available for each EDG.

Additional Corrective Actions:

Engineering Change Request (ECR) 4871 has been written to correct the common mode failure mechanism. CAP assignment 1233935-09 will track the ECR.

PREVIOUS SIMILAR EVENTS

A LER search was conducted and no similar LER events at PINGP involving common mode failures due to common power supplies or control power for safety related systems was identified in the last three years.