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MAR 16 2009

L-PI-09-026
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 1-09-01, Unanalyzed Condition Due To Manual Actions That Do Not Comply With 10 CFR 50 Appendix R

Licensee Event Report (LER) 1-09-01 is enclosed. The LER describes an unanalyzed condition identified with respect to manual operator actions and their use in 10 CFR 50, Appendix R safe shutdown strategies for Fire Areas 31 and 32 (Auxiliary Feedwater Pump and Instrument Air Compressor Rooms). This was identified during a review of Prairie Island Nuclear Generating Plant's safe shutdown compliance assessment and was previously reported in accordance with 10 CFR 50.72 on January 14, 2009.

Summary of Commitments

This letter contains no new commitments and no revisions 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

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ENCLOSURE 1

LICENSEE EVENT REPORT 1-09-01

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 1	05000282	1 of 4

4. TITLE
Unanalyzed Condition Due To Manual Actions That Do Not Comply With 10 CFR 50, Appendix R

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
1	14	2009	2009	– 001 –	00	03	16	2009	Prairie Island Unit 2	05000306
									FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE
1

10. POWER LEVEL
100

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)
Jorge L. O'Farrill, Licensing Engineer	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

O 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 January 14, 2009 during a review of Prairie Island Nuclear Generating Plant's (PINGP) safe shutdown compliance assessment, it was discovered that a fire in either fire area 31 or 32 could cause the loss of the instrument air system which is credited with providing compressed air to the safeguards chilled water system. The safeguards chilled water system is required in order to achieve and maintain hot shutdown for compliance with 10 CFR 50 Appendix R.

This condition is of low safety significance because in the event of a loss of instrument air, the safeguards chillers have compressed air cylinders which provide a minimum of 8 hours of backup air. Operators validate on every shift that there is at least a 12 hour supply of backup air in the cylinders and have instructions that direct replacement of the compressed air cylinders if less than a 12 hour supply of air is available.

The discovery of this condition is being reported as an unanalyzed condition in accordance with 10 CFR 50.73(a)(2)(ii)(B) due to the clarification in Regulatory Issue Summary (RIS) 2006-10 that Appendix R, Paragraph III.G.2 does not allow the use of operator manual actions to satisfy the requirements of Appendix R. Replacement of the air cylinders is considered an operator manual action.

EVENT DESCRIPTION

On January 14, 2009, during a review of Prairie Island Nuclear Generating Plant's (PINGP) safe shutdown compliance assessment, it was discovered that the loss of the instrument air[1] (IA) system due to a fire in either fire area 31 or 32 had not been fully analyzed with respect to the clarifications made in Regulatory Issue Summary (RIS) 2006-10, Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions. Upon a loss of IA, the safeguards chilled water system is supported by a safety related backup compressed air system that relies on the use of manual operator actions to ensure that an 8 hour air supply is always available. However, RIS 2006-10 provides clarification that operator manual actions are not compliant with the intent of 10 CFR 50 Appendix R Paragraph III.G.2.

EVENT ANALYSIS

Fire area 31 contains the two train B auxiliary feedwater[2] (AFW) pumps and one IA compressor whereas fire area 32 contains the two train A AFW pumps and two IA compressors. A fire in either fire area 31 or 32 would only affect one train of AFW, but could potentially cause the loss of the IA system. Engineering calculation GEN-PI-052, Revision 3B credits the IA system with providing compressed air to the pressurizer power operated relief valves (PORVs), steam generator PORVs, and the safeguards chilled water system. Upon a loss of IA, the pressurizer and steam generator PORVs fail in the desired configuration (closed) for hot shutdown.

The safeguards chillers on the other hand, require compressed air to perform their safety function in the event of a fire such that hot shutdown can be accomplished as required by 10 CFR 50, Appendix R. The IA system is the primary source of that compressed air and is necessary to maintain operability of the safeguards chillers. The PINGP Appendix R compliance strategy for a fire in either fire area 31 or 32 considered that the IA compressors could be damaged due to fire, but did not address the effect on the chilled water system. The safeguards chiller units rely on two safety-related backup compressed air cylinders that are installed to provide at least 8 hours of compressed air. PINGP operators monitor the air pressure of the compressed air cylinders and replace them if the combined pressures drop below what is required to provide a 12 hour air supply.

10 CFR 50 Appendix R, Paragraph III.G.2 requires one train of equipment necessary to achieve and maintain hot shutdown be unaffected by a fire. It is required to maintain hot shutdown until repairs to achieve and maintain cold shutdown are completed within 72 hours. Because the operator manual actions to replace the compressed air cylinders would need to be performed within that 72 hour period, it is not in compliance with 10 CFR 50 Appendix R as clarified by RIS 2006-10. Accordingly, this is being reported as an unanalyzed condition as required by 10 CFR 50.73(a)(2)(ii)(B) because the IA system – required for the safeguards chillers – lacks a fire barrier to ensure a compressed air supply is provided to the chillers in the event of a fire. This condition was previously reported to the NRC as an unanalyzed condition in accordance with 10 CFR 50.72(b)(3)(ii)(B) on January 14, 2009.

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[1] EIIS Component Identifier: BA
[2] EIIS Component Identifier: LE

SAFETY SIGNIFICANCE

In the event of a fire in one of the affected fire areas causing a loss of the IA system, the manual operator actions – while not compliant with Appendix R – would have allowed the safe shutdown of either unit. Therefore, this event did not impact the health and safety of the public, and the safety significance of this event is considered minimal. Due to no actual loss of safety function occurring as a result of the as-found condition, this event is not reportable per 10 CFR 50.73(a)(2)(v).

CAUSE

The cause of this event is the result of misinterpretation of the regulations governing licensees' safe shutdown capability. While Appendix R, paragraph III.G.2 does not list operator manual actions as a means of ensuring that one of the redundant trains is free of fire damage, it does not expressly prohibit the use of operator manual actions either. In 2006 the NRC's issuance of RIS 2006-10, Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions, clarified the intent of Paragraph III.G.2 of Appendix R as not allowing operator manual actions as a means to ensure that one of the redundant trains is free of fire damage.

PINGP made an initial event notification for non-compliant operator manual actions in response to RIS 2006-10 on June 4th, 2007.

CORRECTIVE ACTIONS

The PINGP fire protection program requires an hourly fire patrol for all inoperable fire barriers or an alternate compensatory measure that is more effective than an hourly fire patrol. If utilized as a compensatory measure, operator manual actions can provide a more effective compensatory measure than hourly fire patrols. Operator manual actions are allowed to be used as compensatory measures provided the stipulated actions are feasible and reliable. While not acceptable as a compliance strategy for Appendix R, manual operator actions currently in place are preferable, as an alternate compensatory measure, to the hourly fire patrols that are stipulated by the PINGP fire protection program.

PINGP is also transitioning to NFPA 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, which allows the licensee to quantify the fire area risk provided it is realistic and accurate. Under NFPA 805 the use of operator actions is one of the factors that can be considered to lower the overall risk presented by a fire in that area. PINGP's licensee amendment request (LAR) to implement NFPA 805 – expected to be submitted in the fourth quarter of 2010 – will describe how PINGP intends to meet the requirements for the new fire protection program.

PREVIOUS SIMILAR EVENTS

A review of LERs for Unit 1 and Unit 2 since 2006 found LER 1-07-02. This LER reported an unanalyzed condition in fire area 29 due to noncompliance with Appendix R in the use of operator manual actions. An extent of condition review at that time identified a number of additional fire areas that were non-compliant. The lack of fire barriers in fire areas 31 and 32 was not identified at that time because it was not included in the fire protection or Appendix R programs. The compressed air cylinders were installed to meet design basis requirements, not specifically for fire protection requirements.