May 9, 2002

Mr. Mano Nazar
Site Vice-President
Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC
1717 Wakonade Drive East
Welch, MN 55089

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NRC INSPECTION REPORT 50-282/02-03(DRS); 50-306/02-03(DRS)

Dear Mr. Nazar:

On April 11, 2002, the NRC completed a supplemental inspection of your Prairie Island Nuclear Generating Plant. The results of this inspection were discussed on April 10 and 11, 2002, with you and members of your staff. The enclosed report presents the results of that inspection.

The supplemental inspection was an examination of activities conducted under your license as they relate to safety and to compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel. Specifically, this inspection focused on your re-assessment of the root causes and development of corrective actions for the White inspection finding associated with the cooling water pumps documented in NRC Inspection Report 50-282/00-13; 50-306/00-13.

Based upon the results of this inspection, the inspector determined that your root cause evaluation of the White inspection finding identified the primary and contributory causes for the finding. The inspector also determined that your completed and proposed corrective actions for the finding appropriately addressed the identified root and contributory causes. Consequently, the White finding will be closed.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

John M. Jacobson, Chief
Mechanical Engineering Branch
Division of Reactor Safety

Docket Nos. 50-282; 50-306
License Nos. DPR-42; DPR-60

Enclosure: Inspection Report 50-282/02-03(DRS);
50-306/02-03(DRS)

cc w/encl: Plant Manager, Prairie Island
R. Anderson, Executive Vice President
and Chief Nuclear Officer
Site Licensing Manager
Nuclear Asset Manager
Commissioner, Minnesota
Department of Health
State Liaison Officer, State of Wisconsin
Tribal Council, Prairie Island Indian Community
J. Silberg, Esquire
Shawn, Pittman, Potts, and Trowbridge
A. Neblett, Assistant Attorney General
Office of the Attorney General
Administrator, Goodhue County Courthouse
Commissioner, Minnesota Department
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-282; 50-306
License Nos:	DPR-42; DPR-60
Report No:	50-282/02-03(DRS); 50-306/02-03(DRS)
Licensee:	Nuclear Management Company, LLC
Facility:	Prairie Island Nuclear Generating Plant, Units 1 and 2
Location:	1717 Wakonade Drive East Welch, MN 55089
Dates:	April 8 through 11, 2002
Inspectors:	K. O'Brien, Senior Reactor Inspector
Approved by:	John M. Jacobson, Chief Mechanical Engineering Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000282-02-03(DRS); 05000306-02-03(DRS), on 04/08-11/2002, Nuclear Management Company, LLC, Prairie Island Nuclear Generating Plant. Supplemental Inspection - Mitigating Systems Cornerstone.

Cornerstone: Mitigating Systems

The U.S. Nuclear Regulatory Commission (NRC) performed this supplemental inspection to assess the licensee's evaluation associated with the inoperability of the Prairie Island Nuclear Power Plant safeguards cooling water (service water) system. This performance issue was previously characterized as having low to moderate risk significance (White) in NRC Inspection Reports 50-282-00-13; 50-306-00-13, and 50-282-01-14; 50-306-01-14. During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that the licensee performed a comprehensive evaluation of the inoperable safeguards cooling water system that the NRC identified during a safety system design basis inspection. The licensee's evaluation identified the root causes of the performance issue to include inadequate management and use of design documents, inadequate quality class process scope, and an inadequate 1980s design change. The licensee's inadequate management and use of design documents and inadequate quality class process scope root causes resulted in the performance issue having potential impacts beyond the cooling water system. As a result, the licensee has developed an extensive extent-of-condition review in an effort to ensure that other potential similar issues are identified and corrected. In addition, the licensee intends to provide focused initial and continuing training to the engineering and other plant staff to ensure that the sources of design basis information are clearly defined, communicated, and utilized.

Given the licensee's acceptable performance in addressing the inoperable cooling water system, the White finding associated with this issue will only be considered in assessing plant performance for four additional quarters in accordance with the guidance in Inspection Manual Chapter 0305, "Operating Reactor Assessment Program." Implementation of the licensee's corrective actions will be reviewed during a future inspection.

A. Inspector Identified Findings

No findings of significance were identified.

B. Licensee Identified Findings

No findings of significance were identified.

Report Details

01 Inspection Scope

This supplemental inspection, performed in accordance with NRC Inspection Procedure 95001, assessed the licensee's re-evaluation of a low to moderate risk finding associated with the inoperability of the cooling water (service water) system pumps. This finding was previously characterized as "White" in NRC letter dated February 20, 2001, which re-analyzed an initial assessment of the finding included in NRC Inspection Report 50-282/00-13; 50-306/00-13. The "White" finding was related to the mitigating systems cornerstone in the reactor safety strategic performance area. The inspectors reviewed the Licensee Event Report and Condition Reports relating to the root cause analysis, extent of condition evaluations, and corrective actions to prevent recurrence associated with this finding. This inspection was performed, in part, due to findings developed during a prior supplemental inspection, as documented in NRC Inspection Report 50-282/01-14; 50-306/01-14.

02 Evaluation of Inspection Requirements

02.1 *Problem Identification*

a. Determine that the evaluation identifies who (i.e., licensee, self-revealing, or NRC), and under what conditions the issue was identified.

The cooling water pump inoperability issue was identified by the NRC during a baseline Safety System Design and Performance Capability Inspection in November 2000, as documented in Inspection Report (IR) 50-282/00-13; 50-306/00-13. Based on the finding from that inspection, the licensee initiated Condition Report (CR) 2000-4776 and, after concluding that the pumps were inoperable, issued Licensee Event Report (LER) 50-282/2000-04.

b. Determine that the evaluation documents how long the issue existed, and prior opportunities for identification.

The licensee documented in the LER that the problem originated in 1976 when the site's Operations Committee incorrectly determined that the bearing water supply was not essential to pump operability. This determination contradicted the information in the pump's vendor manual that stated bearing water supply was needed for pump operation. Subsequently, in 1977, the licensee downgraded the bearing water supply for the cooling water pumps to non-safety related in a safety evaluation [10 CFR 50.59] based on the Operations Committee's decision. The pump's operability was eventually affected in 1981 when a design change installed non-safety related filters in the system which resulted in a non-qualified source of bearing water. Additionally, in 1986, a modification moved the bearing water supply source from the safeguards [safety-related] supplied header to the non-safety related filtered water system.

From 1976 through 2000, the licensee had multiple opportunities to identify this problem. In two specific instances, (the Design Basis Document Project in 1991 and the licensee's service water system operational performance inspection in 1994), questions regarding the need for a qualified source of bearing water were asked because of the

inconsistency between the bearing water supply classification and the pump design requirements. In both cases, the licensee's resolution relied on the 1977 safety evaluation and incorrectly agreed that the bearing water was not essential to pump operation.

c. Determine that the evaluation documents the plant specific risk consequences (as applicable) and compliance concerns associated with the issue.

The risk associated with this problem was characterized by the NRC as a "White" finding [an issue with low to moderate increased importance to safety]. The licensee documented that they agreed with this significance determination in Licensee Event Report 50-282/2000-04, Revision 1. Also, the licensee's root cause report stated that this problem was significant because an external event might have required these pumps to operate, and might have disabled the bearing water supply through the failure of the non-qualified PVC [polyvinyl chloride] piping or the loss of power to the well and strainer backwash function.

02.2 *Root Cause and Extent of Condition Evaluation*

a. Determine that the problem was evaluated using a systematic method(s) to identify root cause(s) and contributing cause(s).

The licensee performed two separate root cause evaluations of the finding. The second evaluation was conducted to resolve NRC-identified deficiencies with the results of the first root cause evaluation as documented in NRC Inspection Report 50-286/01-14; 50-306/01-14. The second root cause evaluation employed a combination of structured root cause analysis techniques including event and causal factor charting, change analysis, and barrier analysis. The inspector determined that the evaluations were conducted with sufficient rigor and detail to identify the root and contributing causes. The licensee identified three root causes and four contributing causes as a result of the second root cause evaluation effort.

b. Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.

The inspector determined that the licensee's second root cause evaluation was thorough and identified the primary root causes and associated contributing causes. The licensee-determined primary root causes included inadequate management and use of design documents and an inadequate quality class process scope. As a result of these root causes, management and plant engineering staff did not have readily available design information regarding the cooling water system pumps. In addition, the plant quality class process did not require a rigorous review or documentation of the design basis information used to justify changes in the quality class. The licensee also identified several contributing causes which permitted the initial error to occur and precluded the error from being recognized over the next twenty five years.

Because the root causes for the condition were inadequacies in fundamental components of the licensee's system for controlling the plant design basis, the licensee undertook a comprehensive extent-of-condition evaluation to ensure that other similar problems were identified and resolved.

c. *Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.*

The licensee's second root cause evaluation effort appropriately considered other occurrences of the problem, including a similar finding developed during a 2000 NRC Safety System Design Inspection. The inspectors determined that the licensee identified several other similar occurrences and properly compared the circumstances and specifics for each of the similar occurrences to the conditions that permitted the cooling water system inoperability. The licensee also validated that the proposed White finding corrective actions, as appropriate, would have precluded the similar occurrence if implemented.

d. *Determine that the root cause evaluation included consideration of potential common cause(s) and extent of condition of the problem.*

Both the first and second root cause evaluations considered potential common causes and the licensee was conducting an extensive extent-of-condition review covering other plant systems. Based upon the second root cause evaluation effort, the licensee implemented several actions to identify the extent-of-condition associated with personnel training and work processes. The preliminary results from these efforts indicated that similar problems could exist in other engineering and plant documents and within engineering staff training and work processes. The inspector determined that the licensee's efforts had appropriately considered and identified the extent-of-condition potential raised by the cooling water system inoperability.

02.3 *Corrective Actions*

a. *Determine that appropriate corrective action(s) are specified for each root/contributing cause or that there is an evaluation that no actions are necessary.*

The inspector determined that the licensee had properly addressed the immediate corrective actions required as a result of the initial finding of an inoperable cooling water system.

Using the results of both the root cause evaluation efforts, the licensee developed comprehensive corrective actions to address the root and contributory causes. Significant among the corrective actions were the licensee's efforts to fully defined the extent-of-condition resulting from the root causes associated with the inadequate management and use of design documents and the inadequate quality class process. In addition, based upon results developed during the second root cause evaluation effort, the licensee developed corrective actions to more clearly define, control, and ensure a proper understanding and use of design basis documents by the engineering and other plant staff. The inspector determined that the proposed corrective actions were appropriate to address the root and contributory causes.

b. *Determine that the corrective actions have been prioritized with consideration of the risk significance and regulatory compliance.*

The licensee appropriately prioritized the immediate compensatory actions and design change activities necessary to ensure a safety-related source of lubricating water to the

cooling water pumps following the NRC's initial identification of the finding. In addition, the inspector noted that the licensee staff had prioritized the additional corrective actions that were necessary as a result of findings developed during the two root cause evaluation efforts and the extent-of-condition reviews.

c. Determine that a schedule has been established for implementing and completing the corrective actions.

The licensee developed a detailed schedule for implementing each of the corrective actions proposed as a result of the root cause evaluation efforts. The schedules were included as a part of the corrective action system and were actively monitored by plant management to ensure a timely completion of each action. The inspector determined that the licensee's established corrective action schedule was appropriate.

d. Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence.

For each of the corrective actions to the root and contributory causes, the licensee developed either quantitative or qualitative measures by which to assess the effectiveness of the corrective actions. Many of the effectiveness measures included focused independent reviews of current engineering and other plant staff performance in implementing the recently revised management controls and associated training. The inspector determined that the licensee's corrective action effectiveness measures were appropriately defined and comprehensive.

03 Exit Meeting Summary

On April 11, 2002, the inspector presented the inspection results to Mr. M. Werner and other members of the Prairie Island staff. The licensee acknowledged the findings presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. None were identified as proprietary.

KEY POINTS OF CONTACT

Licensee

D. Anderson, Senior Engineering Specialist
M. Brossart, Superintendent Mechanical Systems and Program Engineering
P. Huffman, Manager of System Engineering
R. Peterson, Project Engineer
M. McKeown, Manager of Design Engineering
M. Nazar, Site Vice President
M. Werner, Plant Manager
H. Williams, Director of Engineering
R. Womack, Manager of Engineering Programs

NRC

J. Adams, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-282/00-13-01 50-306/00-13-01	NOV	Inadequate design control measures, which resulted in a potential failure of the cooling water pumps due to a lack of lubricating water for shaft bearings.

Discussed

None

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CR	Condition Report
DRS	Division of Reactor Safety
IR	Inspection Report
LER	Licensee Event Report
NRC	Nuclear Regulatory Commission
PVC	Polyvinyl Chloride

LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document in this list does not imply NRC acceptance of the document, unless specifically stated in the inspection report.

Condition Reports

Number	Description	Revision/Date
2001-86350	Re-examine the Revised Root Cause Evaluation for the Cooling Water White Finding, Based Upon External Review	January 2, 2002
OTH 017996	Select a Sample of Risk-Significant Components and Determine if Inspection Reports Should be Reviewed	March 8, 2002

Procedures

Number	Description	Revision/Date
H1	Quality List Classification Criteria	8
5AWI 6.1.0	Design Change General	6
5AWI 2.1.0	Quality Assurance Program Boundary	6
5AWI 4.5.0	Plant Component Data Files	3
SWI ENG-20	Disposition of Vendor Information	0

Miscellaneous Documents

Description	Revision/Date
Procedure Change Request: "Operation Manual H1, Quality Classification Criteria"	PCR 2002-0496
Temporary Change Notice: Procedure 5AWI 3.3.5, "50.59 Screenings"	TCN 2002-1052
Procedure Change Request: "Q-List Extension Update Form"	PCR 2002-0495
Procedure Change Request: "Quality Assurance Program Boundary"	PCR 2001-2070
Work Request WO 116009, "Attach TDAFWP Drain Line"	January 11, 1991