

October 19, 2001

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 50-282/01-16; 50-306/01-16

Dear Mr. Nazar:

On September 30, 2001, the NRC completed an inspection at your Prairie Island Nuclear Generating Plant. The enclosed report documents the inspection findings which were discussed on September 27, 2001, with you and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

No findings of significance were identified.

Since September 11, 2001, the Prairie Island Nuclear Generating Plant has assumed a heightened level of security based on a series of threat advisories issued by the NRC. Although the NRC is not aware of any specific threat against nuclear facilities, the heightened level of security was recommended for all nuclear power plants and is being maintained due to the uncertainty about the possibility of additional terrorist attacks. The steps recommended by the NRC include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with local law enforcement and military authorities, and limited access of personnel and vehicles to the site.

The NRC continues to interact with the Intelligence Community and to communicate information to Nuclear Management Company, LLC. In addition, the NRC has monitored maintenance and other activities which could relate to the site's security posture.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures 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,

Original signed by  
Roger D. Lanksbury

Roger D. Lanksbury, Chief  
Branch 5  
Division of Reactor Projects

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

Enclosures: 1. Inspection Report 50-282/01-16; 50-306/01-16  
2. List of Information Requested for Heat Sink Inspection

cc w/encls: Plant Manager, Prairie Island  
R. Anderson, Chief Nuclear Officer  
G. Eckholt, Site Licensing Manager  
S. Northard, Nuclear Asset Manager  
J. Malcolm, Commissioner, Minnesota  
Department of Health  
State Liaison Officer, State of Wisconsin  
Tribal Council, Prairie Island Dakota Community  
J. Silberg, Esquire  
Shawn, Pittman, Potts, and Trowbridge  
P. Tester, Assistant Attorney General  
Office of the Attorney General  
S. Bloom, 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: 50-282/01-16; 50-306/01-16

Licensee: Nuclear Management Company, LLC

Facility: Prairie Island Nuclear Generating Plant

Location: 1717 Wakonade Drive East  
Welch, MN 55089

Dates: August 17 through September 30, 2001

Inspectors: S. Ray, Senior Resident Inspector  
S. Thomas, Resident Inspector  
G. O'Dwyer, Reactor Engineer  
M. Mitchell, Radiation Specialist  
D. Kimble, Resident Inspector, Monticello  
K. O'Brien, Senior Reactor Engineer

Approved by: Roger D. Lanksbury, Chief  
Branch 5  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000282-01-16; IR 05000306-01-16, on 08/17-09/30/2001; Nuclear Management Company, Prairie Island Nuclear Generating Plant, Units 1 & 2, Resident Inspector, Reactor Engineer, and Radiation Safety Specialist Report.

This report covers a 6-week routine resident inspection, a baseline heat sink inspection, and a baseline radiation safety inspection. The inspection was conducted by resident inspectors and specialist inspectors. No findings of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>. Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation.

A. Inspector-Identified Findings

No findings of significance were identified.

B. Licensee-Identified Findings

No findings of significance were identified.

## Report Details

### Summary of Plant Status

Unit 1 was in cold shutdown following an unplanned trip on August 3, 2001, until the reactor was brought critical on September 10, 2001. Unit 1 was connected to the grid on September 11 and reached full power on September 13, 2001. Unit 2 operated at or near full power for the entire inspection period.

### 1. **REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness**

#### 1R04 Equipment Alignment (71111.04)

##### a. Inspection Scope

The inspectors performed a walkdown of the accessible portions of the B train of cooling water to verify that critical portions of the redundant train were in the correct lineup while the A train of cooling water was unavailable. The inspectors also verified that there were no outstanding work orders (WOs) or condition reports (CRs) associated with the train that could affect its function.

##### b. Findings

No findings of significance were identified.

#### 1R05 Fire Protection (71111.05)

##### a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of fire fighting equipment, the control of transient combustibles, and on the condition and operating status of installed fire barriers. The inspectors selected the following fire areas for inspection based on their overall contribution to internal fire risk, as documented in the Individual Plant Examination of External Events (IPEEE), or their potential to impact equipment which could initiate a plant transient.

- Fire Area 20, Bus 15 room;
- Fire Area 81, Bus 16 room;
- Fire Area 111, D5 building mezzanine; and
- Fire Area 112, D6 building mezzanine.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

Biennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed documents associated with testing, inspection, cleaning, and performance trending of the 12 containment fan coil unit, the 22 diesel cooling water pump jacket cooler, and the 11 component cooling heat exchanger. These heat exchangers were chosen based upon their importance in supporting required safety functions as well as relatively high risk achievement worths in the plant specific risk assessment. The 12 containment fan coil unit and the 11 component cooling heat exchanger were also selected so that the inspectors could evaluate the licensee's thermal performance testing methods. During the inspection, the inspectors reviewed completed surveillance tests and associated calculations, and performed independent calculations to verify that these activities adequately ensured proper heat transfer. The inspectors reviewed the documentation to confirm that the test or inspection methodology was consistent with accepted industry and scientific practices, based on review of heat transfer texts and Electrical Power Research Institute standards (EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, December 1991, and EPRI TR-107397, Service Water Heat Exchanger Testing Guidelines, March 1998).

The inspectors reviewed CRs concerning heat exchanger and ultimate heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and entering them in the corrective action program. The inspectors also evaluated the effectiveness of the corrective actions for identified issues, including the engineering justification for operability, if applicable.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed systems to verify that the licensee properly implemented the maintenance rule for structures, systems, or components (SSCs) with performance problems. This evaluation included the following aspects:

- whether the SSC was scoped in accordance with 10 CFR 50.65;
- whether the performance problem constituted a maintenance rule functional failure;
- safety significance classification;
- the proper 10 CFR 50.65(a)(1) or (a)(2) classification for the SSC; and



- the appropriateness of the performance criteria for SSCs classified as (a)(2) or the appropriateness of goals and corrective actions for SSCs classified as (a)(1).

The inspectors reviewed the licensee's implementation of the maintenance rule requirements for the following SSCs:

- reactor coolant system;
- DB-50 breakers located in the Unit 1 reactor trip switchgear; and
- containment and auxiliary building cooling system.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's management of plant risk during emergent maintenance activities. These activities were chosen based on their potential impact on increasing the probability of an initiating event or impacting the operation of safety-related equipment. The inspection was conducted to verify that evaluation, planning, control, and performance of the work were done in a manner to reduce risk where practical, and that contingency plans were in place where appropriate. The inspectors reviewed the following maintenance activities:

- investigation of reactor trip breaker primary disconnect assembly finger discoloration, and
- replacement of actuator mounting studs on control valve CV-31384.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors selected three CRs for risk significant components and systems in which operability issues were discussed. These CRs were evaluated to determine whether the operability of the components and systems was justified. The issues evaluated were:

- breaker 12-4 fire;
- residual heat removal pipe hanger analysis; and
- fouling of the D5/D6 emergency diesel generator building inlet screens.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed operator workarounds (OWAs) to determine whether a mitigating system function of the operator's ability to implement abnormal emergency operating procedures was affected. The workarounds were chosen because they represented a potential increase in the possibility of an initiating event. The following workarounds were reviewed:

- OWA 20015970, "Electro-Hydraulic Oil Coolers on Both Units Can't Control Electro-Hydraulic Oil Temperature Due to a Modification Which Partially Bypassed the Oil Coolers"; and
- OWA 20017095, "Expedite Integrated Planning Process Project Number 990027 to Resolve Heater Drain Pump Speed Inaccuracy."

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed post-maintenance testing activities associated with maintenance on important mitigating and support systems to ensure that the testing adequately verified system operability and functional capability with consideration of the actual maintenance performed. Testing subsequent to the following activities were observed or reviewed:

- D2 emergency diesel generator testing subsequent to restoring the original crankcase ejector orifice and other repairs after a small oil fire;
- D1 emergency diesel generator testing subsequent to repairing the suspected cause of the failure of the diesel room ventilation to auto-start during the performance of a diesel generator surveillance test;
- reenergize Bus 11 and Bus 12 subsequent to the Breaker 12-4 fire repairs; and
- Bus 12 functional testing.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

On August 3, Unit 1 tripped from about 25 percent power due to a fire in the cubicle for Breaker 12-4 (1M station auxiliary transformer feed to Bus 12). The inspectors conducted inspections of outage activities associated with the forced outage including:

- control of shutdown risk and emergent work;
- replacement and testing of Bus 12 cubicles;
- replacement and testing of damaged instrument and control cables; and
- preparations for plant startup.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors witnessed selected surveillance testing and/or reviewed test data to verify that the equipment tested using the surveillance test procedures (SPs) met Technical Specifications, the Updated Safety Analysis Report, Design Basis Documents, and licensee procedural requirements, and also demonstrated that the equipment was capable of performing its intended safety functions. The activities were selected based on their importance in verifying barrier integrity or mitigating systems capability. The following tests were evaluated:

- SP 1166, "Unit 1 Seal Water Injection Line Check Valve Refueling Outage Test";
- SP 2334, "D5 Diesel Generator 18 Month 24 Hour Load Test"; and
- Instrument and Controls Preventive Maintenance Procedure (ICPM) 1-027, "Loop A Cooling Water Header Instrument Calibration."

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On September 26, 2001, the inspectors observed a licensee emergency plan drill. The inspectors observed drill activities in the control room simulator, Emergency Operations Facility, and Technical Support Center. During the drill, the inspectors observed the licensee make two event classifications and two notifications. No protective action recommendations were needed or made. The inspectors also attended the licensee evaluators' critique of the drill to ensure that deficiencies were noted for entry into the corrective action system.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

### Cornerstone: Occupational Radiation Safety

#### 2OS1 Access Control to Radiologically Significant Areas (71121.01)

##### .1 Plant Walkdowns and Radiation Work Permit Reviews

###### a. Inspection Scope

The inspector conducted walkdowns of radiologically significant areas (radiation and high radiation areas) to verify the adequacy of the licensee's radiological controls, including surveys, postings, and barricades. Specifically, the inspector reviewed surveys and walked down radiologically significant areas located in the auxiliary building, reactor building, and Unit 1 containment to determine whether radiation work permit (RWP) prescribed radiological and engineering controls were in place, and whether licensee surveys and postings were complete and accurate in accordance with 10 CFR Part 20 and the licensee's procedures. The inspector also reviewed RWPs used to access these areas to verify that work instructions and controls had been adequately specified, and that electronic pocket dosimeter set points were in conformity with survey indications.

###### b. Findings

No findings of significance were identified.

##### .2 Job-In-Progress Reviews

###### a. Inspection Scope

The inspector observed the following high radiation area work activity and evaluated the licensee's use of radiological controls:

- RC [Reactor Coolant] 1-5 Valve Repacking

The inspector reviewed radiological job requirements for the activity, attended a pre-job briefing and observed job performance with respect to those requirements. The inspector reviewed required surveys, and radiation protection job coverage, including contamination controls, to verify that appropriate radiological controls were utilized and were consistent with the RWP. The inspector also reviewed surveys and applicable postings and barricades to verify their accuracy. The inspector observed radiation protection technicians and worker performance at work sites to determine if the technicians and workers were aware of the radiological conditions in their workplace, the RWP controls/limits, and that they performed adequately, given the level of radiological hazards present.

b. Findings

No findings of significance were identified.

2OS2 As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls (71121.02)

.1 Station Exposure History

a. Inspection Scope

The inspector reviewed the station's collective exposure history for 2000 and year-to-date 2001 including collective exposures during the 2001 unscheduled Unit 1 outage. The inspector performed the reviews to evaluate the licensee's ALARA program's strengths and weaknesses in relation to station goals and industry 3 year rolling averages.

b. Findings

No findings of significance were identified.

.2 Job Site Inspections and ALARA Controls

a. Inspection Scope

The inspector evaluated the licensee's use of ALARA controls for the high radiation area work activity described in Section 2OS1.2. The inspector reviewed ALARA plans for the activity, observed work activities associated with the RWP, and evaluated the licensee's use of engineering controls to achieve dose reductions. The inspector also determined if workers were utilizing the low dose waiting areas during the activity and whether the first-line supervisor for the job ensured that the job was conducted in a dose efficient manner.

b. Findings

No findings of significance were identified.

.3 Radiological Work Planning

a. Inspection Scope

The inspector reviewed the general ALARA planning procedures and the ALARA coordinator methodology to assure proper implementation of the site ALARA plan. The inspector selected the highest person-rem exposure job from the unscheduled outage (discussed in Section 2OS1.2) and assessed the adequacy of the radiological controls and work planning.

For this job activity, the inspector reviewed ALARA evaluations, including initial reviews and in-progress reviews, to evaluate the licensee's exposure estimates and performance. The inspector also assessed the integration of ALARA requirements into

work packages to evaluate effectiveness of the licensee's communication of radiological work controls to workers.

b. Findings

No findings of significance were identified.

.4 Verification of Exposure Goals and Exposure Tracking System

a. Inspection Scope

The inspector reviewed the methodology and assumptions used for the unscheduled outage exposure estimates and exposure goals and compared job dose rate and man-hour estimates for accuracy. The inspector examined job dose history reports and dose reductions anticipated through lessons learned to verify that the licensee appropriately forecasted current Unit 1 outage doses.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems (71121.01 and 71121.02)

a. Inspection Scope

The inspector evaluated the effectiveness of the licensee's self-assessment process to identify, characterize, and prioritize problems. The inspector reviewed Outage Assessments for the unscheduled outage related to ALARA and access control issues to evaluate the licensee's ability to assess its radiation protection program during that outage. The inspector also reviewed the year 2000 observation reports and condition reports to assess overall problem identification and resolution capabilities related to ALARA.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed the performance indicator data submitted by the licensee for two performance indicators in the initiating events and barrier integrity cornerstones to verify their completeness and accuracy. The following performance indicators were reviewed:

- unplanned power changes per 7000 critical hours for July 2000 through June 2001, and
- reactor coolant system activity for October 2000 through June 2001.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

.1 (Closed) Licensee Event Response (LER) 1-00-03: Flooding from Postulated Failure of Air/Vacuum Valve Has Potential to Disable Both Trains of Essential Service (Cooling) Water

This event report described the licensee's failure to ensure that an improper functioning of a cooling water pump discharge air/vacuum valve could not cause a loss of all three safety-related pumps due to flooding of the cooling water pump room. The issue was previously discussed in Inspection Report 50-282/00-13(DRS); 50-306/00-13(DRS) and was determined to involve a non-cited violation of NRC requirements for inadequate design control. The issue was characterized using the Significance Determination Process (SDP) as having very low risk significance.

The inspectors reviewed the event report-documented root causes and corrective actions for the issue and performed a walkdown of associated plant modifications. The licensee's root cause evaluation determined that a single failure assessment of the initial design had not been completed for all of the system components. Therefore, the assessment did not consider the possibility that a valve failure could cause a common mode flooding failure of all three safety-related pumps. Further, the root cause evaluation determined that other plant change processes did not require the staff to ensure that system design bases were not affected by the changes. The inspectors determined that the root causes were appropriate to the issue.

The inspectors reviewed the initial and proposed corrective actions developed in response to the root cause evaluation. A field walkdown of some of the associated plant modifications was also conducted. The inspectors determined that the proposed and completed corrective actions were appropriate to address the root and contributing causes. The licensee was tracking final implementation of the corrective actions as a part of CR 20004760. The inspectors did not identify any other significant findings.

.2 (Closed) LER 1-00-04, Revision 1: Inoperability of Safeguards Cooling Water (Essential Service Water) Pumps Caused by Unqualified Lubricating Water Supply to the Pump Shaft Bearings

This event report described the licensee's failure to ensure a safety-related source of lubricating water supply to the safeguards cooling water pump shaft bearings. The issue was previously discussed in Inspection Report 50-282/00-13(DRS); 50-306/00-13(DRS), and was the basis for Notice of Violation 50-282/200013-01; 50-306/200013-01. The root causes and corrective actions for the issue were further discussed and evaluated in Inspection Report 50-282/01-14; 50-306/01-14.

Final NRC review of the issue will be documented in a future supplemental inspection report as a part of the closure of Notice of Violation 50-282/2000013-01; 50-306/2000013-01 and the associated WHITE finding.

.3 (Closed) LER 1-00-05: Failure to Test Cooling (Service) Water Strainer Backwash Valves Due to Inadequate Surveillance Test Procedure

This event report described the licensee's failure to include cooling water strainer backwash valves in their Inservice Testing Program and to test the valves in accordance with the requirements of American Society of Mechanical Engineers (ASME) Section XI and the Technical Specifications.

The issue was screened out from further review as being a minor issue using the Group 1 screening questions of the SDP because the error was administrative only, the valves were routinely tested, though not in accordance with the codes requirements, and the valves would have been able to perform their intended safety function. The licensee entered the issue into its corrective action system as CR 20004893.

.4 (Closed) LER 1-01-02: Auto Actuation of Unit 1 4160 Volt Safeguards Bus 16 Source Sequencer Following Grid Disturbance Caused by Severe Weather

This event report described an event on June 18, 2001, where a grid disturbance caused tripping of one of the offsite power supplies to Bus 16 and the automatic transfer of the bus to the alternate offsite power source as designed. The event was reviewed as part of a Maintenance Rule Implementation inspection in Inspection Report 50-282/01-15; 50-306/01-15. The event was not considered to be risk significant.

4OA6 Meeting(s)

Exit Meeting

The resident inspectors presented the inspection results to Mr. M. Nazar and other members of licensee management at the conclusion of the inspection on September 27, 2001. The licensee acknowledged the findings presented. No proprietary information was identified.

Interim Exit Meetings

Senior Official at Exit:	T. Silverberg, Acting Prairie Island Plant Manager
Date:	August 23, 2001
Proprietary:	No
Subject:	Biennial Heat Sink
Change to Inspection Findings:	No
Senior Official at Exit:	Joel Sorensen, NMC Vice President
Date:	August 24, 2001
Proprietary:	No
Subject:	Occupational Radiation Safety Program
Change to Inspection Finding:	No



4OA7 Licensee-Identified Violations

The following issue was identified by the licensee and was a violation of NRC requirements which meet the criteria of Section IV of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as a minor violation. The minor violation was corrected by the licensee and is being documented in the inspection report because the minor violation involved the extenuating circumstances criterion for closing an LER.

NRC Tracking Number

Requirement Licensee Failed to Meet

N/A

Technical Specification 4.2.A.2. requires, in part, the performance of inservice testing of ASME Code Class 1, 2, and 3 valves in accordance with ASME Section XI as required by 10 CFR 50.55a(f)(4). Contrary to this, between December 1989 and 2000, the licensee did not conduct inservice testing of the cooling water system strainer backwash valves, CV-316552 through 53, in accordance with requirements of ASME Section XI. (Section 4OA3.3)

## KEY POINTS OF CONTACT

### Licensee

T. Allen, General Superintendent Plant Operations  
T. Amundson, General Superintendent Engineering  
T. Breene, Manager Nuclear Performance Assessment  
T. Downing, Generic Letter 89-13 Program Coordinator  
A. Johnson, General Superintendent Radiation Protection and Chemistry  
L. Meyer, General Superintendent Plant Maintenance  
M. Nazar, Site Vice-President  
Y. Shen, Probabilistic Risk Assessment Project Manager  
T. Silverberg, General Superintendent Plant Operations  
M. Sleigh, Superintendent Security  
M. Werner, Plant Manager  
P. Wildenborg, Site Health Physicist

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

1-00-03	LER	Flooding from Postulated Failure of Air/Vacuum Valve Has Potential to Disable Both Trains of Essential Service (Cooling) Water (Section 4OA3.1)
1-00-04, Rev. 1	LER	Inoperability of Safeguards Cooling Water (Essential Service Water) Pumps Caused by Unqualified Lubricating Water Supply to the Pump Shaft Bearings (Section 4OA3.2)
1-00-05	LER	Failure to Test Cooling (Service) Water Strainer Backwash Valves Due to Inadequate Surveillance Procedure (Section 4OA3.3)
1-01-02	LER	Auto Actuation of Unit 1 4160-Volt Safeguards Bus 16 Source Sequencer Following Grid Disturbance Caused by Severe Weather (Section 4OA3.4)

## LIST OF ACRONYMS USES

ADAMS	Agencywide Documents Access and Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
CR	Condition Report
CRDM	Control Rod Drive Mechanism
CV	Control Valve
DRS	Division of Reactor Projects
EPRI	Electrical Power Research Institute
HX	Heat Exchanger
ICPM	Instrument and Controls Preventative Maintenance Procedure
IMC	Inspection Manual Chapter
IPEEE	Individual Plant Evaluation of External Events
IR	Inspection Report
IST	Inservice Testing
LER	Licensee Event Report
NRC	Nuclear Regulatory Commission
OWA	Operator Workaround
PARS	Publicly Available Records
PM	Preventative Maintenance Procedure
RC	Reactor Coolant
RPIP	Radiation Protection Implementing Procedure
RWP	Radiation Work Permit
SDP	Significance Determination Process
SP	Surveillance Test Procedure
SSC	Structures, Systems, or Components
WO	Work Order
ZX	Containment and Auxiliary Building Cooling

## LIST OF DOCUMENTS REVIEWED

### 1R04 Equipment Alignment

Operating Procedure C35	Cooling Water System	Revision 42
Drawing NF-39216-1	Flow Diagram Unit 1 & 2 Cooling Water - Screenhouse	Revision Z
Drawing NF-39217-1	Flow Diagram Unit 2 Cooling Water - Turbine Building	Revision W
Drawing NF-39217-2	Flow Diagram Unit 2 Cooling Water - Auxiliary Building	Revision S

### 1R05 Fire Protection

IPEEE NSPLMI-96001 Appendix B	Internal Fires Analysis	Revision 2
Plant Safety Procedure F5 Appendix A	Fire Strategies	Revision 8
F5 Appendix D	Impact of Fire Outside Control/Relay Room	Revision 6
F5 Appendix F	Fire Hazard Analysis	Revision 14

### 1R07 Heat Sink Performance

SP 1304	Unit 1 Component Cooling Heat Exchanger Performance Test Accomplished on January 20, 2001 as WO 0004856	Revision 4
SP 1304	Unit 1 Component Cooling Heat Exchanger Performance Test Accomplished on April 18, 1999 as WO 9815409	Revision 4
[Preventive Maintenance Procedure] PM 3002-2-22	22 Diesel Cooling Water Pump Annual Inspection Accomplished as WO 9908421	Revision 19
PM 174-012	12 Containment Fan Coil Unit Refueling Inspection/Maintenance Accomplished by WO 000719 on February 8, 2001	Revision 5
WO 951052	12 Fan Coil Unit Performance Test	
Calculation ENG-ME-084	Effect of River Water Temperature Component Cooling Heat Exchanger and Residual Heat Removal Heat Exchanger Performance Post-Loss of Coolant Accident	Revision 0

Calculation ENG-ME-085	Effect of River Water Temperature On Component Cooling Heat Exchanger and Residual Heat Removal Heat Exchanger Performance At Various Containment Sump Temperatures	Revision 0
CR 19992760	12 Component Cooling Heat Exchanger Calculations. Error in Calculations Regarding the Number of Tubes Plugged	
CR 19992904	One Tube Plugged in Each of the Air Coolant and Oil Coolant Heat Exchangers	
CR 20001156	Lack of Action on Questioning Attitude Allowed Operation of Component Cooling Flow to Spent Fuel Pool Heat Exchangers To Be 2150 Gallons Per Minute Vice 1800 Gallons Per Minute Last 25 Years.	
CR 20001775	Component Cooling Heat Exchanger Manways	
CR 20005561	21 Component Cooling Heat Exchanger Temperature Control Failure	
CR 20005744	Need Better Method to Ensure Travel Stops for Component Cooling Heat Exchanger Temperature Control Valves Are Properly Adjusted Prior to Placing Residual Heat Removal In Service	
CR 2001600	Discrepancies Were Found Between HXR and ZETEC Data Management Systems Due to Analysts Failing to Generate Reports	
CR 20012304	Error Found in SES 320 and Tech Manual for Heat Exchangers 135-031 and 135-032	
CR 20012329	Component Cooling Heat Exchanger Temperature Control Valves Are Not Being Timed Full Open on SP 1155 and 2155. Currently, They Are Timed With the Valve Stop Installed	
CR 20003059	Killed Thousands of Small Fish in the Discharge Canal as a Result of Unit 1 Zebra Mussel Treatment of 8/15/00, WO 0007275	
CR 20004718	Zebra Mussels - Intake Screenhouse - #128 Bay 68 Collected and About 10 - 15 Out of Reach Not Collected	
CR 19981674	Commercial Fan Coil Unit Drain Plates Used in Safety-Related Application	

CR 19992232	Cooling Water Temperature Greater Than 85 Degrees	
CR 20016617	Design Basis Document Incorrectly States the Fan Coil Unit Cooling Coils Are Inspected and Cleaned Per PM 3151-1-1, Actual: PM 3154-1-XX	
CR 20011995	High Vibration Problems With 12 and 13 Containment Fan Coil Units Restrict Fast Speed Operation	
CR 20016950 <sup>1</sup>	Document Capability of Residual Heat Removal and Component Cooling Heat Exchangers to Remove Heat During Post Loss of Coolant Accident Recirculation	
CR 20017038 <sup>1</sup>	NRC Identified that Plant Instrumentation Indicated that Residual Heat Removal Heat Exchangers Transferred About 10% More Heat than Component Cooling Heat Exchangers During Unit 1 Component Cooling Heat Exchanger Testing	
Drawing 69-G-229-I-IA	Setting Plan for Item #11&21 Component Cooling Exchanger	Revision 4
Drawing 69-G-229-I-3	Items 11, 12, 21, 22 Tube Bundle Details	Revision 0
Drawing X-HIAW-107-6	Items 12 & 22 Shell & Channel Detail	Revision C

<sup>1</sup> Condition report issued as a result of this inspection.

## 1R12 Maintenance Rule Implementation

### General

	2000 Equipment Performance Annual Report	April 20, 2001
	Maintenance Rule System Basis Document, Volume 1A	Revision 3
	Quarterly Equipment Performance Report - 1 <sup>st</sup> Quarter 2001	May 4, 2001
	Quarterly Equipment Performance Report - 2 <sup>nd</sup> Quarter 2001	August 7, 2001
NUMARC 93-01	Nuclear Energy Institute Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	Revision 2
Regulatory Guide 1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	Revision 2

Reactor Coolant System

Operations Manual B.4.A	Reactor Coolant System	Revision 5
Updated Safety Analysis Report Section 4	Reactor Coolant System	Revision 23
CR 20014790	2RC-7-2 Unit 2 Loop A Spray Bypass Required Additional Exercising Prior to Noticing any Flow Through the Valve	
CR 20014543	Corrosion/Erosion Found on 21 Pressurizer Manway Pad	
CR 20014584	Evaluation of Flaws on Unit 1 Pressurizer Manway Area	
CR 20002409	Reactor Coolant Pump No. 1 Seal Leakoff Flow Rate is Trending Down	
CR 20003478	Unit 2 Loop A Pressurizer Spray Valve CV-31228 Appears To Be Stuck Partially Open	
CR 20000714	Unit 1 Loop B Pressurizer Spray Valve CV-31225 Appears to be Stuck Open. Process Book Data Seems to Show Valve Problems Arose 2/25/00	
SP 1070	Reactor Coolant System Integrity Test	Revision 25 (Dated 3/2/96)
SP 1070	Reactor Coolant System Integrity Test	Revision 26 (Dated 12/11/97)
SP 1596	Refueling Outage Maintenance Testing and Modification Turnover	Revision 1 (Dated 11/19/98)
SP 1070	Reactor Coolant System Integrity Test	Revision 27 (Dated 5/24/99)
SP 1070	Reactor Coolant System Integrity Test	Revision 29 (Dated 2/24/01)

DB-50 Breakers

CR 20017539	Reactor Trip Primary Disconnect Inspections Identified Damage to Some Assembly Fingers	
CR 20015987	Two Reactor Trip Breakers Failed Testing of Trip Bar Force Using New Acceptance Criteria. Trip Force Was Less Than 16 Ounces. Breakers Left As Spare.	

CR 20006016	Reactor Trip Breakers Opened During Temperature Channel Restoration Per WO 0013675. Control Rods Were Already At the Bottom Before the Event	
WO 0111560	Inspect Primary Disconnect Assemblies on Unit 1 Reactor Trip Switchgear Breakers	
WO 0111647	Repair Spare Reactor Trip Breaker Operating Mechanism [4-24Y7273B]	
WO 0111648	Repair Spare Reactor Trip Breaker Operating Mechanism [1-24Y7274B]	
Westinghouse Technical Bulletin, W-TB-99-05	DB-50 Breaker Minimum Trip Force And Seismic Enhancements	Revision 7
<u>Containment and Auxiliary Building Cooling System</u>		
CR 20017572	Justify Keeping ZX [Containment and Auxiliary Building System] In Service in Its Current Condition	
CR 20017295	ZX System Design Function Lost Due To Corrosion	
CR 19992191	CV-39401 Exceeded Its Reference Stroke Time In Excess of +/- 25%. CV-39401 Remains Within Its Maximum Stroke Time	
CR 19993211	Improvements Are Needed To the ZX System To Assure Cooling Is Operating Properly for Maintenance and Equipment Life	
WO 00104067	Chilled Water Return Pipe Leak	
WO 00107134	Replace Temporary Patch on 14-ZX-6	
WO 9908403	Chilled Water Pin Hole Leak	
WO 9908428	Chilled Water Piping Has a Pin Hole Leak	
SP 1245A	11/13 Fan Coil Unit ZX Valves Stroke Quarterly Test	Revision 0
SP 1245B	12/14 Fan Coil Unit ZX Valves Stroke Quarterly Test	Revision 0
SP 2245A	21/23 Fan Coil Unit ZX Valves Stroke Quarterly Test	Revision 0
SP 2245B	22/24 Fan Coil Unit ZX Valves Stroke Quarterly Test	Revision 0
SP 1297A	Train A Quarterly Cycling of CRDM [Control Rod Drive Mechanism] Cooling Valves	Revision 0



SP 1297B	Train B Quarterly Cycling of CRDM Cooling Valves	Revision 0
SP 2297A	Train A Quarterly Cycling of CRDM Cooling Valves	Revision 0
SP 2297B	Train B Quarterly Cycling of CRDM Cooling Valves	Revision 0

1R13 Maintenance Risk Assessment and Emergent Work Control

	Phase 2 At-Power Risk Report	Dated 9/11/01
WO 0110076	Replace Actuator Mounting Studs On CV-31384	
SP 2155B	Component Cooling Quarterly Test Train B	
CR 20017539	Reactor Trip Primary Disconnect Inspections Identified Damage To Some Assembly Fingers	

1R15 Operability Evaluations

CR 20016501	Electrical Fault in Breaker 12-4 During 1R to 1M Transfer During Unit 1 Startup on 8/3/2001	
Professional Forensic Engineering Report Prepared By Anderson Engineering	Prairie Island Nuclear Generating Plant 12-4 Event	Submitted 8/30/01
CR 20017313	Unit 1 Attached Piping: 7 Piping Systems Have a Location With Stress Greater Than Allowable and 28 Hangers With Load Greater Than Allowable	
CR 20017167	D5 Station Blackout Building Fan Inlet Screens Found To Be 70% Plugged While CR 20016984 Only Considered 50% Plugged	
CR 20016984	D5/D6 Generator Building Cooling Fan Intakes Clogged Approximately 30% With Insects and Other Debris	
WO 0110705	D6 Supply Fans Intake Louvers Are 1/3 Plugged	
WO 0110706	D5 Supply Fans Intake Louvers Are 1/3 Plugged	

1R16 Operator Workarounds

- |              |  |
|--------------|--|
| OWA 20015970 | Electro-Hydraulic Oil Coolers on Both Units Can't Control Electro-Hydraulic Oil Temperature Due To a Modification Which Partially Bypassed the Oil Coolers |
| OWA 20017095 | Expedite Integrated Planning Process Project Number 990027 To Resolve Heater Drain Pump Speed Inaccuracy   |

1R19 Post-Maintenance Testing

- |   |  |            |
|---|--|------------|
| WO 0109510  | Install New Crankcase Ejector Orifice on D2  |            |
| WO 0110310  | Replace Old Crankcase Ejector Orifice on D2 Engine   |            |
| WO 0110318  | Replace D2 Overspeed Micro Switch and Inspect Wires  |            |
| CR 20016504   | D2 Failed SP 1305 When Kilovolt-Amperes Could Not be Manually Raised to Greater Than 750 Kilovolt-Amperes    |            |
| CR 20016797   | D2 High Crankcase Pressure and Oil Leak Resulted in Fire on Exhaust Below Overspeed Annunciator Micro Switch |            |
| CR 20016827   | Wire Installed to D2 Overspeed Annunciator Does Not Match Type Listed on Drawing                             |            |
| Temporary Change Notice<br>TCN 2001-1494                | Remote Alarm Response - D2 Engine Overspeed  |            |
| CR 20017414   | SP1093 Completed Unsuccessfully Due To Failure of Vent Fans To Start   |            |
| CR 20017492   | Evaluate Components Removed from D1 Ventilation Start Circuit  |            |
| Electrical Maintenance<br>Procedure PE 7777-<br>11/12HU | 4.16KV Buses 11 and 12 Re-Energization Procedure   | Revision 0 |
| WO 0111083  | D1 Ventilation Fans Did Not Start in Automatic   |            |
| WO 0111255  | D1 Control Switch, Relay Replacement   |            |
| WO 0110374  | Breaker 12-1 Pre-Operational Test  |            |

1R20 Refueling and Outage

	Shift Manager Unit 1 Outage Turnover Log	Daily 8/3/01 through 9/10/01
	Prairie Island Unit 1 Daily Plan	Daily 8/3/01 through 9/10/01
Operating Procedure 1C1.2	Unit 1 Startup Procedure	Revision 26

1R22 Surveillance Testing

SP 1166	Seal Water Injection Line Check Valve Refueling Outage Test	Revision 13
WO 0109592	SP 1166 Performed on 8/20/01	
NUREG 1482	Guidelines for Inservice Testing at Nuclear Power Plants	
ASME OM-10	Inservice Testing of Valves in Light-Water Reactor Power Plants	1987 Edition with 1988 Addenda
Operations Manual H.10.1	ASME Section XI Inservice Testing Implementation Program	Revision 10
Operations Manual H.12	Plant Check Valve Program	Revision 3
Operations Manual G.1	Surveillance and Periodic Test Program	Revision 19
SP 2334	D5 Diesel Generator 18 Month 24 Hour Load Test	Revision 8
SP 2093	D5 Diesel Generator Monthly Slow Start Test	Revision 67
ICPM 1-027	Loop A Cooling Water Header Instrument Calibration	Revision 5

1EP6 Drill Evaluation

	Prairie Island Nuclear Generating Plant Emergency Plan Drill - August 1, 2001	Revision 0
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20S1 Access Control to Radiologically Significant Areas

Station Procedures

RPIP [Radiation Protection Implementing Procedure] 1008	Radiation Protection Key Control	Revision 3
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RPIP 1106	Access Control Procedure	Revision 10
RPIP 1120	Posting Of Restricted Areas	Revision 16
RPIP 1135	RWP Coverage	Revision 11
RWP 1013	Valve Maintenance - Tighten/Add/Re-Pack and Minor Maintenance	Revision 1

Condition Reports

CR 20011621	Storing Radioactive Samples Without Individual Containers Labeled
CR 20011938	Respirator Fit Tester Failed As-Found
CR 20013430	High Radiation Area and Locked High Radiation Area Postings/Barricades Are Not Inspected Weekly
CR 20014940	Radiation Protection Supervisor Received Dose Alarm While Preparing Resin Liner for Shipment
CR 20015604	Conditionally Released Radioactive Material #00-01 Was Not Being Inventoried Weekly

2OS2 ALARA Planning and Controls

Station Procedures

RPIP 1004	Radiation Protection ALARA Program	Revision 3
RPIP 1105	Extremity Monitoring	Revision 13
RPIP 1107	Unborn Child Protection	Revision 5
RPIP 1110	Administrative Dose Controls	Revision 13
RPIP 1121	RWP Issuing	Revision 16
RPIP 1130	On-The-Job Dose Monitoring Procedure	Revision 10
RPIP 1160	ALARA Reviews	Revision 4

Condition Reports

CR 20012944	Blanket CR for Airborne I-131 for Date Range of January 23 to February 13, 2001; 23 Occurrences
CR 20016773	Radiation Protection Working in Auxiliary Building/22 Residual Heat Removal Pit Exit Whole Body Count
CR 20016812	Maintenance Working on Charging Pump in 22 Charging Pump Room, 7.99 nCi [nanoCurie] on Knee of Pants RWP #5

CR 20016906

Gap Analysis Results for Radiation Protection

Reports

Actual vs. Estimated Exposures Per Radiation Work Permit by Activity and Task January to August, 2001

August 23, 2001

4OA1 Performance Indicator Verification

LER 2-01-03

Technical Specification Required Shutdown of Unit 2 Due to Declared Inoperability of Both Emergency Diesel Generators

Unit 1 Radiochemistry Report for Dose Equivalent Iodine

10/1/00 through 9/24/01

Unit 2 Radiochemistry Report for Dose Equivalent Iodine

10/1/00 through 9/24/01

4OA3 Event Followup

LER 1-00-05

Failure To Test Cooling (Service) Water Strainer Backwash Valves Due To Inadequate Surveillance Procedure

LER 1-00-04, Rev. 1

Inoperability of Safeguards Cooling Water (Essential Service Water) Pumps Caused By Unqualified Lubricating Water Supply to the Pump Shaft Bearings

LER 1-00-03

Flooding from Postulated Failure of Air/Vacuum Valve Has Potential to Disable Both Trains of Essential Service (Cooling) Water

CR 200004893

Cooling Water Backwash Valves Not in Inservice Testing

Root Cause Report for CR 20004893

LER 1-00-05: Failure to Test Cooling Water Strainer Backwash Valves Due to Inadequate Surveillance Procedure

Revision 0

SP 1151

Cooling Water System Quarterly Test

Revision 20

LER 1-01-02

Auto-Actuation of Unit 1 4160-Volt Safeguards Bus 16 Source Sequencer Following Grid Disturbance Caused By Severe Weather

## LIST OF INFORMATION REQUESTED

The following information is needed by August 13, 2001, to support the biennial "Heat Sink Performance" inspection, Procedure 71111.07. Please provide for the following heat exchangers (HXs) [12 Containment Fan Coil Unit, 22 Diesel Cooling Water Pump Jacket Cooler, and 11 Component Cooling Water Heat Exchanger]:

1. Copy of the two most recently completed tests confirming thermal performance of each HX. Include documentation and procedures that identify the types, accuracy, and location of any special instrumentation used for these tests (e.g., high accuracy ultrasonic flow instruments or temperature instruments). Include calibration records for the instruments used during these tests. Include drawings showing the piping configurations and flowpaths for normal operation and testing for the HXs. Also indicate where the instruments used for the tests were located. Describe the measures to ensure proper fluid mixing for temperature considerations.
2. Copy of the evaluations of data for the two most recent completed tests confirming the thermal performance of each HX.
3. Copy of the calculation which establishes the limiting (maximum) design basis heat load which is required to be removed by each of these HXs.
4. Copy of the calculation which correlates surveillance testing results from these HXs with design basis heat removal capability (e.g., basis for surveillance test acceptance criteria).
5. The clean and inspection maintenance schedule for each HX. For the last two clean and inspection activities completed on each HX, provide a copy of the document describing the inspection results. Provide HX performance trending data tracked for each HX.
6. Provide a copy of the document which identifies the current number of tubes in service for each heat exchanger and the supporting calculation which establishes the maximum number of tubes which can be plugged in each HX. Provide a copy of the document establishing the repair criteria (plugging limit) for degraded tubes which are identified in each HX.
7. Copy of the as-built HX specification sheets. Also provide the design specification and heat exchanger data sheets for each HX. Copy of the vendor and component drawings for each HX. Copy of the vendor and operating manuals for each HX.
8. Provide a list of issues with a short description documented in your corrective action system associated with these HXs in the past three years. Provide a list of issues with a short description documented in your corrective action system associated with the ultimate heat sink, especially any loss of heat sink events and any events or conditions that could cause a loss of ultimate heat sink.

If the information requested above will not be available, please contact Gerard O'Dwyer as soon as possible at (630) 829-9624 or E-mail - [gfo@NRC.gov](mailto:gfo@NRC.gov).