

February 11, 2008

Mr. Michael D. Wadley  
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, UNITS 1 AND 2  
NRC INTEGRATED INSPECTION REPORT 05000282/2007005 AND  
05000306/2007005

Dear Mr. Wadley:

On December 31, 2007, the U. S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Prairie Island Nuclear Generating Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on January 8, 2008, with you and other members of your staff.

This inspection examined 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of these inspections, two NRC identified findings of very low safety significance were identified. These findings were determined to involve violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy. In addition, four licensee-identified violations are listed in Section 4OA7 of this report.

If you contest the subject or severity of a Non-Cited Violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the Resident Inspector Office at the Prairie Island Nuclear Generating Plant.

M. Wadley

-2-

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Sincerely,

**/RA/**

Richard A. Skokowski, Chief  
Branch 3  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000282/2007005 and 05000306/2007005  
w/Attachment: Supplemental Information

cc w/encl: D. Koehl, Chief Nuclear Officer  
Regulatory Affairs Manager  
P. Glass, Assistant General Counsel  
Nuclear Asset Manager  
State Liaison Officer, Minnesota Department of Health  
Tribal Council, Prairie Island Indian Community  
Administrator, Goodhue County Courthouse  
Commissioner, Minnesota Department  
of Commerce  
Manager, Environmental Protection Division  
Office of the Attorney General of Minnesota

M. Wadley

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Nuclear Asset Manager  
State Liaison Officer, Minnesota Department of Health  
Tribal Council, Prairie Island Indian Community  
Administrator, Goodhue County Courthouse  
Commissioner, Minnesota Department  
of Commerce  
Manager, Environmental Protection Division  
Office of the Attorney General of Minnesota

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SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2  
NRC INTEGRATED INSPECTION REPORT 05000282/2007005 AND  
05000306/2007005

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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: 05000282/2007005 and 05000306/2007005

Licensee: Nuclear Management Company, LLC

Facility: Prairie Island Nuclear Generating Plant, Units 1 and 2

Location: Welch, MN

Dates: October 1, 2007, to December 31, 2007

Inspectors: S. Ray, Senior Resident Inspector (acting)  
D. Karjala, Resident Inspector  
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Approved by: Richard A. Skokowski, Chief  
Branch 3  
Division of Reactor Projects

Enclosure

## TABLE OF CONTENTS

SUMMARY OF FINDINGS .....	1
REPORT DETAILS .....	3
Summary of Plant Status    3	
1. REACTOR SAFETY .....	3
1R01 Adverse Weather Protection (71111.01) .....	3
1R04 Equipment Alignment (71111.04) .....	3
1R05 Fire Protection (71111.05) .....	4
1R11 Licensed Operator Requalification Program (71111.11).....	5
1R12 Maintenance Effectiveness (71111.12) .....	11
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13).....	12
1R15 Operability Evaluations (71111.15).....	12
1R17 Permanent Plant Modifications (71111.17).....	13
1R19 Post-Maintenance Testing (71111.19).....	14
1R20 Refueling and Other Outage Activities (71111.20) .....	14
1R22 Surveillance Testing (71111.22).....	15
1R23 Temporary Plant Modifications (71111.23).....	16
1EP4 Emergency Action Level and Emergency Plan Changes (71114.04).....	17
1EP6 Drill Evaluation (71114.06) .....	17
2. RADIATION SAFETY .....	18
2OS1 Access Control to Radiologically Significant Areas (71121.01) .....	18
2OS2 ALARA Planning and Controls (71121.02) .....	20
2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01) .....	22
2PS2 Radioactive Material Processing and Transportation (71122.02) .....	23
2PS3 Radiological Environmental Monitoring and Radioactive Material Control Programs (71122.03).....	26
4. OTHER ACTIVITIES .....	27
4OA1 Performance Indicator Verification (71151) .....	27
4OA2 Identification and Resolution of Problems (71152) .....	28
4OA3 Event Follow-up (71153).....	30
4OA5 Other Activities.....	32
4OA6 Meeting(s).....	38
4OA7 Licensee-Identified Violations .....	38
SUPPLEMENTAL INFORMATION .....	1
KEY POINTS OF CONTACT        1	
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED 1	
LIST OF DOCUMENTS REVIEWED    3	
LIST OF ACRONYMS USED        13	

## SUMMARY OF FINDINGS

IR 05000282/2007005, 05000306/2007005; 10/01/07 - 12/31/07; Prairie Island Nuclear Generating Plant, Units 1 and 2; Occupational and Public Radiation Safety.

This report covers a three-month period of baseline resident inspection and announced baseline inspections on licensed operator requalification, radiation protection, and emergency preparedness. The inspection was conducted by the resident inspectors and inspectors from the Region III office. Two green findings associated with Non-Cited Violations 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). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### A. Inspector-Identified and Self-Revealed Findings

#### **Cornerstone: Occupational Radiation Safety**

- Green. A finding of very low safety significance and an associated Non-Cited Violation (NCV) was inspector-identified for the licensee's failure to adequately maintain sufficient controls over a posted very high radiation area (VHRA) during the spring 2006 Unit-1 refuel outage (U1R24) contrary to 10 CFR 20.1602 and station procedural requirements. Specifically, the licensee failed to maintain appropriate control of the C-sump (i.e., the thimble tube chase). The licensee has entered the issue into the corrective action program. Licensee corrective actions included reinforcing expectations for procedural compliance and revising the procedures to require the written permission of the plant manager for VHRA key issue.

The finding was more than minor because it was associated with the Program/Process attribute of the Occupational Radiation Safety cornerstone and potentially affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation. The finding was determined to be of very low safety significance because the finding did not involve As-Low-As-Is-Reasonably-Achievable (ALARA) planning, collective dose was not a factor, it did not involve an overexposure, there was not a substantial potential for a worker overexposure, and the licensee's ability to assess worker dose was not compromised. The cause of the finding is related to a cross-cutting aspect in the area of Human Performance associated with the aspect of work practices in procedural compliance (H.4.b). (Section 40A5)

- Green. A finding of very low safety significance and an associated NCV of Technical Specification 5.4.1 was inspector-identified for the licensee's failure to adequately implement radiation safety procedures concerning the 2006 Unit-2 refueling outage when the C-sump VHRA key was signed out by radiation protection (RP) supervision and possession of the key was transferred between individuals over multiple shifts. The licensee has entered the issue into the corrective action program. Licensee corrective actions for this issue included reinforcing expectations for procedural compliance and revising the procedures to ensure that the VHRA keys are maintained in the control of RP supervision, that possession is not transferred between personnel, and that VHRA keys are checked back in at the end of each shift.

The finding was more than minor because it was associated with the Program/Process attribute of the Occupational Radiation Safety Cornerstone and potentially affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation. The finding was determined to be of very low safety significance because the finding did not involve ALARA planning, collective dose was not a factor, it did not involve an overexposure, there was not a substantial potential for a worker overexposure, and the licensee's ability to assess worker dose was not compromised. The cause of the finding is related to the cross-cutting area of Problem Identification and Resolution associated with the aspect of corrective action program specifically that the licensee takes appropriate corrective actions to address safety issues, commensurate with their significance (P.1.d). (Section 4OA5)

**B. Licensee-Identified Violations**

Four violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.



## REPORT DETAILS

### Summary of Plant Status

Unit 1 operated at or near full power except that on October 13, 2007, the unit was brought to about 40 percent power for condenser tube cleaning and turbine valve testing. The unit was returned to full power on October 14. In addition, on December 21, 2007, Unit 1 was brought to Mode 3 (hot standby) for a forced outage due to both Unit 1 diesel generators (DGs) being inoperable. The unit was returned to critical and synchronized to the grid on December 24 and returned to full power on December 25, 2007.

Unit 2 operated at or near full power for the entire inspection period.

### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Readiness for Seasonal Cold Weather Susceptibilities

##### a. Inspection Scope

The inspectors performed a review of the licensee's completed procedure for winter plant operation and a walkdown of selected risk-significant systems to observe that the licensee had properly aligned the systems for winter operation and implemented compensatory actions as needed. The inspectors also reviewed licensee corrective action documents to verify that cold weather deficiencies identified during the previous year had been corrected. The inspectors reviewed the documents listed in the Attachment as part of this inspection.

The inspectors evaluated cold weather readiness of the following three systems which, together, constituted one sample:

- cooling water;
- control room ventilation; and
- greenhouse fire protection sprinkler system.

##### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignment (71111.04)

##### .1 Partial Walkdowns

##### a. Inspection Scope

The inspectors performed partial system equipment alignment inspection samples comprised of in-plant walkdowns of accessible portions of trains of risk-significant equipment associated with the mitigating systems and barrier integrity cornerstones.

The inspectors conducted the inspections during times when the trains were of increased importance due to the redundant trains or other related equipment being unavailable. The inspectors also reviewed documents entering deficient conditions associated with equipment alignment issues into the corrective action program, verifying that the licensee was identifying issues at an appropriate threshold and entering those issues into their corrective action program in accordance with the corrective action procedures.

The inspectors utilized the valve and electric breaker checklists, where applicable, to verify that the components were properly positioned and that support systems were lined up as needed. The inspectors also examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious performance deficiencies. The inspectors reviewed outstanding work requests, work orders (WOs), and corrective action program action requests (CAPs) associated with the operable trains to verify that those documents did not reveal issues that could affect the completion of the available train(s) safety functions. The inspectors used the information in the appropriate sections of the Updated Safety Analysis Report (USAR) to determine the functional requirements of the systems. Documents reviewed as part of these inspections are listed in the Attachment.

The inspectors verified the alignment of the following trains for a total of four samples:

- D1 diesel generator (DG) during the emergent unavailability of D2 DG due to cooling water pipe replacement on October 18, 2007;
- D6 DG during the emergent unavailability of D5 DG due to high crankcase pressure;
- 22 diesel-driven cooling water pump (DDCLP) during the planned unavailability of the 12 DDCLP; and
- D1 DG during the planned unavailability of D2 DG due to additional cooling water pipe replacement on December 11, 2007.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Walkdowns

a. Inspection Scope

The inspectors conducted in-office and in-plant reviews of portions of the licensee's Fire Hazards Analysis and Fire Strategies to verify consistency between these documents and the as-found configuration of the installed fire protection equipment and features in the fire protection areas listed below. The inspectors selected fire areas for inspection based on their overall contribution to internal fire risk as documented in the Individual Plant Examination of External Events, their potential to impact equipment that could initiate a plant transient, or their impact on the plant's ability to respond to an event. The inspectors assessed the control of transient combustibles and ignition sources, the material and operational condition of fire protection systems and equipment, and the status of fire barriers. In addition, the inspectors reviewed CAPs associated with

fire protection issues to verify that the licensee was identifying issues at an appropriate threshold and entering them into their corrective action program in accordance with corrective action procedures. Documents reviewed during the inspections are listed in the Attachment.

The following fire areas were inspected by in-plant walkdowns supporting the completion of nine samples:

- Fire Area 3, 121 control room ventilation system room;
- Fire Area 92, 122 control room ventilation system room;
- Fire Area 26, D2 DG room;
- Fire Area 13, control room;
- Fire Area 33, turbine building 695-foot elevation, battery room 11;
- Fire Area 34, turbine building 695-foot elevation, battery room 12;
- Fire Area 35, turbine building 695-foot elevation, battery room 21;
- Fire Area 36, turbine building 695-foot elevation, battery room 22; and
- Fire Area 127, D5/D6 DG building 735-foot elevation, D5 480 volt switchgear 211 and 212 room.

b. Findings

No Findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Quarterly Resident Inspector Review

a. Inspection Scope

The inspectors performed a quarterly review of licensed operator requalification training in the simulator, completing one licensed operator requalification inspection sample. The inspectors observed a crew during an evaluated exercise in the plant's simulator facility. The inspectors compared crew performance to licensee management expectations. The inspectors verified that the crew completed all of the critical tasks for each exercise scenario. For any weaknesses identified, the inspectors observed that the licensee evaluators noted the weaknesses and discussed them in the critique at the end of the session.

The inspectors assessed the licensee's effectiveness in evaluating the requalification program ensuring that licensed individuals would operate the facility safely and within the conditions of their licenses, and evaluated licensed operator mastery of high-risk operator actions. The inspection activities included, but were not limited to, a review of high-risk activities, emergency plan performance, incorporation of lessons learned, clarity and formality of communications, task prioritization, timeliness of actions, alarm response actions, control board operations, procedural adequacy and implementation, supervisory oversight, group dynamics, interpretations of Technical Specifications (TS), simulator fidelity, and licensee critique of performance.

b. Findings

No findings of significance were identified.

Note: Sections .2 through .10 below together constitute one inspection sample.

.2 Facility Operating History

a. Inspection Scope

The inspectors reviewed the plant's operating history from November 2005 through October 2007 to identify operating experience that was expected to be addressed by the Licensed Operator Requalification Training (LORT) program. The inspectors then verified that the identified operating experience had been addressed by the facility licensee in accordance with the station's approved Systems Approach to Training (SAT) program to satisfy the requirements of 10 CFR 55.59(c), "Requalification program requirements." Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.3 Licensee Requalification Examinations

a. Inspection Scope

The inspectors performed a biennial inspection of the licensee's LORT test/examination program for compliance with the station's SAT program which would satisfy the requirements of 10 CFR 55.59(c)(4), "Evaluation." The operating examination material reviewed consisted of six operating tests, each containing two or three dynamic simulator scenarios and five or six job performance measures (JPMs). The written examinations reviewed consisted of six written examinations, each containing approximately 30 questions. The inspectors reviewed the annual requalification operating test and biennial written examination material to evaluate general quality, construction, and difficulty level. The inspectors assessed the level of examination material duplication from week-to-week during the current year operating test. The examiners assessed the amount of written examination material duplication from week-to-week for the written examination administered in October 2007. The inspectors reviewed the methodology for developing the examinations, including the LORT program two-year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.4 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of a requalification operating test to assess the licensee's effectiveness in conducting the test to ensure compliance with 10 CFR 55.59(c)(4), "Evaluation." The inspectors evaluated the performance of two simulator crews in parallel with the facility evaluators during five dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the administration of several JPMs. The inspectors assessed the facility evaluators' ability to determine adequate crew and individual performance using objective, measurable standards. The inspectors observed the training staff personnel administer the operating test, including conducting pre-examination briefings, evaluations of operator performance, and individual and crew evaluations upon completion of the operating test. The inspectors evaluated the ability of the simulator to support the examinations. A specific evaluation of simulator performance was conducted and documented under Section 1R11.8, "Conformance with Simulator Requirements Specified in 10 CFR 55.46," of this report. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.5 Examination Security

a. Inspection Scope

The inspectors observed and reviewed the licensee's overall licensed operator requalification examination security program related to examination physical security (e.g., access restrictions and simulator considerations) and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of examinations and tests." The inspectors also reviewed the facility licensee's examination security procedure, any corrective actions related to past or present examination security problems at the facility, and the implementation of security and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the examination process. Four specific corrective action reports, CAP 01112425, CAP 01114482, CAP 01115206, CAP 01113193, and CAP 01115230 were reviewed. Documents reviewed are listed in the Attachment.

b. Findings

During operating test validation, simulator scenarios to be used for the annual operating test were potentially exposed to unauthorized personnel. The examination author established examination security for the simulator. Part of the establishment of examination security included verifying the door to the simulator engineers' office was locked and posted as an exclusion area except for those personnel authorized to view examination material. The examination author and one other instructor began validating simulator scenarios to be used for the annual operating test. A few hours after beginning examination validation, a third instructor discovered that the door locking mechanism for the simulator engineers' office had failed and would not prevent entry into

the office. Because the computer terminal in the simulator engineers' office connects to the simulator's computer, the scenario material being validated could be viewed by anyone who had access to the computer terminal. The simulator scenarios validated during that morning were potentially exposed to unauthorized personnel and were replaced before they could be used in the annual operating test. Therefore, no violation of examination integrity occurred. The training department documented this door mechanism failure in CAP 01112425.

During biennial written examination development, written examination material that was to be used during the biennial written examinations was potentially exposed to unauthorized personnel. During development of the requalification examination, the examination author took some examination material out of the examination development room for shredding. After arriving at the shredder, the examination author determined that some of the material should be saved rather than be shredded and sorted the material into two groups – material to be shredded, and material to be saved. After the shredding was completed, the examination author left the area of the shredder without retrieving the non-shredded (saved) examination material. The examination author returned to the shredder area at a later time and discovered the examination materials. Because the examination material was not controlled by someone on the security agreement during the time the examination author was away from the shredder, it could have been viewed by unauthorized personnel. The potentially exposed examination material was replaced before it could be used in an examination. Because the un-controlled examination material was replaced prior to being used in another examination, no violation of examination integrity occurred. The training department documented this lapse of examination material control in CAP 01114482.

During validation of the biennial written examinations, a licensed operator was exposed to questions that would appear on his biennial written examination while he was validating a biennial written examination that would be administered to other licensed operators. A licensed operator scheduled to take the Week 1 biennial written examination was assigned to validate the biennial written examination that would be used during Week 7 of the requalification examinations. There were three questions on the examination the operator validated (Week 7) that appeared on his own (Week 1) biennial examination. The facility was able to establish that the operator got all three questions correct both times the operator saw them. Additionally, if the three questions were deleted from the operator's biennial examination, the operator's final grade would remain above 80 percent and the sample plan for the examination would still be valid, making the operator's examination a valid biennial examination. This issue appears to be a weakness in the facility's examination security procedure. The NRC has concerns that some exam security steps are implemented because of instructor knowledge rather than following an approved procedure. Additional inspection is necessary for a correct resolution for this issue. This issue will be part of the Unresolved Item noted below. The training department documented this lapse of examination material control in CAP 01115206.

During operating test validation, simulator scenarios to be used for the annual operating test were potentially exposed to unauthorized personnel. The examination author and another authorized instructor assigned to validate examination scenarios completed validation activities for the day and left the simulator without verifying that all examination materials had been erased from the simulator's memory. Upon return the next morning the two instructors discovered that some scenarios they had validated had not been

erased from the simulator computer's memory and were viewable on the uncontrolled simulator overnight by unauthorized personnel. The uncontrolled examination material was replaced before it could be used in the requalification examinations and no violation of examination integrity occurred. The training department documented this lapse of examination material control in CAP 01113193.

Because there were four CAPs written, the station's training department issued CAP 01115230 to track and document the trend in examination security.

The issues documented in CAP 01115206 (operator validating a written examination with questions that appeared in his own biennial written examination), and in CAP 01113193 (simulator examination material left on uncontrolled simulator overnight), appear to involve a procedure weakness or a failure to follow appropriate procedures and require additional information and review. Until the procedures are reviewed and compared with individual performance, a final determination cannot be made. This issue is an Unresolved Item (URI) pending receipt of additional follow up information from the licensee and further review and assessment is completed by the NRC.  
**(URI 05000282/2007005-01; 05000306/2007005-01)**

.6 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT program up-to-date, including the use of feedback from plant events and industry experience information. The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions. This evaluation was performed to verify compliance with 10 CFR 55.59 (c), "Requalification Program Requirements," and the licensee's SAT program. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.7 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous biennial requalification examinations and the training from the current examination cycle to ensure that they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans. This evaluation was performed in accordance with 10 CFR 55.59 (c), "Requalification Program Requirements," and with respect to the licensee's SAT program. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.8 Conformance with Operator License Conditions

a. Inspection Scope

The inspectors reviewed the facility and individual operator licensees' conformance with the requirements of 10 CFR Part 55. The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53 (e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted watch-standing credit for maintaining active operator licenses. The inspectors reviewed the facility licensee's LORT program to assess compliance with the requalification program requirements as described by 10 CFR 55.59 (c). Additionally, medical records for 12 licensed operators were reviewed for compliance with 10 CFR 55.53 (i). Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.9 Conformance with Simulator Requirements Specified in 10 CFR 55.46

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors also reviewed a sample of simulator performance test records (i.e., transient tests, malfunction tests, steady state tests, and core performance tests), simulator discrepancies, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics. The inspectors conducted interviews with members of the licensee's simulator staff about the configuration control process and completed the Inspection Procedure 71111.11, Appendix C, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46 (c) and (d). Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.



.10 Annual Operating Test Results and Biennial Written Examination Results

a. Inspection Scope

The inspectors reviewed the pass/fail results of the individual biennial written tests administered by the licensee during calendar year 2007. The inspectors also reviewed the results for the operating and simulator tests (required to be given annually per 10 CFR 55.59(a)(2)) administered by the licensee during calendar years 2006 and 2007. The overall written examination and operating test results were compared with the significance determination process in accordance with NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process." Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Inspection Scope

a. Routine Inspection

The inspectors reviewed repetitive maintenance activities to assess maintenance effectiveness, including Maintenance Rule (10 CFR 50.65) activities, work practices, and common cause issues. The inspectors performed one issue/problem-oriented maintenance effectiveness sample under the mitigating systems and barrier integrity cornerstones. The inspectors assessed the licensee's maintenance effectiveness associated with problems on:

- unavailability of 121 instrument air compressor.

The inspectors conducted in-office reviews of the licensee's Maintenance Rule evaluations of equipment failures for maintenance preventable functional failures and equipment unavailability time calculations, comparing the licensee's evaluation conclusions to applicable Maintenance Rule (a)(1) performance criteria. Additionally, the inspectors reviewed scoping, goal-setting (where applicable), performance monitoring, short-term and long-term corrective actions, functional failure definitions, and current equipment performance status.

The inspectors reviewed CAPs for significant equipment failures associated with risk-significant and safety-related mitigating equipment to ensure that those failures were properly identified, classified, and corrected. The inspectors reviewed other CAPs to assess the licensee's problem identification threshold for degraded conditions, the appropriateness of specified corrective actions, and that the timeliness of the implementation of corrective actions was commensurate with the safety significance of the identified issues. Key documents used by the inspectors in conducting this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors conducted in-plant walkdowns and in-office reviews of risk assessments for significant planned maintenance activities and unplanned maintenance activities that involved emergent equipment failures. Documents reviewed during these inspections are listed in the Attachment. Six inspection samples were completed as follows:

- emergent replacement of a section of cooling water piping on the supply to the D2 DG;
- emergent repair of D5 engine 2 for replacement of cylinder liners, pistons, and piston rings due to high crankcase pressure during a period where other risk significant equipment, such as the 121 control room chiller, the 11 component cooling heat exchanger temperature control valve, and the 123 and 124 station air compressors were also out of service;
- emergent repair of the bus 16 load sequencer due to failed power supplies during a period where planned work was also ongoing on switchyard bus 2;
- unexpected extension of a maintenance window on the 12 DDCLP during planned maintenance in the switchyard and in the 22 residual heat removal pump pit;
- planned maintenance window on the D2 DG with emergent inoperability of the 121 safeguards chiller; and
- unexpected extension of a maintenance window on the D2 DG for replacement of bearings and couplings.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the technical adequacy of operability evaluations completing five inspection samples. The inspectors conducted these inspections by in-office review of associated documents and in-plant walkdowns of affected areas and plant equipment.

The inspectors compared degraded or nonconforming conditions of risk-significant structures, systems, or components associated with barrier and mitigating systems and against the functional requirements described in the TS, USAR, and other design basis documents; determined whether compensatory measures, if needed, were implemented; and determined whether the evaluation was consistent with the requirements of Administrative Work Instruction 5AWI 3.15.5, "Operability Determinations". Documents reviewed are listed in the Attachment. The following operability evaluations were reviewed by inspectors:

- Operability Recommendation (OPR) 01114161 that documented the operability of the 121 control room chiller with an air leak;
- OPR 01113609 that documented the operability of the Unit 1 cooling water line 6-CL-30 to D2 which had a small through-wall leak;
- operability of the main steam safety relief valves based on NRC operating experience with a difference in the tested and installed configurations at another plant;
- OPR 01115585 that documented the operability of the D5 DG after high crankcase pressure problems; and
- operability of the 12 DDCLP with the right angle gear cooler partially plugged with zebra mussels.

b. Findings

Potential Inadequate Corrective Actions to Prevent Unnecessary D5 DG Unavailability

For the D5 DG crankcase pressure issue, the inspectors noted that this had been a long-standing problem with the D5 and D6 DGs. Licensee corrective actions may have been inadequate and/or not completed in a timely manner, resulting in unnecessary increased unavailability of the DGs. The licensee was performing a root cause evaluation of the high crankcase pressure problem technical issues, but it was not complete at the end of this inspection period. The licensee did complete a root cause evaluation of the management and organizational issues leading to the potential inadequate corrective actions. That evaluation indicated that there were wide-ranging organizational, management, leadership, and cultural issues contributing to the problem. Thus there may have been performance deficiencies which resulted in a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." This issue was considered a URI pending the inspectors' review of the technical root cause report. The inspectors review will determine whether failure to take adequate and timely corrective actions led to unnecessary DG unavailability and whether that unavailability resulted in a more than minor increase in risk. **(URI 05000306/2007005-02)**

1R17 Permanent Plant Modifications (71111.17)

.1 Annual Review

a. Inspection Scope

The inspectors reviewed the preliminary design concepts for a modification to the D5 DG crankcase breather line that the licensee intended to make during the period that the D5 DG was out of service due to high crankcase pressure. The modification was intended to limit the amount of crankcase oil ingested into the combustion air system in an attempt to limit damage to pistons, liners, and piston rings due to lubricating oil combustion products. The licensee did not complete the design in time to install during the out-of-service period, so this inspection was not considered a completed inspection sample. Design documents reviewed were in draft form only and are therefore not listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors assessed post-maintenance testing completing six inspection samples. The inspectors selected post-maintenance tests associated with important mitigating, initiating events, and barrier integrity systems to ensure that the testing was performed adequately, demonstrated that the maintenance was successful, and that operability of associated equipment and/or systems was restored. The inspectors conducted these inspections by in-office review of documents, in-plant walkdowns of associated plant equipment, and interviews with responsible personnel. The inspectors observed and assessed the post-maintenance testing activities for the following maintenance activities:

- D6 DG cooling fan switch following failure of the fan to start during a surveillance test;
- D2 DG following replacement of cooling water supply piping section;
- D5 DG during 12-hour break-in engine 2 run following repairs after high crankcase pressure;
- 22 DDCLP following scheduled preventive maintenance;
- 12 DDCLP following maintenance; and
- D2 DG following replacement of #13 bearing and refurbishment of vertical drive coupling and tapered shaft.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

The inspectors observed activities associated with a forced outage on Unit 1 initiated on December 21, 2007. The forced outage continued through December 24, 2007, when the unit achieved criticality at 1450 and synchronization to the grid at 1856. The inspectors assessed the adequacy of forced outage-related activities, including implementation of risk management, conformance to approved site procedures, and compliance with TS requirements. The following major activities were observed or performed:

- On December 21, 2007, the inspectors observed operator performance during a Unit 1 shutdown to Mode 3 as required by TS due to the inoperability of both diesel generator D1 and D2. D2 was inoperable due to corrective maintenance activities to replace the #13 bearing and refurbishment of the vertical shaft coupling. D1 became inoperable on December 20, 2007 at 11:55 p.m. due to an inoperable load sequencer found during surveillance testing. Technical Specifications required shutdown of the unit to Mode 3 within 8 hours of the load sequencer becoming inoperable. Unit 1 was shutdown to Mode 3 at 7:04 a.m. on December 21, 2007.

- From December 21 through December 24, 2007, the inspectors reviewed licensee activities to determine whether emergent issues were appropriately identified and resolved prior to reactor plant mode changes and power ascension. The inspectors also observed troubleshooting and repair of the bus 15 load sequencer and completion of the overhaul of the D2 DG. The inspectors observed and/or reviewed testing and evaluation of the other three load sequencers to verify that a common mode problem did not exist.
- On December 24, 2007, the inspectors observed licensee start-up and power ascension activities. The inspectors observed shift briefings, operator performance, and shift management coordination of plant activities, including startup evolutions leading toward criticality which occurred at 2:50 p.m.. The unit was synchronized to the grid at 6:56 p.m. and reached full power at 5:54 a.m. on December 25, 2007.

Documents reviewed are listed in the Attachment. The observation of these activities represented one inspection sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

During this inspection period, the inspectors completed five surveillance inspection samples as follows:

- Surveillance Procedure (SP) 1305, D2 Diesel Generator Monthly Slow Start Test [routine];
- SP 2334, D5 Diesel Generator 18-Month 24-Hour Load Test [routine];
- SP 1090B, 12 Containment Spray Pump Quarterly Test [in-service test];
- SP 1218, Monthly 4 Kilovolts Bus 15 Undervoltage Relay Test [routine]; and
- SP 2295/SP 2093, D5 Diesel Generator 6-Month Fast Start Test/D5 Diesel Generator Monthly Slow Start [routine].

During completion of the inspection samples, the inspectors observed in-plant activities and reviewed procedures and associated records to verify, when applicable, that:

- preconditioning did not occur;
- effects of the testing had been adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, properly documented, and the calibration frequency was in accordance with TS, USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy;

- applicable prerequisites described in the test procedures were satisfied;
- test frequency met TS requirements to demonstrate operability and reliability;
- the tests were performed in accordance with the test procedures and other applicable procedures;
- jumpers and lifted leads were controlled and restored where used;
- test data/results were accurate, complete, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of American Society of Mechanical Engineers Code, Section XI, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data have been accurately incorporated in the test procedure;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented in the corrective action program.

Key documents used by the inspectors in conducting this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed temporary modification EC 9603, "RHR [Residual Heat Removal] Motor Space Heater Electrical Separation," and the associated 10 CFR 50.59 screening, and compared it against the USAR and TS to verify that the modification did not affect operability or availability of the Unit 2 RHR systems. The inspectors walked down the modification to ensure that it was installed in accordance with the modification documents and reviewed post-installation and removal testing to verify that the actual impact on the RHR system would be adequately verified by the tests.

Documents reviewed are listed in the Attachment. This review constituted one inspection sample.

b. Findings

No findings of significance were identified.

## **Cornerstone: Emergency Preparedness**

### 1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

#### a. Inspection Scope

The inspectors performed a screening review of the 2006 and 2007 revisions to the Prairie Island Nuclear Generating Plant Emergency Plan to determine whether the changes decreased the effectiveness of the licensee's emergency planning for its Prairie Island nuclear power station. This review did not constitute an approval of the changes, and as such, the changes are subject to future NRC inspection to ensure that the emergency plan continues to meet NRC regulations.

Documents reviewed are listed in the Attachment. These activities completed one inspection sample.

#### b. Findings

No findings of significance were identified.

### 1EP6 Drill Evaluation (71114.06)

#### a. Inspection Scope

The inspectors observed the licensee perform a full facility emergency preparedness drill on December 18, 2007. This inspection completed one sample of the emergency preparedness inspection requirement.

The inspectors observed activities in the simulated control room, technical support center, operations support center, and emergency operations facility. The inspectors also attended selected post-drill critiques. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the drill performance and ensure that the licensee evaluators or participants noted the same weaknesses and entered them into the licensee's corrective action program. Emphasis was placed on observations regarding event classification, notification, protective action recommendations, site evacuation, and accountability. Key documents reviewed by the inspectors are listed in the Attachment.

#### 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/Boundary Verifications and Radiation Work Permit Reviews

###### a. Inspection Scope

The inspectors walked down with a survey instrument numerous high and locked high radiation area boundaries in the auxiliary building, in the radioactive waste barrel yard, and in ancillary site buildings to determine if the prescribed radiological access controls were in place, if licensee postings were complete and accurate, and if physical barricades/barriers were adequate. During the walkdowns, the inspectors reviewed the placement of air sampling devices and challenged access control boundaries to determine if high radiation area (HRA) and locked high radiation area (LHRA) access was controlled in compliance with the licensee's procedures, and TSs, and the requirements of 10 CFR 20.1601 and were consistent with Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants."

The inspectors reviewed the licensee's procedures and its methods for the assessment of internal dose as required by 10 CFR 20.1204 to determine if methodologies were technically accurate and would include the impact of hard to detect radionuclides such as pure beta or alpha emitters, when applicable. No worker intakes that resulted in a committed effective dose equivalent in excess of 50 millirem occurred during the period reviewed by the inspectors (September 2006 - September 2007). However, internal dose assessments which resulted in exposures less than 50 millirem committed effective dose equivalent were reviewed by the inspectors for adequacy.

The inspectors reviewed the licensee's practices and programmatic controls which prohibited the temporary storage of highly activated and/or contaminated materials (non-fuel) within the spent fuel pool that were attached to cables/lanyards and consequently more readily removable from the pool. Radiation protection (RP) staff were interviewed and a walkdown of the refuel floor was performed to verify the licensee's practices.

These reviews represented three required inspection samples.

###### b. Findings

No findings of significance were identified.

##### .2 Job-In-Progress Reviews and Review of Work Practices in Radiologically Significant Areas

###### a. Inspection Scope

The inspectors observed aspects of the following two ongoing jobs that were being performed in radiologically significant areas to evaluate work activities that presented the greatest radiological risk to workers.



- High Integrity Container (HIC) Transfer from Pit to the Barrel Yard Locked HRA Storage Area, and
- 121 Aerated Sump Strainer Change Out In Accordance With Test Procedure 1585.

The inspectors reviewed the radiological job requirements for these activities, including the radiation work permit (RWP) requirements and attended an As-Low-As-Is-Reasonable-Achievable (ALARA) pre-job briefing. Radiation survey information to support these work activities was reviewed, and the radiological job requirements and the access control provisions were assessed for conformity with TSs and with the licensee's procedures. During job observations, the inspectors determined if radiological controls and radiation protection job coverage were adequate, including remote job coverage/control.

The inspectors reviewed the licensee's procedures and discussed with the RP staff its practices for access into high and potentially very high radiation areas and for access to areas with the potential for changing radiological conditions. The inspectors evaluated the adequacy of the radiological controls and the radiological hazards assessment associated with such entries.

The inspectors also reviewed the licensee's procedure and practices associated with dosimetry placement (both whole body and extremity dosimetry) and with the use of multiple whole body dosimetry for work in high radiation areas having significant dose gradients for compliance with the requirements of 10 CFR 20.1201(c) and applicable industry guidelines. Work in areas where dose rate gradients were subject to significant variation were reviewed to evaluate the licensee's practices for dosimetry placement.

These reviews represented three required inspection samples.

b. Findings

No findings of significance were identified.

.3 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements and determined whether workers were aware of the radiological conditions, of the RWP controls and limits in place, and that their performance had accounted for the level of radiological hazards present.

The inspectors also reviewed selected radiological problem reports generated primarily in 2006 and 2007 (year to date) which found that the cause of the event was due to radiation worker errors to determine if there was an observable pattern traceable to a similar cause and to determine if this matched the corrective action approach taken by the licensee to resolve the identified problems.

These reviews represented two required inspection samples.

b. Findings

No findings of significance were identified.

.4 Radiation Protection Technician Proficiency

a. Inspection Scope

During job observations and plant walkdowns, the inspectors evaluated radiation protection staff performance with respect to radiation protection work requirements, conformance with procedures and those requirements specified in the RWP, and assessed proficiency with respect to radiation protection requirements, station procedures and health physics practices.

The inspectors reviewed selected radiological problem reports generated primarily in 2006 and 2007 (year to date) to determine the extent of any specific problems or trends that may have been caused by deficiencies with radiation protection technician work control, and to determine if the corrective action approach taken by the licensee to resolve the reported problems was adequate.

These reviews represented two required inspection samples.

b. Findings

No findings of significance were identified.

20S2 ALARA Planning and Controls (71121.02)

.1 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the licensee's assumptions and basis for its collective outage exposure estimate and evaluated the methodology and practices for projecting work activity specific exposures. This included evaluating both dose rate and time/labor estimates for adequacy, compared to historical station specific or industry data.

The inspectors reviewed the licensee's process for adjusting outage exposure estimates, when unexpected changes in scope, emergent work, or other unanticipated problems were encountered, which significantly impacted worker exposures. This included, determining that adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles, and not adjusted to account for failures to plan or control the work. The frequency of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning.

The licensee's exposure tracking system was evaluated to determine whether the level of exposure tracking detail, exposure report timeliness, and exposure report distribution were sufficient to support control of collective exposures. The inspectors reviewed RWPs to determine if they covered too many work activities to allow work activity specific exposure trends to be detected and controlled. During the conduct of exposure significant work, the inspectors evaluated if licensee management was aware of the

exposure status of the work and would intervene if exposure trends increased beyond exposure estimates. Additionally, the inspectors attended a station ALARA Committee meeting to assess the degree of oversight in outage dose management.

These reviews represented two required and one optional inspection sample.

b. Findings

No findings of significance were identified.

.2 Job Site Inspections and ALARA Control

a. Inspection Scope

The inspectors directly observed portions of the following two jobs that were being performed in high or locked high radiation areas that potentially represented significant radiological risk to workers:

- HIC transfer from Pit to the Barrel Yard Locked HRA Storage Area, and
- 121 Aerated Sump Strainer Change Out In Accordance With Test Procedure 1585.

The licensee's use of engineering controls to achieve dose reductions was evaluated to verify that procedures and controls were consistent with the licensee's ALARA reviews.

Job sites were observed to determine if workers were cognizant of work area radiological conditions, and utilized low dose waiting areas, and were effective in maintaining their doses ALARA by moving to the low dose waiting area when subjected to temporary work delays.

These reviews represented one required and one optional inspection sample.

b. Findings

No findings of significance were identified.

.3 Source Term Reduction and Control

a. Inspection Scope

The inspectors reviewed licensee records to understand historical trends and current status of plant source term. The inspectors discussed the plant's source term with health physics staff to determine if the licensee had developed a good understanding of the input mechanisms and the methodologies and practices necessary to achieve reductions in source term. The inspectors discussed licensee exposure reduction initiatives such as system flushing and use of shielding.

The inspectors reviewed the licensee's source term reduction initiative and discussed its status with health physics staff. The inspectors determined if specific sources had been identified by the licensee for exposure reduction initiatives and if priorities were established or being considered for the implementation of these actions.

These reviews represented one optional inspection sample.

b. Findings

No findings of significance were identified.

**Cornerstone: Public Radiation Safety**

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

.1 Inspection Planning and In-Office Inspection

a. Inspection Scope

The licensee's radioactive gaseous and liquid effluent program was reviewed and documented in Inspection Report 05000282/2006002; 05000306/2006002 for the 2006/2007 inspection cycle. This review occurred prior to the latest revision (May 2006) to Inspection Procedure 71122.01 "Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems. Consequently, the scope of this inspection was limited to those program elements that are now contained in the revised inspection procedure but were not reviewed as a part of the program at the time of the last inspection.

Specifically, the inspectors performed an assessment of the licensee's radiological effluent program for all of the Radiological Effluent Release Report(s) issued since the previous inspection to verify that the program was implemented as described in Radioactive Effluent TSs/Offsite Dose Calculation Manual.

Specifically the inspectors:

- Verified that the licensee had records on sampling locations, type of monitoring and frequency of sampling (i.e., information needed to satisfy the requirements of 10 CFR 20.1501);
- Determined that any anomalous results reported in the current Radiological Effluent Release Report were entered in the licensee's corrective action program and adequately resolved;
- Confirmed that the licensee performed an evaluation of the type and amount of radioactive material that was released and the associated projected doses to members of the public for unmonitored releases, (i.e., via typical, routine effluent pathways, or via spills, leaks, abnormal, or unexpected liquid or gaseous discharge, or other unusual occurrences);
- Verified that areas have been properly documented in the site's decommissioning file, per 10 CFR 50.75(g), if required, for any areas where spills, leaks, or other unusual occurrences (i.e., involving the spread of licensed radioactive material in and around the facility, equipment, and site) have occurred;

- Assessed the licensee's understanding of the location and construction of underground pipes and tanks, and storage pools that contain radioactive contaminated liquids; and
- Assessed the licensee's capabilities (such as monitoring wells) of detecting spills or leaks and of identifying groundwater radiological contamination both on site and beyond the owner controlled area and reviewed the licensee's technical bases for its onsite groundwater monitoring program.

These reviews represented one required inspection sample.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation (71122.02)

.1 Radioactive Waste System Description and Waste Generation

a. Inspection Scope

The inspectors reviewed the liquid and solid radioactive waste system descriptions in the USAR and reviewed the 2005 and 2006 Annual Environmental and Effluent Release Reports for information on the types and amounts of radioactive waste generated and disposed. The inspectors reviewed the scope of the licensee's audit/self-assessment activities with regard to the radioactive material processing and transportation programs to determine if those activities satisfied the requirements of 10 CFR 20.1101(c) and the quality assurance audit requirements of 10 CFR Part 20, and of 10 CFR 71.137, as applicable.

These reviews represented one required inspection sample.

b. Findings

No findings of significance were identified.

.2 Radioactive Waste System Walkdowns

a. Inspection Scope

The inspectors walked down selected portions of the liquid and solid radioactive waste processing systems to verify that these systems were consistent with the descriptions in the USAR and in the Process Control Program and to assess the material condition and operability of those systems. No significant changes were made to the radioactive waste processing systems since the last inspection of this program area. The inspectors reviewed the status of radioactive waste processing equipment that is not operational and/or abandoned in place in order to assess the licensee's physical and administrative controls preventing the inadvertent use of this equipment and the potential impact of any inadvertent use of this equipment, such as an unmonitored release or a source of unnecessary personnel exposure.

The inspectors reviewed the licensee's processes for transferring waste into shipping containers to determine if appropriate waste stream mixing and sampling was performed so as to obtain representative waste stream samples for analysis. The inspectors reviewed the licensee's practices for the collection of area smear surveys to represent the dry-active waste (DAW) stream and the methods used for determining the radionuclide mix of various filter media to determine if they were representative of the intended radioactive waste stream. Additionally, the inspectors reviewed the methodologies for quantifying gamma emitting radionuclide waste stream content, for determining waste stream tritium concentrations and for waste concentration averaging to ensure that representative samples of the waste products were provided for the purposes of waste classification pursuant to 10 CFR 61.55.

These reviews represented one required inspection sample.

b. Findings

No findings of significance were identified.

.3 Waste Characterization and Classification

a. Inspection Scope

The inspectors reviewed the licensee's methods and procedures for determining the classification of radioactive waste shipments including the use of scaling factors to quantify difficult-to-measure radionuclides (e.g., pure alpha or beta emitting radionuclides and those that decay by electron capture). The inspectors reviewed the last two radiochemical sample analysis results (i.e., 10 CFR Part 61 analyses) including vendor laboratory data for each of the licensee's waste streams and the associated calculations used to account for difficult-to-measure radionuclides. These waste streams consisted of various resins, concentrator waste sludge, filter media, and DAW. The inspectors also reviewed the minimum detectable concentrations achieved for each waste stream as determined by the licensee's contract analytical laboratory, compared to the corresponding radionuclide groupings in 10 CFR 61.55, to determine whether the concentration values satisfied the NRC Branch Technical Position on Radioactive Waste Classification. These reviews were conducted to determine if the licensee's program assured compliance with 10 CFR Part 61. The inspectors also reviewed the licensee's waste characterization and classification program to determine if reactor coolant chemistry data was periodically evaluated to account for changing operational parameters that could potentially affect waste stream classification and thus validate the continued use of existing scaling factors between sample analysis updates.

These reviews represented one required inspection sample.

b. Findings

No findings of significance were identified.

#### .4 Shipment Preparation and Shipment Manifests

##### a. Inspection Scope

The inspectors reviewed selected documentation of shipment packaging, surveying, package labeling and marking, vehicle inspections and placarding, emergency instructions, and licensee verification of shipment readiness for non-excepted radioactive material and radioactive waste shipments. Specifically, the inspectors reviewed:

- Shipping Record 05-072; Bead Resin HIC No. 124;
- Shipping Record 06-053; Liner No. 121;
- Shipping Record 07-004; C-Vans of DAW;
- Shipping Record 07-006; C-Vans of DAW;
- Shipping Record 07-011; Bead Resin HIC No. 130; and
- Shipping Record 07-012; Bead Resin HIC No. 132.

For each shipment, the inspectors determined if the requirements of 10 CFR Parts 20 and 61, and those of the Department of Transportation (DOT) in 49 CFR Parts 170-189 were met. Specifically, records were reviewed and staff involved in shipment activities were interviewed to determine if packages were labeled and marked properly, if package and transport vehicle surveys were performed with appropriate instrumentation, whether survey results satisfied DOT requirements, and if the quantity and type of radionuclides in each shipment were determined accurately. The inspectors also determined whether shipment manifests were completed in accordance with DOT and NRC requirements and if they included the required emergency response information.

Selected staff involved in shipment activities were interviewed by the inspectors to determine if they had adequate skills to accomplish shipment related tasks and to determine if the shippers were knowledgeable of the applicable regulations to satisfy package preparation requirements for public transport with respect to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," and 49 CFR Part 172, Subpart H. Additionally, the training content for general awareness/ familiarization training for radiation protection technicians, station laborers, and for warehouse staff were reviewed for compliance with the hazardous material training requirements of 49 CFR 172.704.

These reviews represented two required inspection samples.

##### b. Findings

No findings of significance were identified.

#### .5 Identification and Resolution of Problems for Radioactive Waste Processing and Transportation

##### a. Inspection Scope

The inspectors reviewed Licensee Event Reports (as applicable), self-assessment and audit reports, along with field observation reports that involved the radioactive waste and radioactive materials shipping program since the last inspection to determine if the licensee had effectively implemented its corrective action program and that problems

were identified, characterized, prioritized, and corrected. The inspectors determined whether the licensee's oversight mechanisms (audits, self-assessments, etc.) collectively were capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors also selectively reviewed condition reports generated since the previous inspection that dealt with the radioactive material/radioactive waste shipping program or waste processing activities and interviewed staff and reviewed documents to determine if the following activities were being conducted in an effective and timely manner, commensurate with their importance to safety and risk:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of Non-Cited Violations tracked in the corrective action program; and
- Implementation/consideration of risk significant operational experience feedback.

These reviews represented one required inspection sample.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring and Radioactive Material Control Programs (71122.03)

.1 Unrestricted Release of Material from Radiologically Controlled Areas

a. Inspection Scope

The inspectors observed several individuals and various material/equipment being released from the radiologically controlled area of the plant at the main control point. The inspectors also observed radiation protection technicians performing radiological surveys of miscellaneous materials being surveyed for released from the radiologically controlled area. The methods used for control, survey, and release of materials from these areas was evaluated to determine consistency with regulatory guidance and compliance with the licensee's procedures.

The inspectors verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was in current calibration. The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material and verified that there was adequate guidance on how to respond to indications which may signal the presence of licensed radioactive material. The inspectors reviewed the licensee's procedures and ensured the radiation detection sensitivities were consistent with the NRC guidance contained in IE Circular 81-07 and IE Information Notice 85-92 for surface contamination and with applicable NRC Health Physics Positions (HPPOS-221) for volumetrically contaminated material. Through interviews,



the inspectors verified that the RP staff had a clear understanding of the radioactive material control program requirements and understood the proper radiation survey equipment to use for various unconditional release applications.

The inspectors verified that the licensee evaluated the impact of difficult-to-measure radionuclides on its radiation survey program including those radionuclides that decay via electron capture. The inspectors reviewed the licensee's procedures to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters (i.e., counting times and background radiation levels). The inspectors verified that the licensee had not established a "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area.

These reviews represented two required inspection samples.

b. Findings

No findings of significance were identified.

**OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

**Cornerstone: Mitigating Systems**

.1 Reactor Safety Strategic Area

a. Inspection Scope

The inspectors sampled the licensee's submittals for performance indicators (PIs) and used the PI definitions and guidance contained in Revision 5 of Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guidance," to verify the accuracy of the PI data. The inspectors reviewed selected applicable conditions and data from logs, CAPs, and data input forms from July 2006 through September 2007 for each PI area specified below. The inspectors independently re-performed selected calculations where applicable. The inspectors compared the information so developed to the data reported by the licensee to ensure accuracy. Documents reviewed as part of this inspection are listed in the Attachment. The following PIs were reviewed for a total of four samples:

Unit 1

- Mitigating System Performance Index for the residual heat removal system; and
- Mitigating System Performance Index for the support cooling system.

## Unit 2

- Mitigating System Performance Index for the residual heat removal system; and
- Mitigating System Performance Index for the support cooling system.

### b. Findings

No findings of significance were identified.

## **Cornerstone: Public Radiation Safety**

### .2 Radiation Safety Strategic Area

#### a. Inspection Scope

The inspectors reviewed, the most recent 12 months of licensee event reports, licensee data reported to the NRC, selected plant logs, selected corrective action program data, and NRC inspection reports to verify the following performance indicators reported by the licensee through the third Quarter of 2007

- Radioactive Effluent TSs/Offsite Dose Calculation Manual radiological effluent occurrences.

The inspectors verified that the licensee accurately reported performance as defined by the applicable revision of NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline."

### b. Findings

No findings of significance were identified

## 40A2 Identification and Resolution of Problems (71152)

### .1 Routine Review of Identification and Resolution of Problems

#### a. Inspection Scope

As required by NRC Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed screening of all items entered into the licensee's corrective action program. This was accomplished by reviewing the description of each new CAP and attending selected daily management review committee meetings. Documents reviewed are listed in the Attachment to this report.

### b. Findings

No findings of significance were identified.

## .2 Semiannual Review to Identify Trends

### a. Inspection Scope

The inspectors performed a semiannual review of the licensee's corrective action program to identify trends that could indicate the existence of a more significant safety issue. The inspectors reviewed both the licensee's CAP database and a separate database maintained by the inspectors for CAPs initiated between June 1, 2007, and December 11, 2007. Various sorts were conducted on the data to identify areas with multiple related issues. The effectiveness of the licensee's corrective action program was assessed by comparing trends identified by the inspectors to those identified by the licensee. Key documents reviewed during this inspection are listed in the Attachment. This inspection completed the second semiannual trend inspection for the year and constituted one inspection sample.

### b. Findings

No findings of significance were identified.

## .3 Annual Sample - Zebra Mussel Treatment

### a. Inspection Scope

The inspectors selected an issue associated with recent issues associated with zebra mussel treatment for a more in-depth review in accordance with Inspection Procedure 71152, "Identification and Resolution of Problems." This effort completed one in-depth review of the Problem Identification and Resolution inspection sample to review the corrective action aspects associated with related events. The inspectors reviewed licensee evaluations and both completed and pending corrective actions. The key documents reviewed by the inspectors associated with this inspection are listed in the Attachment to this report.

### b. Findings and Observations

No findings of significance were identified. The inspectors reviewed multiple condition reports, initiated over the past year, relating to zebra mussel issues. The licensee's identification of these problems was complete, accurate, and timely. Corrective actions related to each condition report appeared to be adequate and were focused on the cause of each condition. Post job critiques were performed after zebra mussel treatment corrective measures had been taken with the results once again captured in the licensee's corrective action program. During the later portion of 2007, several CAPs relating to observed increases in the river zebra mussel population appear to have initiated licensee action to further enhance its monitoring through development of a Zebra Mussel Monitoring Program. The development of this monitoring program has been captured within the licensee's corrective action program via CAP 01089806.

4OA3 Event Follow-up (71153)

- .1 (Closed) Licensee Event Report (LER) 05000282/2007-001-00 and 05000282/2007-001-01: Unit 1 Train B Emergency Core Cooling System Inoperable Longer Than Allowed by TSs Due to Inoperable Breaker

On April 3, 2007, licensee operators discovered that the closing spring on the breaker for the 12 safety injection (SI) pump were discharged with the breaker open. This issue was previously discussed in Inspection Report 05000282/2007003; 05000306/2007003, Section 1R22 and was considered unresolved pending a review of the licensee's root cause for the event and a risk evaluation if necessary.

As discussed in Sections 4OA5.1 and 4OA7 of this report, the issue is closed and dispositioned as a licensee-identified finding of very low safety significance (Green) and Non-Cited Violation (NCV). Documents reviews are listed in the Attachment. This review represented one sample. This LER is closed.

- .2 (Closed) LER 05000282/2007-003-00; 05000306/2007-003-00: Unanalyzed Condition Due to Breached Fire Barrier

On August 9, 2007, licensee staff documented an apparent breach between the Train A and Train B auxiliary feedwater pump rooms. The licensee's investigation determined that the condition was an unanalyzed condition.

This issue was previously discussed in Inspection Report 05000282/2007004; 05000306/2007004, Section 4OA7.1, and was dispositioned as a licensee-identified finding of very low safety significance (green) and NCV in that report. The LER presented information that was previously reviewed by the inspectors. Documents reviewed are listed in the Attachment. This review represents one sample. This LER is closed. The licensee intended to submit a supplemental LER upon completion of a root cause investigation.

- .3 (Closed) LER 05000306/2007002-00: Emergency Diesel Generator Inoperable Longer Than Allowed by TSs Due to Loose Switch

On October 8, 2007, when the D6 DG was started for a monthly surveillance test, the 22 diesel room cooling fan failed to automatically start. Later when an operator manipulated the switch, the fan started. A licensee investigation determined that the switch was loose in its mounting to the control panel and had apparently been inadvertently left in the mid position after the previous D6 surveillance run on September 3, 2007. Thus the D6 DG had been inoperable for about 35 days.

Following the surveillance test on September 3, 2007, the operator place the switch in what appeared to be the proper position. However, due to the loose mounting, there was no way for the operator to detect that the switch had been left in a mid position. Specifically, the switch pointer was in the proper position and the associated light indicated was also reflected that the fan was not operating, which was expected for the standby condition.

Licensee corrective actions were documented in CAP 01114222 and included checking and tightening, if necessary, all the control panel switches for both the D5 and D6 DGs.

Planned corrective actions included establishing a preventive maintenance activity to periodically check the switches and evaluating procedure changes to ensure that the switches get fully rotated when their positions are changed.

A preliminary Significance Determination Process (SDP) using the phase 2 pre-solved worksheets indicated that the issue had the potential for being greater than of very low safety significance. The inspectors asked the regional Senior Reactor Analyst to perform a phase 3 SDP.

The Region III Senior Reactor Analyst determined that the SDP phase 2 result was overly conservative because it did not account for recovery of the D6 ventilation fan. The result was also conservative because the exposure period was assumed to be equivalent to one year when the period of unavailability was actually only slightly over 30 days. The Senior Reactor Analyst performed an SDP phase 3 risk evaluation to more accurately characterize the risk significance of the condition. The NRC's simplified plant analysis risk model, Revision 3.31, was used in the evaluation. Since the simplified plant analysis risk model is based on Prairie Island Unit 1, a diesel generator on Unit 1 was assumed to be failed even though the actual plant condition involved the Unit 2 D6 diesel generator. The common cause failure probability for all DGs was not changed because the finding did not affect the other unit's DGs. The failed DG ventilation fan was determined to be easily recoverable with more than adequate time available for recovery. The DG non-recovery probability at one hour and two hours was assumed to be 0.1, consistent with the SDP phase 2 usage rules. The exposure period was determined to be 35 days. The delta Core Damage Frequency calculated using these assumptions was below 1E-7 and therefore the result was determined to be a finding of very low safety significance (Green). The dominant sequence involved a loss of offsite power, failure of the DGs, failure to cross-tie a DG from the opposite unit, and the failure to recover either offsite power or an DG prior battery depletion. The licensee also performed a risk evaluation using the same assumptions and the results were consistent with the NRC's SDP results.

This LER is closed. The enforcement aspects of this issue are discussed in Section 4OA7 of this report.

.4 Unit 1 Shutdown Required by TSs

a. Inspection Scope

On December 20, 2007, at 11:55 p.m., with the D2 DG out of service for planned maintenance, the licensee was required to verify operability of the bus 15 load sequencer in preparation for testing of the bus 16 D2 DG relays. The bus 15 load sequencer surveillance test failed, requiring the licensee to declare the D1 DG inoperable in accordance with TS. With both Unit 1 DGs inoperable, TS required at least one DG to be restored within two hours or the unit placed in Mode 3 (hot standby) within the next six hours. The sequencer could not be immediately repaired, so the licensee commenced a Unit 1 shutdown at 4:13 a.m. on December 21, 2007.

The inspectors observed the activities leading up to and during the shutdown. The licensee reported the event in accordance with 10 CFR 50.72. Unit 1 reached Mode 3 at 7:04 a.m. on December 21. The load sequencer was repaired by replacement of a circuit card before the unit was required to be placed in cold shutdown. The inspectors

determined that the licensee met all TS action requirements and NRC reporting requirements for the plant conditions. Documents reviewed are listed in the Attachment. Other issues during the shutdown, forced outage, and subsequent startup are discussed in Section 1R20 of this report. This activity represented one sample.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 (Closed) URI 05000282/2007003-01: Failure of the 12 Safety Injection Pump Breaker

This issue was previously discussed in Inspection Report 05000282/2007003; 05000306/2007003, Section 1R22, and was considered unresolved pending a review of the licensee's root cause for the event and a risk evaluation if necessary.

The inspectors reviewed the root cause for the event as documented in CAP 01085806. The cause was determined to be that the breaker charging motor brushes had exceeded their useful life. The licensee also determined that the breaker, and therefore the 12 SI pump, had been inoperable for 19 days, a time period longer than allowed by TS. The licensee reported this failure to meet the TS as an LER, discussed in Section 4OA3 of this report. Corrective actions included repair of the subject breaker, interim breaker verification activities each time a breaker is operated, and establishing of periodic inspection and replacement of charging motors.

The inspectors performed a risk assessment of the issue with the assistance of a regional Senior Reactor Analyst. The finding affected the mitigating systems cornerstone, specifically the high pressure SI system. The finding resulted in the actual loss of a safety function for a single train for greater than the TS allowed outage time. As a result, a phase 2 SDP evaluation was required. The inspectors used the pre-solved SDP worksheets for Prairie Island based on Revision 2.01a. The phase 2 analysis assumed that the SI pump was unavailable for between 3 and 30 days. The preliminary result of the phase 2 evaluation was a Yellow finding.

The Senior Reactor Analyst determined that the phase 2 SDP result was overly conservative and performed a phase 3 SDP analysis of the finding using the Simplified Plant Analysis Risk model, Revision 3.31, for Prairie Island. An exposure time of just over 19 days was used to represent the period of time that the 1B SI pump was unavailable. Recovery of the pump was not credited. After reviewing plant specific information, the base risk model was modified to credit the operator's ability to perform a secondary side cooldown and reactor coolant system depressurization during medium loss of coolant accident and steam generator tube rupture events to allow the use of low pressure systems when high pressure injection systems are failed. The steam generator tube rupture frequency was also modified to use a plant-specific frequency because the Unit 1 steam generators had been replaced within the past several years with the better alloy 690 design. The result of the phase 3 SDP analysis was a finding of very low safety significance (Green). The dominant sequence involved a steam generator tube rupture, failure of the high pressure safety injection system, and failure to cool down and depressurize to use low pressure injection systems.

This URI is closed. The associated LER for this event is closed in Section 4OA3.1 of this report. The enforcement aspects of this finding are discussed in Section 4OA7 of this report.

.2 (Closed) URI 05000282/2007003-04; 05000306/2007003-04: Control of Very High Radiation Area Keys.

a. Inspection Scope

An unresolved item was documented in NRC inspection report 05000282; 05000306/2007003 concerning the licensee's very high radiation area controls for the C-sump (i.e., the thimble tube chase) during the most recent refueling outages (Units 1 and 2). During the previous inspection, the inspectors identified issues of procedural non-compliance that potentially occurred when the plant configuration was such that radiation levels exceeding 500 rads per hour could have occurred in the C-sump areas. Supplemental reviews were performed by the licensee, and the additional information was reviewed by the inspectors.

Specifically, the inspectors reviewed the additional data relative to the licensee's control of high risk, high dose rate, high radiation areas (HRAs), and for very high radiation areas (VHRAs) control to determine if workers were adequately protected from radiological overexposure. Selected procedures, surveys, condition reports, plant configuration drawings and related licensee documentation were reviewed, including administrative and procedural changes, and selected plant personnel were interviewed. The inspectors completed these reviews to verify that the licensee's program and its implementation met the requirements of 10 CFR 20.1601 and 10 CFR 20.1602 and were consistent with NRC guidance.

b. Findings

Performance Deficiency 1:

Introduction: An NRC-identified Green finding and associated NCV were identified for the failure to maintain sufficient control over a posted very high radiation area, as required by 10 CFR 20.1602.

Description: During the 2006 Unit-1 refueling outage the C-sump VHRA key was signed out by RP supervision over multiple shifts. RP supervision then transferred possession of the key to containment RPT Leads, who then transferred possession of the VHRA key from RPT Lead to RPT Lead over a period of multiple shifts. The transferring possession of the VHRA key occurred during the same time frame that the in-core detector thimbles were being prepared and withdrawn from the vessel into the C-sump area (i.e. the thimble tube chase). Consequently, plant configuration met the conditions requiring the posting and controls for a VHRA.

At Prairie Island, station specific procedures institute the additional controls necessary to ensure 10 CFR 20.1602 compliance, and include requirements that the C-sump will always be treated as a VHRA and that the very high radiation area keys shall be controlled by the shift supervisor and shall not be issued to anyone without the permission of the plant manager or his designee. Additionally, other station procedures require plant manager approval and specify that prior to retracting the in-core detector

thimbles, the area is clear of personnel and that the tube chase access port covers are locked by ensuring that the C-sump is locked and that the VHRA key is sealed in the Shift Supervisor's key locker.

The licensee performed an additional review of this issue following the NRC's previous inspection of this area. During the review, the licensee and NRC identified an additional lapse in the controls of the VHRA keys. During the U1R24 outage, individuals in the field had possession of the VHRA key to the C-sump when the key was documented as being in the main control room and under the control of the shift supervisor, and during the time frame that the in-core detector thimble were being retracted from the vessel and into the thimble tube chase. Following the identification of this additional key control issue, the licensee acknowledged that the issue represents a violation of 10 CFR 20.1602.

Analysis: The inspectors determined that the licensee failed to maintain sufficient controls over a posted very high radiation area during the spring 2006 Unit-1 refuel outage (U1R24) contrary to 10 CFR 20.1602 and station procedural requirements, which represents a performance deficiency and a finding as described in Manual Chapter 0612, Appendix B, "Issue Screening." The issue was more than minor because it was associated with the Program/Process attribute of the Occupational Radiation Safety Cornerstone and potentially affected the cornerstone objective to ensure worker health and safety from exposure to radiation. The finding does not involve the application of traditional enforcement, because it did not result in actual safety consequences or the potential to impact the NRC's regulatory function, and was not the result of willful actions. The finding was evaluated using the SDP in accordance with Inspection Manual Chapter (IMC) 0609, Appendix C, for the Occupational Radiation Safety cornerstone.

The finding was determined to be of very low safety significance because the finding did not involve ALARA planning, collective dose was not a factor, it did not involve an overexposure, there was not a substantial potential for a worker overexposure, and the licensee's ability to assess worker dose was not compromised. The cause of the finding is related to a cross-cutting area of Human Performance associated with the aspect of work practices in procedural compliance. (H.4.b) (Section 4OA5)

Licensee corrective actions included reinforcing expectations for procedural compliance and revising the procedures to require the written permission of the plant manager for VHRA key issue.

Enforcement: Title 10 CFR 20.1602 for control of access to very high radiation areas requires in part, that in addition to the requirements for 10 CFR 20.1601 (control of access to high radiation areas), the licensee shall institute additional measures to ensure that an individual is not able to gain unauthorized or inadvertent access to very high radiation areas. The additional measures at Prairie Island station include administrative controls of VHRA keys to ensure that the VHRA keys are maintained under the control of the shift supervisor, only issued with the specific approval of the plant manager, and key possession is not transferred among individuals.

Contrary to the above, during the U1R24 refueling outage, individuals in the field had possession of the VHRA key to the C-sump when the key was documented as being in the main control room and under the control of the shift supervisor, and during the time



frame that the in-core detector thimble were being retracted from the vessel and into the thimble tube chase. Additionally, on several occasions during the outage once the VHRA key was initially issued by the plant manager and released by the shift supervisor, physical possession of the VHRA key was transferred from individual to individual prior to being returned to the shift supervisor's control. Since the finding is of very low safety significance and had been entered into the corrective action system as CAP 01083810, the associated violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 05000282/2007005-03; 05000306/2007005-03)**

#### Performance Deficiency 2:

Introduction: A Green finding and associated NCV were identified when NRC inspectors identified an issue where the licensee failed to maintain sufficient control over a key to a posted very high radiation area.

Description: During the 2006 Unit-2 refueling outage the C-sump VHRA key was signed out by RP supervision, and possession of the key was transferred between individuals over multiple shifts.

At Prairie Island, station specific procedures include requirements that C-sump will always be treated as a VHRA and that the very high radiation area keys shall be controlled by the shift supervisor and shall not be issued to anyone without the permission of the plant manager or his designee. Additionally, other station procedures specify that the keys for locked high radiation areas and very high radiation areas shall be promptly returned at the end of each job and keys shall not be signed out and transferred between personnel.

The licensee performed an additional evaluation of plant conditions following the inspectors' initial review of this issue. Based on that review, the licensee provided adequate information to demonstrate that the C-sump was under additional controls to prevent the area from having radiation levels exceeding 500 rads per hour. Nonetheless, the licensee acknowledged that certain procedural controls were not fully implemented. Specifically, during the U2R24 outage individuals transferred possession of the VHRA key to the C-sump over multiple shifts and without the explicit knowledge and approval of the plant manager, contrary to the requirements of station Radiation Protection Implementing Procedure (RPIP) 1008 "Radiation Protection Key Control". During the times that the VHRA key was out of the control of the shift supervisor, plant conditions were such that VHRA conditions could not have been created in the C-sump (i.e. the thimble tube chase).

Analysis: The inspectors determined that the licensee failed to maintain sufficient controls over keys to a posted very high radiation area during the fall 2006 Unit-2 refuel outage (U2R24) when 'VHRA key No. 197 was transferred between individuals over shifts contrary to station procedural requirements, which represents a performance deficiency and a finding as described in Manual Chapter 0612, Appendix B, "Issue Screening." The issue was more than minor because it was associated with the Program/Process attribute of the Occupational Radiation Safety Cornerstone and potentially affected the cornerstone objective to ensure worker health and safety from exposure to radiation. The finding does not involve the application of traditional enforcement, because it did not result in actual safety consequences or the potential to impact the NRC's regulatory function, and was not the result of willful actions. The

finding was evaluated using the SDP in accordance with IMC 0609, Appendix C, for the Occupational Radiation Safety cornerstone. The finding was determined to be of very low safety significance because the finding did not involve ALARA planning, collective dose was not a factor, it did not involve an overexposure, there was not a substantial potential for a worker overexposure, and the licensee's ability to assess worker dose was not compromised.

Additionally, the cause of this finding was related to the cross-cutting area of Problem Identification and Resolution, associated with the aspect of the corrective action program specifically that the licensee takes appropriate corrective actions to address safety issues, commensurate with their significance (P.1.d). Issues with control of locked and very high radiation area keys had been previously identified and entered into the licensee's corrective action program (CAP 01029886) through a licensee self assessment conducted in May 2006. However, the evaluation of the issue was not comprehensive nor thorough relative to potential regulatory impact on station TSs or 10 CFR Part 20 compliance, relative to the control of locked and very HRA keys and access control. Had the corrective actions to the previously identified issues of control of locked and very high radiation area keys been comprehensive and properly implemented the U2R24 VHRA key control procedural violation may not have occurred.

Licensee corrective actions for this issue included reinforcing expectations for procedural compliance and revising the procedures for such that the VHRA keys are maintained in the control of radiation protection supervision, possession is not transferred between personnel, and that VHRA keys are checked back in at the end of each shift.

Enforcement: Station TS 5.4.1 requires that written procedures shall be established, implemented and maintained covering that applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Revision 2, Appendix A, Section 7 requires procedures for the control of radioactivity, including limiting personnel exposure. Station procedure RPIP 1008 "Radiation Protection Key Control" step 13.3 states that keys shall not be signed out and transferred between personnel.

Contrary to the above, during the U2R24 refueling outage possession of the VHRA key for access into the C-sump was transferred in among individuals over multiple shifts. Since the finding is of very low safety significance and had been entered into the corrective action system as CAP 01083810, the associated violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy.

**(NCV 05000282/2007005-04; 05000306/2007005-04)**

This URI (05000282; 05000306/2007003-04) is closed.

.3 (Closed) URI 05000282/2007003-05; 05000306/2007003-05: Performance Indicator Accuracy for Occupational Radiation Safety.

During a June, 2007 radiation safety baseline inspection, the NRC inspectors identified that the licensee's access control and key management practices for VHRAs during the U1R24 and U2R24 refueling outages had the potential to be performance indicator occurrences under the NRC endorsed NEI 99-02 criteria, and at the time neither issue had been voluntarily identified and submitted to the NRC. As stated above, the performance deficiency regarding access control to the C-sump area during the U1R24

outage failed to meet the requirements of 10 CFR 20.1602. Consequently, this issue was determined to be a performance indicator occurrence that has since been reported to the NRC. The failure to accurately report a performance indicator occurrence is a violation of 10 CFR 50.9 "Completeness and Accuracy of Information". This performance indicator occurrence is in addition to a previously identified unreported occupational radiation safety performance indicator occurrence of a locked high radiation area as previously documented in inspection report 05000282/2007003; 05000306/2007003, Section 4OA1.

The inspectors reviewed the control of the VHRA key to the C-sump area during the U2R24 and concluded that the issue did not meet the criteria of a performance indicator occurrence under NEI 99-02 criteria. The licensee demonstrated that the key control issues did not adequately conform to station procedures but that a violation of 10 CFR 20.1602 did not occur. During the times that the VHRA key was out of the control of the shift supervisor, plant conditions were such that VHRA conditions could not have been created in the C-sump (i.e., the thimble tube chase).

The licensee has performed a root cause evaluation and determined that the causes of not always identifying performance indicator occurrences were varied. However, corrective actions planned and implemented included modifying site practices to comply with the fleet procedures to include both the shift manager and the screening team on CAP reportability evaluations and to develop a user aid to facilitate issue screening.

Since the cumulative unreported performance indicator occurrences did not result in a change to the performance indicator's threshold (color), the NRC determined that the finding constitutes a violation of 10 CFR 50.9 of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. The licensee documented the problem in Root Cause Evaluation (RCE) 1099946-01.

This URI (05000282/2007003-05; 05000306/2007003-05) is closed.

.4 (Closed) URI 05000282/2007006-01; 05000306/2007006-01: Evaluate Technical Support Center (TSC) Operability During Time With Damper Disconnected

This issue was previously discussed in Inspection Report 05000282/2007006; 05000306/2007006, Section 4OA2 a.(2).1.(1), and was considered unresolved pending the inspector's review of the operability of the TSC while the damper actuating rod was disconnected.

The inspectors reviewed completed Work Request 30701, "Troubleshoot MD-34602 Damper," with which the licensee verified that the subject damper failed to the closed position and remained closed during all modes of TSC ventilation system operation with the damper actuating rod disconnected. With the damper closed, the ventilation system remained operable. Thus, the licensee's original failure to evaluate the condition for past operability and regulatory impact was considered to be a minor issue. This URI is closed.

#### 4OA6 Meeting(s)

##### .1 Exit Meeting

The inspectors presented the inspection results to Mr. M. Wadley and other members of licensee management at the conclusion of the inspection on January 8, 2008. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

##### .2 Interim Exit Meetings

Interim exits were conducted for:

- Access Control to Radiologically Significant Areas and Radiological Effluents inspection with Mr. P. Huffman, Plant Manager, on October 5, 2007;
- Biennial Operator Requalification Program inspection with Mr. J. Sorensen, Director, Site Operations, on October 19, 2007;
- Biennial Operator Requalification Program inspection and Requalification Examination results with Mr. J. Sternisha, Training Manager, on November 14, 2007, via telephone;
- Radioactive Material Processing and Transport inspection with Mr. Michael Wadley, Site Vice President, on November 30, 2007;
- Biennial Operator Requalification Program Inspection and Unresolved Item status with Mr. J. Sternisha, Training Manager, on December 7, 2007, via telephone;
- Emergency Preparedness inspection with Mr. M. Agen, Emergency Plan Coordinator, on December 17, 2007; and
- Follow-up teleconference calls were held on December 19, 2007, and January 2, 2008, with Mr. Scott Northard in reference to the unresolved items.

#### 4OA7 Licensee-Identified Violations

The following violations of very low significance were identified by the licensee and are violations of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Manual, NUREG-1600, for being dispositioned as NCVs.

##### **Cornerstone: Not applicable**

Title 10 CFR 50.74 states, in part, that "Each licensee shall notify the appropriate Regional Administrator as listed in Appendix D to Part 20 of this chapter within 30 days of the following in regard to a licensed operator or senior operator: (c) Permanent disability or illness as described in 55.25 of this chapter." Contrary to this, the licensee identified in August 2007 that three licensed operators had been wearing prescribed corrective lenses since April 2007 without notifying the NRC. This was identified in the licensee's corrective action program as CAP 01104269, "Licensed Operator Physical Paperwork Incomplete." After notification, the NRC amended the operators' licenses with a corrective lenses condition. This finding is of very low safety significance because the operators wore their corrective lenses, were continuously in the company of other licensed operators when performing license duties, and made no operational errors while performing license duties.

### **Cornerstone: Mitigating Systems**

- Technical Specification 3.5.2 required that two emergency core cooling trains shall be operable and that, with one or more trains inoperable, the train must be restored to operable status within 72 hours or the unit be placed in Mode 3 within the next 6 hours. Contrary to this, on April 3, 2007, during performance of a scheduled surveillance test, licensee operators discovered that the 12 safety injection pump was inoperable because the breaker charging springs were discharged with the breaker open. A subsequent investigation by the licensee, as documented in CAP 01085806, determined that the pump had been inoperable for 19 days while the unit remained in Mode 1. As discussed in Section 4OA5.1 of this report, the violation was of very low safety significance.
- Technical Specification 3.8.1.b required that two diesel generators capable of supplying the onsite 4 kilovolt safeguards distribution system be operable. With one DG inoperable, Action B required, in part, that the inoperable DG be restored to operable within 14 days or the unit be placed in Mode 3 within 6 hours. Contrary to this, on October 8, 2007, the licensee discovered that the control switch for the 22 diesel room cooling fan, a subsystem required to support D6 DG operability, was inoperable because it was in the mid position and therefore the fan did not start automatically. Further investigation, as documented in CAP 01114222, determined that the switch had been in the wrong position for 35 days while the unit remained in Mode 1. As discussed in Section 4OA3.3 of this report, the violation was of very low safety significance.

### **Cornerstone: Public Radiation Safety**

Technical Specification 5.4.1 requires that written procedures shall be established, implemented and maintained covering that applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Revision 2, Appendix A, Section 7, required procedures for the control of radioactivity, including limiting materials released to the environment. These controls were provided by licensee Procedure RPIP 1302 "Unconditional Release of Material," Revision 19. Section 3.3 of that procedure required that tools and equipment be unconditionally release when the free release criteria of Section E are met. Section E required that no detectable peaks be identified after performing an isotopic analysis, and also required that all radioactive material labels be removed or defaced. Contrary to the above, on November 6, 2007, a radiologically contaminated gauge was improperly released from the radiologically controlled area. The gauge was labeled on the back side as radioactive material, and the label had not been defaced. Also, gamma analysis by multi-channel analyzer identified that licensed material was present on the gauge with low levels of cobalt 60 and cesium 137. This incident was identified by the licensee on a shift supervisor walk down of the auxiliary feedwater pump room and documented in the licensee's corrective action program as CAP 01118408.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

M. Wadley, Site Vice President  
M. Agen, Emergency Plan Coordinator, Sr.  
T. Allen, Nuclear Safety Assurance Manager  
J. Anderson, Radiation Protection and Chemistry Manager  
M. Carlson, Engineering Director  
M. Davis, Compliance Engineer  
F. Forrest, Operations Manager  
P. Huffman, Plant Manager  
M. Kent, Radiation Protection Supervisor  
T. Ouret, Operations Training Supervisor  
J. Sorensen, Director Site Operations  
M. Walter, General Supervisor Operations Training  
P. Wiltse, Maintenance Manager

#### Nuclear Regulatory Commission

L. Kozak; Senior Reactor Analyst

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

05000282/2007005-01; 05000306/2007005-01	URI	Potential Failure to Follow Appropriate Procedures Involving Examinations Required by 10 CFR 55 (Section 1R11.5)
05000306/2007005-02	URI	Potential Inadequate Corrective Actions to Prevent Unnecessary D5 Diesel Generator Unavailability (Section 1R15)
05000282/2007005-03; 05000306/2007005-03	NCV	Inadequate Implementation of VHRA Controls for the C-sump in U1R24 (Section 4OA5)
05000282/2007005-04; 05000306/2007005-04	NCV	Inadequate Control of VHRA Keys in U2R24 (Section 4OA5)

#### Closed

05000282/2007003-01	URI	Failure of the 12 Safety Injection Pump Breaker (Section 4OA5.1)
05000282/2007003-04; 05000306/2007003-04	URI	Control of Very High Radiation Area Keys (Section 4OA5)

05000282/2007003-05; 05000306/2007003-05	URI	Performance Indicator Accuracy for Occupational Radiation Safety (Section 4OA5)
05000282/2007006-01; 05000306/2007006-01	URI	Evaluate Technical Support Center Operability During Time with Damper Disconnected (Section 4OA5.2)
05000282/2007-001-00 and 05000282/2007-001-01	LER	Unit 1 Train B Emergency Core Cooling System Inoperable Longer Than Allowed by TSs Due to Inoperable Breaker (Section 4OA3.1)
05000282/2007-003-00; 05000306/2007-003-00	LER	Unanalyzed Condition Due to Breached Fire Barrier (Section 4OA3.2)
05000306/2007-002-00	LER	Emergency Diesel Generator Inoperable Longer Than Allowed by TSs Due to Loose Switch (Section 4OA3.3)
05000282/2007005-03; 05000306/2007005-03	NCV	Inadequate Implementation of VHRA Controls for the C-sump in U1R24 (Section 4OA5)
05000282/2007005-04; 05000306/2007005-04	NCV	Inadequate Control of VHRA Keys in U2R24 (Section 4OA5)

Discussed

None.

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that 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 on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### 1R01 Adverse Weather

- TP 1637; Winter Plant Operations; Revision 39; completed November 7, 2007
- CAP 01068579; TP 1636 and TP 1637
- CAP 01083370; Leak on Turbine Sump to Landlock Line

### 1R04 Equipment Alignment

#### D1 Diesel Generator (10/18/07)

- Integrated Checklist C1.1.20.7-1; D1 Diesel Generator Valve Status; Revision 20
- Integrated Checklist C1.1.20.7-2; D1 Diesel Generator Auxiliaries and Room Cooling Local Panels; Revision 9
- Integrated Checklist C1.1.20.7-3; Diesel Generator D1 Main Control Room Switch and Indicating Light Status; Revision 15
- Integrated Checklist C1.1.20.7-4; D1 Diesel Generator Circuit Breakers and Panel Switches; Revision 12
- Work Request Query WM-0053; Open D1 Work Requests (01/01/2007 through 10/18/2007)
- Action Request Report TIPAA10; Open D1 CAPs (01/01/2007 through 10/18/2007)

#### D6 Diesel Generator

- Integrated Checklist C1.1.20.7-13; D6 Diesel Generator Valve Status; Revision 14
- Integrated Checklist C1.1.20.7-14; D6 Diesel Generator Auxiliaries and Local Panels and Switches; Revision 12
- Integrated Checklist C1.1.20.7-15; D6 Diesel Generator Main Control Room Switch and Indicating Light Status; Revision 6
- Integrated Checklist C1.1.20.7-16; D6 Diesel Generator Circuit Breakers and Panel Switches; Revision 8
- CAP 01116544; Valve 2FO-3-13 Found Out of Position [NRC-Identified]

#### 22 Diesel-Driven Cooling Water Pump

- Integrated Checklist C1.1.35-3; Cooling Water System; Revision 27

#### D1 Diesel Generator (12/11/07)

- Integrated Checklist C1.1.20.7-1; D1 Diesel Generator Valve Status; Revision 20
- Integrated Checklist C1.1.20.7-2; D1 Diesel Generator Auxiliaries and Room Cooling Local Panels; Revision 9
- Integrated Checklist C1.1.20.7-3; Diesel Generator D1 Main Control Room Switch and Indicating Light Status; Revision 15
- Integrated Checklist C1.1.20.7-4; D1 Diesel Generator Circuit Breakers and Panel Switches; Revision 12
- Work Request Query WM-0053; Open D1 Work Requests (01/01/2007 through 12/11/2007)
- Action Request Report TIPAA10; Open D1 CAPs (01/01/2007 through 12/11/2007)



## 1R05 Fire Protection

- Plant Safety Procedure F5, Appendix A; Fire Strategies for Fire Areas 3, 92, 26, 13, 33, 34, 35, 36, & 127; Revision 23
- Plant Safety Procedure F5, Appendix F; Fire Hazard Analysis for Fire Areas 3, 92, 26, 13, 33, 34, 35, 36, & 127; Revision 20
- Operations Manual C31; Fire Protection and Detection Systems; Revision 28
- Work Order 00309073-01; SP 1189 Safety Related Fire Detector Check; dated June 29, 2007
- SP 1189; Safety Related Fire Detector Check (11/12/21/22 Battery Rooms); Revision 23, dated August 07, 2007
- Work Order 00269929-01; SP 1266 18 Month Fire Damper Inspection; dated October 6, 2006
- SP 1266; Fire Damper – 18 Month Inspection (HFD #'s 50, 51, 54, 56, 59 & VFD #'s 45, 52, 53, 55)
- CAP 01114559; Extra Fire Hose Should be Positioned Near D2 Hose Station

## 1R11 Licensed Operator Requalification Program

- Simulator Evaluation Guide P9160S-002; ATT SQ-39; Revision 0
- Administrative Work Instruction 5AWI 3.15.0; Plant Operation; Revision 22
- Malfunction Test IA01; Loss of Service Air Header; dated September 7, 2005
- Malfunction Test TC12; Turbine Trip; dated September 7, 2005
- Malfunction Test EG06; Generator Fault; dated August 9, 2005
- Malfunction Test RH01; Residual Heat Removal Pump Trip; dated March 26, 2004
- Malfunction Test FW13; MFW Pump Trip FW13; dated December 12, 2006
- NMC Simulator Performance Test T01; Annual Reactor Trip; dated April 16, 2007
- NMC Simulator Performance Test T06; Main Turbine Trip w/o Reactor Scram; dated April 8, 2007
- NMC Simulator Performance Test S01; Steady State Test; dated May 1, 2007
- SWI O-43; Operator Qualification Program; Revision 7
- Two-Year Plan; dated May 18, 2007
- Six-Year Plan; dated May 18, 2007
- CAP 01115206; LOR Biennial Written Exam Compromise
- CAP 01114482; LOR JPM Exam Material Left in an Unsecured Location
- CAP 01113193; 2007 LOR NRC Exam Security Compromise
- CAP 01112425; Door Malfunction during NRC Exam Validation
- FL-LOR-TPD; NMC Fleet Licensed Operator Requalification FL-LOR-TPD Training Program Description; Revision 0
- QF 1040-04; Remediation Training Form; Revision 005
- QF 1040-05; Trainee Feedback Form; Revision 004
- GAR0108134105; NRC IP-71111.11B Self-Assessment; dated June 22, 2007
- FP-T-SAT-71; NRC Exam Security Requirements; Revision 1
- PINGP 910; NRC Licensed Duty Quarterly Report Tracking Report; Revision 1
- 5 Simulator Crew Evaluation Reports
- 12 Licensed Operator Medical Records
- 27 Simulator Scenarios for Annual License Examination Evaluation
- 30 Job Performance Measures
- 7 Written Examinations for Biennial License Examination

## 1R12 Maintenance Effectiveness

- CAP 01064348; 121 Compressor Train has Exceeded Maintenance Rule Unavailability Limit
- RCE 01064348; 121 Instrument Air Compressor Maintenance Rule A(1) Due to 526.5 Hours of Unavailability
- Maintenance Rule A(1) Action Plan; 121 Compressor Train and Station Air System
- MRE 0106434801; 121 Compressor Train Exceeded Maintenance Rule Unavailability Limit
- RCE 01064348; PARB Comment and Score Card
- CAP 01011789; 121 Air Compressor is Continually Loaded
- CAP 01074251; 121 Instrument Air Compressor Piston Found Loose
- CAP 01074226; Water in 121 Instrument Air Compressor Cylinder
- CAP 01074017; Vendor Manual XH-52-32 is Not Up to Date
- CAP 01071114; 121 Air Compressor Troubleshooting Results Indicate Possible Worn Bearings
- CAP 01057476; 121 Air Compressor Expanded Scope Due to Wear Surfaces and Water
- CAP 01011390; Predictive Maintenance for Air Compressors

## 1R13 Maintenance Risk Assessments and Emergent Work Control

### D2 Cooling Water Line Replacement

- Equipment to Protect with D2 Out of Service; October 16, 2007
- Complex Work Plan; D2 CL Pipe Repair; October 16, 2007

### D5 Engine 2 Repairs

- 5AWI 3.15.10; Emergency Diesel Generator Compensatory Measures; Revision 0
- SWI-O-59, Attachment A; Equipment to Protect: D6 & Train "B" ECCS; October 25, 2007
- Procedure H24.1, Appendix A; Phase 1 Risk Assessment Preparation; Revision 3
- Operator Logs; October 29, 2007
- Unit 1 Risk Assessment; October 29, 2007
- Activity Schedules; PI - D5 Engine 2 Repair October 2007; run dates October 24 through October 29, 2007
- WO 00334507; Contingency Repair D5 High Crankcase Pressure
- CAP 01115585; D5 Engine 2 Excessive Crankcase Pressure During 24 Hour Run
- CAP 01115730; 21 D5 and 22 D6 Dirty Fuel Oil Tanks Full of Water
- CAP 01115754; Issues With Corrective Action for D5
- CAP 01116247; Small Piece of Aluminum Found in D5 Lube Oil Filter
- CAP 01116287; Piston Damaged During Maintenance Activities on D5
- CAP 01116434; Coolant Found Dripping From D5 2A8 Cylinder Liner

### Bus 16 Load Sequencer

- CAP 01117362; Unplanned Limiting Condition for Operations Entry for Bus 16 Sequencer Failure
- Prompt Investigation for CAP 01117362; November 7, 2007
- CAP 01117480; Clearance Order for Bus 16 Load Sequencer Undervoltage Monitor Failed to Fully Isolate Power
- Troubleshooting Spreadsheet for WO 349378; Credible Failure Modes Evaluation; November 8, 2007
- SP 1095; Bus 16 Load Sequencer Test; Revision 21

#### Emergent Extension of 12 Diesel-Driven Cooling Water Pump Maintenance Window

- CAP 01119406; Replacement Cooling Water Pump Does Not Match Old Pump
- CAP 01120099; 12 DDCLP Stopped During Maintenance Run Due to Low Bearing Water Flow
- CAP 01120226; Emergent Work for 12 DDCLP

#### D2 Maintenance Window With Emergency 121 Safeguards Chiller Inoperability

- Equipment to Protect List; December 11, 2007
- Equipment to Protect List; December 12, 2007
- CAP 01120876; 121 Control Room Chiller Suction Spool Piece Leaking
- CAP 01120914; Both Units Entered Limiting Condition for Operations 3.0.3 for Safeguards Chiller Water
- CAP 01120989; Site Failed to Recognize a Potential Operability Issue

#### D2 #13 Main Bearing Replacement & Lower Vertical Drive Coupling Rebuild

- CAP 01121352; D2 Lower Vertical Drive Thrust and Backlash Out of Specification
- CAP 01121491; D2 Lower Vertical Drive Coupling Hub & Locknut Found Loose
- CAP 01121349; D2 #13 Upper Main/Thrust Bearing Found Wiped During Preventative Maintenance Inspection
- CAP 01121676; Documentation of Common Mode Failure Evaluation for D1 and D2
- CAP 01121679; D2 Generator Bearing Iron Wear Particulates are Trending Upward
- WO 00294380-17; D2 24-Month Inspection - Rebuild Lower Vertical Drive Assembly
- WO 00294380-18; D2 24-Month Inspection - Replace #13 Main Bearing

#### 1R15 Operability Evaluations

##### OPR 01114161

- CAP 01114161; 121 Control Room Chiller Tripped
- Temporary Change Request for Procedure C37.11, Chilled Water Safeguards System Operation; Revision 21

##### OPR 01113609

- OPR 01113609-01; U1 Line 6-CL-30, Cooling Water to D2 Has a Small Through-Wall Leak; Revision 0
- CAP 01113609; U1 line 6-CL-30, Cooling Water to D2 Has a Small Through-Wall Leak
- Procedure SWI-NDE-UT-9, Ultrasonic Detection of Pitting; Revision 1
- CAP 01113954; CAP Delayed Going to Screening While Awaiting OPR CAP 01113609 (U1 Line 6-CL-30, CL to D2 Has a Small Through-Wall Leak)

#### Main Steam Relief Valves

- H Procedure H42; Relief Valve Program; Revision 3

##### OPR 01115585

- OPR 01115585-06; D5 Diesel Generator; Revision 0
- Licensee Presentation Material; Prairie Island D5 Crank Case Pressure Review; for conference call with NRC November 7, 2007
- RCE 01115585-01; D5 Inoperability – Organizational Issues
- CAP 01121495; D5 Appears to Meet Definition of “Degraded”
- CAP 01121510; Action to Evaluate D5 For Reduced Reliability Not Performed

### 12 Diesel-Driven Cooling Water Pump Zebra Mussels

- CAP 01119560; 12 Diesel-Driven Cooling Water Pump Right Angle Lube Cooler Inlet Port Plugged
- CAP 01120834; Evaluate Changing Zebra Mussel Treatment to Include Cooling Water Pumps

### 1R17 Permanent Plant Modifications

- NFPA 37; Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines; 1984, 1990, and 2006 Editions
- CAP 01116435; In Process Error - Latest Revision of Specification Not Used
- CAP 01116516; D5 Work Questioned for Addressing Problems Being Experienced

### 1R19 Post-Maintenance Testing

#### D6 Diesel Generator Room Fan Switch

- WO 00347593; 22 Diesel Room Cooling Fan Did Not Autostart With D6; October 8, 2007
- CAP 01114222; D6 Diesel Room Cooling Fan Failed to Start With D6
- CAP 01115011; Past Operability for D6

#### D2 Cooling Water Line Replacement

- WO 00347150 10; Operations Perform Restoration and Preventive Maintenance Test on 6-CL-30 CL to D2; October 19, 2007
- SP 1305; D2 Diesel Generator Monthly Slow Start Test; Revision 35

#### D5 Diesel Generator

- WO 00324336; D5 Diesel Generator Monthly Slow Start; October 31, 2007
- SP 2093; D5 Diesel Generator Monthly Slow Start Test; Revision 83

#### 22 Diesel-Driven Cooling Water Pump

- PM 3002-2-22; 22 DDCLP Diesel Minor Periodic Maintenance; Revision 29
- SP 1106B; 22 Diesel Cooling Water Pump Monthly Test; Revision 69; performed November 9, 2007
- CAP 01117576; 22 DDCLP Low Lube Oil Alarm

#### 12 Diesel-Driven Cooling Water Pump

- C35; Cooling Water; Section 5.5 (Startup of 12 Diesel Cooling Water Pump); Revision 62; performed 12/10/2007
- WO 00350776-02; Loss of Bearing Water Flow on 12 DDCLP During Maintenance; December 4, 2007
- CAP 01120099; 12 DDCLP Stopped During Maintenance Run Due to Low Bearing Flow
- CAP 01120633; 12 DDCLP Baseplate Torque is Indeterminate

#### D2 Diesel Generator

- CAP 01122072; U1 D2 Diesel Generator - No Voltage Control;
- Operations Logs; December 23, 2007
- SP 1307; D2 Diesel Generator 6-Month Fast Start Test; Rev. 30;

## 1R20 Refueling and Other Outage Activities

### Unit 1 Shutdown to Mode 3

- Operating Procedure 1C1.3; Unit 1 Shutdown; Revision 60
- Operating Procedure 1C1.4; Unit 1 Power Operation; Revision 44
- Operating Logs; December 20 and 21, 2007
- CAP 01121944; N-31 Failed to 0 Counts Per Second During Shutdown
- CAP 01121970; 1N-36 Reading Low, Appears to be Overcompensated

### Unit 1 Outage Activities

- CAP 01122077; Discrepancy in Sequencer Testing Requirements Between SP 1306 and SP 1150

### Unit 1 Start-up from Mode 3

- Operating Procedure 1C1.2; Unit 1 Start-up; Revision 41
- Operating Procedure 1C1.4; Unit 1 Power Operation; Revision 44
- Operating Procedure C1B; Appendix – Reactor Startup; Revision 16
- Operating Logs; December 21 through 24, 2007
- CAP 01122068; Rod Insertion Limits Did Not Work on Unit 1 During Startup
- CAP 01122070; Rod Insertion Monitor Function Failed to Operate
- CAP 01122096; Unit 1 CB A Rod H2 Rod Bottom Light Lit above 20 Steps
- CAP 01122103; Unit 1 Startup Delay Due to Rod H-02 Rod Bottom Bistable Calibration
- CAP 01122115; Unit 1 Up Power Delayed Due to Flux Tilt Issues
- WO 352017; Unit 1 CB A Rod H2 Rod Bottom Light Lit Above 20 Steps

## 1R22 Surveillance Testing

### SP 1305

- SP 1305; D2 Diesel Generator Monthly Slow Start Test; Revision 35
- CAP 01114831; CV-31506, D2 Cooling Water Supply CV Bound While Opening
- CAP 01114845; D2 CV-31506 Cycled Outside Reference Range
- CAP 01114852; D2 Started During the Required Air Roll During SP 1305

### SP 1090B

- SP 1090B; 12 Containment Spray Pump Quarterly Test; Revision 12
- WO 00327463; SP 1090B 12 Containment Spray Pump Quarterly

### SP 1218

- SP 1218; Monthly 4KV Bus 15 Undervoltage Relay Test; Revision 33

### SP 2295 & SP 2093

- SP 2295; D5 Diesel Generator 6 Month Fast Start Test; Revision 34
- WO 00328435; SP 2295 D5 Diesel Generator 6 Month Fast Start Test
- SP 2093; D5 Diesel Generator Monthly Slow Start; Revision 84
- WO 00328434; SP 2093 D5 Diesel Generator Monthly Slow Start

## 1R23 Temporary Modifications

- CAP 01063548; Possible Train Separation/Common Cause RHR Wiring Problem
- EC 9603; RHR Motor Space Heater Electrical Separation; Revision 1
- WO 00325738; U2, PNL 2RPA3-28, Restore 21 RHR Motor Heater

- WO 00306475; U2, SYS 2RH, Implement T-Mod EC 9603 During 2R24
- PM 3124-4-12; 12 RHR Pump Motor Inspection (MTR 16-6); Revision 0
- MSIP 3008; Squirrel Cage Induction Motor Visual Inspection; Revision 2

#### 1EP4 Emergency Action Level and Emergency Plan Changes

- Prairie Island Nuclear Generating Plant Emergency Plan; Revision 36
- Prairie Island Nuclear Generating Plant Emergency Plan; Revision 35

#### 1EP6 Drill Evaluation

- Prairie Island Nuclear Generating Plant Emergency Plan Drill Guide; December 18, 2007
- CAP 01121592; E-plan Equipment Found in Abnormal Condition
- CAP 01121598; Operations Support Center Electrical Problems During E-plan Drill
- CAP 01121617; E-plan Drill Fax Machine Problems
- CAP 01121655; E-plan Drill - NRC Notification Was Not Completed Within 1 Hour
- CAP 01121690; Processing the Computer Generated Accountability Report
- CAP 01121751; E-plan Drill - Radiation Protection Staffing in the Operations Support Center

#### 2OS1 Access Control to Radiologically Significant Areas; and

#### 2OS2 ALARA Planning and Controls

- CAP 01028448; Non-Conservative Control of LHRA Keys; dated May 2006
- CAP 01029812; SAR 01021899 Finding Control of HRA/LHRA Keys Not Robust During NMC Audit; dated May 2006
- CAP 01029886; SAR 01024825 - Control of HRAs, LHRAs and VHRAs at Prairie Island; dated May 2006
- CAP 01083810; Administrative Control Deficiencies Associated with VHRA Keys; dated March 2007
- RCE 01099946-01; Site Response to Potentially Significant Regulatory Issues; dated (Event) June 2007
- D67; Incore Instrumentation Refuel / Maintenance Outage Operations; Revision 25
- F2; Radiation Safety; Revision 28
- FP-OP-TAG-01; Fleet Tagging Procedure; Revision 4
- FP-RP-RWP-01; Radiation Work Permit; Revision 5
- PING 631; Seal Request and Authorization; Revision 3
- RPIP 1001; Radiation Protection Program; Revisions 8 and 9
- RPIP 1008; Radiation Protection Key Control; Revisions 7 and 8
- RPIP 1120; Posting of Restricted Areas; Revisions 26 and 28
- RPIP 1135; RWP Coverage; Revision 18
- SOMS Narrative Logs; various dates
- QF 1204; Radiological Work Assessment Form
- 5AWI 5.3.0; Key and Seal Control; Revision 8
- 5AWI 10.1.0; Radiation Protection Program; Revision 7
- U1R24 Refueling Outage Schedule; printed; dated June 2007
- U2 R24 refueling Outage Schedule; printed; dated June 2007

## 2PS2 Radioactive Material Processing and Transportation

- CAP 01056394; Evaluate DOT Hazmat Training; dated October, 2006
- 5AWI 13.1.0; Radioactive Material Packaging and Shipment; Revision 3
- C49.10 Clamshell Operations; Revision 13
- D59; Process Control Program for Solidification/Dewatering of radioactive Waste from Liquid Systems; Revision 8
- Radioactive Material Shipment Package 05-072; dated December 12, 2005
- Radioactive Material Shipment Package 06-053; dated November 2, 2006
- Radioactive Material Shipment Package 07-004; dated March 20, 2007
- Radioactive Material Shipment Package 07-006; dated March 27, 2007
- Radioactive Material Shipment Package 07-011; dated July 10, 2007
- Radioactive Material Shipment Package 07-012; dated July 17, 2007
- RPIP1307; Rad Waste Classification; Revision 7
- RPIP1310; Rad Waste Streams/Scaling Factors; Revision 7
- RPIP1322; Radman for Windows to Generate Scaling Factors; Revision 4
- Prairie Island Updated Safety Analysis Report Section 9; Revision 29

## 2PS3 Radiological Environmental Monitoring and Radioactive Material Control Programs

- CAP 01118408; Uncontrolled Radioactive Material Outside Radiologically Controlled Area; dated November 2007
- 2005 Annual Radiological Environmental Monitoring Report; dated May 2006
- 2006 Annual Radiological Environmental Monitoring Report; dated May 2007
- Offsite Dose Calculation Manual; Revisions 20 and 21
- RPIP 1524; NNC Friskall Description, Operation and Calibration; Revision 13
- RPIP 4741; Onsite Groundwater Tritium Sampling; Revision 5
- RPIP 4742; Prairie Island Indian Community Water Tritium Sampling; Revision 4

## 40A1 Performance Indicator Verification

- PINGP 1318B; MSPI Monthly Unavailability; Revision 1; dated July 2006 through September 2007
- PINGP 1615; Unit 1 Residual Heat Removal MSPI Monthly Data; Revision 0; dated July 2006 through September 2007
- PINGP 1621; Unit 2 Residual Heat Removal MSPI Monthly Data; Revision 0; dated July 2006 through September 2007
- PINGP 1612; Unit 1 Component Cooling MSPI Monthly Data; Revision 0; dated July 2006 through September 2007
- PINGP 1613; Unit 1 Cooling Water MSPI Monthly Data; Revision 0; dated July 2006 through September 2007
- PINGP 1618; Unit 2 Component Cooling MSPI Monthly Data; Revision 0; dated July 2006 through September 2007
- PINGP 1619; Unit 2 Cooling Water MSPI Monthly Data; Revision 0; dated July 2006 through September 2007
- PINGP 1319A; Performance Indicator Data Correction; Revision 0; dated October 23, 2006
- SP 1089A; Train A RHR Pump and Suction Valve From RWST Quarterly Test; Revision 12
- LCO Logs; Systems RH, CL, and CC; July 2006 through September 2007
- SOMS Narrative Logs; Search Criteria RH, CL, and CC; July 2006 through September 2007
- CAP 01116250; Failure to Initiate Level B CAP for MSPI Zero Margin
- CAP 01116251; Margin Review Board Not Convened to Address Low MSPI Margin

- FP-PA-PI-02 NRC and WANO Performance Indicator Reporting; Revision 3
- H33; Performance Indicator Reporting; Revision 8
- RPIP 1013; Occupational Radiation Safety Performance Indicators; Revision 3
- RPIP 3025; Chemistry Performance Indicator Reporting Instructions; Revision 2
- RPIP 4521; Monthly Effluent Release Offsite Dose Calculations; Revision 6

#### 4OA2 Identification and Resolution of Problems

##### Semiannual Trend Review

- CAP 01097037; CV-39409, 12/14 Fan Cooler Units Cooling Water Return Control Valve Shows Degrading Trend
- CAP 01097220; Negative Trend in Overdue CAPS
- CAP 01105051; Adverse Trend: Radiation Protection and Chemistry Not Following Some Fleet Procedures
- CAP 01109464; Trend Data Not Followed Up and Evaluated as Stated in RCE
- CAP 01111533; Out of Service Radiation Detectors
- CAP 01113211; Unexplained Elevated Background Levels in Unit 2 Containment
- CAP 01115384; Identified Need for Improved Contingency Planning
- CAP 01115685; Trend - Unauthorized Temporary Modification and Process Issues

##### Annual Sample

- CAP 01029185; Zebra Mussel Treatment - Post Job Critique Lessons Learned
- CAP 01064739; Zebra Mussels in U2 Circulating Water Bay Found During Inspection
- CAP 01065464; Intake Bay Zebra Mussel Accumulation
- CAP 01089713; Post Job Critique for Zebra Mussel Treatment
- CAP 01089806; Bioboxes Used to Determine Zebra Mussel Treatment Not Representative
- CAP 01090608; Zebra Mussel Treatment Had Two Issues Related To Safety
- CAP 01091706; Jockey Pump Clogged With Shells
- CAP 01098004; Evaluate Engineering Tasks Needed For a Fall 2007 Zebra Mussel Treatment
- CAP 01101125; Repeat Maintenance Issue with Jockey Pump Plugging
- CAP 01110448; Review Zebra Mussel Evaluation
- CAP 01114505; Zebra Mussel Populations In The River Are Increasing
- CAP 01118341; Zebra Mussel Population Increasing Dramatically
- CAP 01119331; Zebra Mussels Found On Cooling Water Pump Piping
- CAP 01120834; Evaluate Zebra Mussel Treatment To Include Cooling Water Pumps

#### 4OA3 Event Follow-up

- LER 1-07-01; Unit 1 Train B Emergency Core Cooling System Inoperable Longer Than Allowed by TSs Due to Inoperable Breaker; June 4, 2007
- LER 1-07-01, Supplement 1; Unit 1 Train B Emergency Core Cooling System Inoperable Longer Than Allowed by TSs Due to Inoperable Breaker; October 26, 2007
- CAP 01085806; Breaker 16-7, 12 Safety Injection Pump Breaker Inoperable
- LER 2-07-02; Emergency Diesel Generator Inoperable Longer Than Allowed by TSs Due to Loose Switch; December 7, 2007
- CAP 01114222; CS-60007, 22 Diesel Room Cooling Fan Failed to Start With D6
- LER 1-07-03; Unanalyzed Condition Due to Breached Fire Barrier
- CAP 01111082; Auxiliary Feedwater Pump Room to Turbine Building Trench Missing Appendix R III.G Barrier
- Operators Narrative Logs; December 20 through 21, 2007
- SP 1094; Bus 15 Load Sequencer Test; Revision 21



- SP 1306; D2 Diesel Generator Relay Functional Test; Revision 10
- Site Notice; Unit 1 Shutdown Due to Bus 15 Load Sequencer Failure; December 21, 2007
- Event Notification Worksheet; Event 43859; December 21, 2007
- CAP 01121937; Failure to Meet Surveillance Requirement 3.3.4.2 Makes Bus 15 Sequencer Inoperable
- CAP 01122129; During SP 1094 Bus 15 Received Error Code 103 Four Times.

#### 4OA5 Other Activities

- LER 1-07-01; Unit 1 Train B Emergency Core Cooling System Inoperable Longer Than Allowed by TSs Due to Inoperable Breaker; June 4, 2007
- LER 1-07-01, Supplement 1; Unit 1 Train B Emergency Core Cooling System Inoperable Longer Than Allowed by TSs Due to Inoperable Breaker; October 26, 2007
- CAP 01085806; Breaker 16-7, 12 Safety Injection Pump Breaker Inoperable
- CAP 01118628; CAP 01110686 TSC Ventilation Actuating Rod for MD-34602
- Work Request 30701; Troubleshoot MD-34602 Damper; completed November 21, 2007

#### 4OA7 Licensee-Identified Violation

- LER 1-07-01; Unit 1 Train B Emergency Core Cooling System Inoperable Longer Than Allowed by TSs Due to Inoperable Breaker; June 4, 2007
- LER 1-07-01, Supplement 1; Unit 1 Train B Emergency Core Cooling System Inoperable Longer Than Allowed by TSs Due to Inoperable Breaker; October 26, 2007
- CAP 01085806; Breaker 16-7, 12 Safety Injection Pump Breaker Inoperable

## LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
CAP	Corrective Action Program/Corrective Action Program Action Request
CFR	Code of Federal Regulations
DAW	Dry-Active Waste
DDCLP	Diesel-Driven Cooling Water Pump
DG	Diesel Generator
DOT	Department of Transportation
HRA	High Radiation Area
IMC	Inspection Manual Chapter
IR	Inspection Report
JPM	Job Performance Measure
LER	Licensee Event Report
LHRA	Locked High Radiation Area
LORT	Licensed Operator Requalification Training
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NMC	Nuclear Management Corporation, LLC
NRC	U.S. Nuclear Regulatory Commission
OPR	Operability Recommendation
PARS	Publicly Available Records
PI	Performance Indicator
PINGP	Prairie Island Nuclear Generating Plant
RCE	Root Cause Evaluation
RHR	Residual Heat Removal
RP	Radiation Protection
RPIP	Radiation Protection Implementing Procedure
RWP	Radiation Work Permit
SAT	Systems Approach to Training
SDP	Significance Determination Process
SI	Safety Injection
SP	Surveillance Procedure
TS	Technical Specifications
TSC	Technical Support Center
URI	Unresolved Item
USAR	Updated Safety Analysis Report
VHRA	Very High Radiation Area
WO	Work Order