

July 26, 2004

Mr. Daniel J. Malone
Site Vice President
Palisades Nuclear Plant
Nuclear Management Company, LLC
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR PLANT
NRC INTEGRATED INSPECTION REPORT 05000255/2004007

Dear Mr. Malone:

On June 30, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Palisades Nuclear Plant. The enclosed report documents the inspection findings which were discussed on June 30, 2004, with Mr. M. Carlson and other members of your staff.

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

Based on the results of this inspection, one finding of very low safety significance (Green) was identified, which was determined to involve a violation of NRC requirements. However, because the finding was of very low safety significance and because the issue has been entered into your corrective action program, the NRC is treating the violation as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violation, you should provide a response with a basis for your denial, within 30 days of the date of this inspection report, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 10, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Palisades facility.

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Sincerely,

/RA/

Eric R. Duncan, Chief
Branch 6
Division of Reactor Projects

Docket No. 50-255
License No. DPR-20

Enclosure: Inspection Report 05000255/2004007
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-255

License No: DPR-20

Report No: 050000255/2004007

Licensee: Nuclear Management Company, LLC

Facility: Palisades Nuclear Plant

Location: 27780 Blue Star Memorial Highway
Covert, MI 49043-9530

Dates: April 1 through June 30, 2004

Inspectors: J. Lennartz, Senior Resident Inspector
M. Garza, Resident Inspector
R. Alexander, Radiation Specialist

Approved by: E. Duncan, Chief
Branch 6
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000255/2004007; 04/01/2004 - 06/30/2004; Palisades Nuclear Plant; Problem Identification and Resolution (71152)

This report covers a 3-month period of baseline resident inspections and an announced baseline inspection in radiation protection. The inspections were conducted by the resident inspectors and a radiation specialist inspector. One Green finding with an associated Non-Cited Violation (NCV) was identified during the inspection. 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 3, dated July 2000.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

Green. The inspectors identified a finding of very low safety significance when licensee personnel failed to adequately review operating experience information. As a result, frazil ice formed on the intake crib in February 2003 which partially blocked flow from the ultimate heat sink to the intake structure. The finding was more than minor because the finding was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting events that upset plant stability and challenge critical safety functions during power operations. The finding was of very low safety significance because the risk significance of the sequences evaluated using the Significance Determination Process Worksheet for the Palisades Nuclear Plant were less than the 1E-6 Green-to-White threshold.

Corrective actions to address this issue included the removal of bar racks from the intake crib to create a large enough gap to minimize the potential for frazil ice to form; revising plant procedures to add alternate methods of supplying water to the intake structure; and implementing the Nuclear Management Company operating experience program fleet procedure at Palisades. One Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified. (Section 40A2.3)

B. Licensee-Identified Violations

None.

REPORT DETAILS

A list of documents reviewed within each inspection area is included at the end of the report.

Summary of Plant Status

The plant operated at or near full power during the inspection period with the following exception:

On April 29, 2004, Main Turbine Governor Valve #3 unexpectedly began to oscillate and plant power was reduced to 87 percent in order to close and isolate the valve in accordance with plant procedures. Licensee personnel subsequently determined that degraded wiring in the valve position control circuitry caused the valve to oscillate. After the degraded wiring was replaced, governor valve #3 was tested satisfactorily and returned to service. Plant power was subsequently raised to full power on April 30th where it remained for the remainder of the inspection period.

1. REACTOR SAFETY

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

1R04 Equipment Alignment

Partial Walkdowns (71111.04Q)

a. Inspection Scope

The inspectors performed partial equipment alignment walkdowns on the following three safety-related and risk significant plant components:

- West Engineered Safeguards High Pressure Air System and Compressor C-6B on May 11th when East Engineered Safeguards High Pressure Air Compressor C-6A was removed from service for planned maintenance;
- Emergency Diesel Generator 1-1 on April 14th when Emergency Diesel Generator 1-2 was in a planned maintenance outage; and
- Auxiliary Feedwater Pumps P-8A and P-8B on June 16th while Auxiliary Feedwater Pump P-8C was out of service for planned maintenance.

During the walkdowns, the inspectors verified that power was available, that accessible equipment and components were appropriately aligned, and that no discrepancies existed which would impact system availability.

The inspectors also reviewed selected condition reports related to equipment alignment problems and verified that identified problems were entered into the corrective action program with the appropriate significance characterization and that planned and completed corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Fire Area Walkdowns (71111.05Q)

a. Inspection Scope

The inspectors toured the following six fire areas in which a fire could affect safety-related equipment:

- Emergency Diesel Generator 1-1 Room, Fire Area 5;
- Spent Fuel Pool Room, Fire Area 17;
- 1C Switchgear Room, Fire Area 4;
- Southwest Cable Penetration Room, Fire Area 26;
- West Engineered Safeguards Room, Fire Area 28; and
- Engineered Safeguards Panel Room, Fire Area 15.

The inspectors verified that transient combustibles and ignition sources were appropriately controlled, and that the installed fire protection equipment in the fire areas corresponded with the equipment which was referenced in the Updated Final Safety Analysis Report, Section 9.6, "Fire Protection." The inspectors also assessed the material condition of fire suppression systems, manual fire fighting equipment, smoke detection systems, and fire barriers. In addition, the inspectors reviewed documentation for completed surveillances to verify that fire protection equipment and fire barriers were tested as required to ensure availability.

b. Findings

No findings of significance were identified.

1R06 Flood Protection (71111.06A)

a. Inspection Scope

The inspectors performed an inspection of equipment designated in the Updated Final Safety Analysis Report which required protection from flooding due to failures of nonsafety-related systems. Specifically, the inspectors verified the adequacy of internal flood protection features for the West Engineered Safeguards Room which contained Safety Injection Pumps P-66B and P-67B, Containment Spray Pumps P-54B and P-54C and Auxiliary Feedwater Pump P-8C.

The inspectors conducted walkdowns noting whether the following attributes associated with the West Engineered Safeguards Room existed:

- Holes or unsealed penetrations in floors, ceilings and walls;
- Common drain system and sumps, including floor drain piping;
- Operable sump pumps and level alarms; and
- Sources of potential internal flooding that were not analyzed or were not adequately maintained.

The inspectors also reviewed selected condition reports related to flood protection problems and verified that identified problems were entered into the corrective action program with the appropriate significance characterization and that planned and completed corrective actions were appropriate and implemented as scheduled.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

The inspectors observed licensee evaluators administer Job Performance Measures during annual requalification examinations to two licensed Reactor Operators on April 2, 2004. Three Job Performance Measures were administered in the simulator and two were administered in the plant. The inspectors assessed the operators' ability to use appropriate plant procedures to complete the following Job Performance Measure tasks:

- operate the steam-driven auxiliary feedwater pump from a remote shutdown panel;
- verify proper equipment alignment following a safety injection actuation signal;
- recirculate a boric acid storage tank for sampling;
- reduce station battery loading to less than 150 amperes; and
- isolate the "B" Steam Generator from outside the control room following an excessive steam demand event.

The inspectors verified that licensee evaluators did not provide inappropriate cuing when administering the Job Performance Measures to the operators and that the evaluators identified operator performance deficiencies. In addition, the inspectors verified that appropriate remediation training was developed to address identified performance deficiencies.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13Q)

a. Inspection Scope

The inspectors reviewed Operator's Risk Reports to verify that plant risk assessments were completed as required by 10 CFR 50.65(a)(4) prior to commencing maintenance activities. The inspectors reviewed the Operations Log and daily maintenance schedules to verify that equipment necessary to minimize plant risk was operable or available as required during planned and emergent maintenance activities. The inspectors also conducted plant walkdowns to verify that equipment necessary to minimize risk was available for use. The following five activities were reviewed:

- planned maintenance on March 30-31, to replace High Pressure Safety Injection Pump P-66B motor breaker;
- planned maintenance on April 13-17, to conduct refueling frequency preventive maintenance on Emergency Diesel Generator 1-2;
- emergent maintenance on April 29-30, for Main Turbine Governor Valve #3 which was oscillating because of degraded wiring in the valve position control circuitry;
- Auxiliary Feedwater System and Emergency Diesel Generator surveillance testing, and Emergency Diesel Generator 1-1 room ventilation damper repairs on May 23-28; and
- emergent maintenance on June 3-4, to replace High Pressure Safety Injection Pump P-66B secondary packing.

The inspectors also verified that condition reports related to emergent maintenance issues were entered into the corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Non-Routine Evolutions and Events (71111.14)

The inspectors completed two inspection samples pertaining to operator performance during the non-routine evolutions described below.

.1 Implementation of Off Normal Procedure

a. Inspection Scope

On April 29, 2004, the inspectors observed the control room operating crew response to excessive cycling of a main turbine governor valve which resulted in load swings on the turbine. The inspectors verified that the control room operators appropriately implemented necessary actions in accordance with Off Normal Procedure-9, "Excessive Load," to reduce turbine load and reactor power. The inspectors also reviewed primary plant computer data to verify that reactor power did not exceed any licensed power limits.

b. Findings

No findings of significance were identified.

.2 Partial Drain of Spent Fuel Pool

a. Inspection Scope

On May 18 through May 19, 2004, the spent fuel pool was drained approximately 5 feet for planned maintenance to replace the suction and discharge valves for the spent fuel pool cooling pumps. The inspectors observed the pre-evolution briefing to ensure that appropriate contingency actions had been developed if needed. The inspectors also verified that the operators appropriately implemented Special Operating Procedure-3, "Removal From Service Spent Fuel Pool Cooling System For Maintenance," to drain and refill the spent fuel pool.

The inspectors reviewed control room logs to verify that pre-defined limits on maximum allowed spent fuel pool temperature were not exceeded and that the spent fuel pool heat-up rate was as expected. In addition, the inspectors reviewed the associated radiological survey sheet to verify that radiation dose limits near the spent fuel pool were as expected while the spent fuel pool was partially drained.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspections Scope

The inspectors reviewed one permanent plant modification package that involved a Thermal Margin/Low Pressure trip setpoint change. The inspectors reviewed the design change information and the 10 CFR 50.59 screening evaluation to verify that the design bases, licensing bases and performance capability of the Thermal Margin/Low Pressure trip function was not degraded through this modification. The inspectors also reviewed the test documentation for the setpoint change to verify that the modification was implemented as described in the modification package. In addition, the inspectors verified that appropriate revisions were made to the affected plant procedures.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed post maintenance testing for the following six activities:

- corrective and preventive maintenance on High Pressure Air Compressor C-6A;
- corrective and preventive maintenance on Emergency Diesel Generator 1-2;
- preventive maintenance on Component Cooling Water Pump P-52A;
- corrective maintenance on High Pressure Safety Injection Pump P-66B;
- preventive maintenance on Diesel Driven Fire Pump P-9B; and
- corrective and preventive maintenance on Charging Pump P-55B.

The inspectors observed portions of the post maintenance testing and reviewed documentation to verify that the tests were performed as prescribed by the work orders and test procedures. The inspectors also verified that applicable testing prerequisites were met prior to the start of the tests and that the effect of testing on plant conditions was adequately addressed by the control room operators.

The inspectors also reviewed post maintenance testing criteria to verify that the test criteria and acceptance criteria were appropriate for the scope of work performed; reviewed completed tests and associated procedures to verify that the tests adequately verified system operability; and reviewed documented test data to verify that the data was complete and that the equipment met the prescribed acceptance criteria.

Further, the inspectors reviewed condition reports to verify that post maintenance testing problems were entered into the corrective action program with the appropriate significance characterization. For select condition reports, the inspectors verified that the corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed five surveillance tests which were conducted on the following risk-significant plant equipment:

- 'B' Safety Injection Tank;
- Primary Coolant System Loop 'C' Flow Instrumentation;
- Personnel Air Lock;
- Diesel Fire Pump Batteries; and
- Hot Shutdown Panel.

The inspectors observed portions of the testing to verify that appropriate test procedures were utilized. The inspectors also reviewed the documented test data for the Technical Specification Surveillance Test procedures and the associated basis documents to verify that testing acceptance criteria were satisfied.

In addition, the inspectors reviewed applicable portions of Technical Specifications, the Updated Final Safety Analysis Report, and design basis documents to verify that the surveillance tests adequately demonstrated that system components could perform required safety functions.

b. Findings

No findings of significance were identified.

1REP Equipment Availability, Reliability and Functional Capability (71111.EP)

.1 Quarterly Maintenance Effectiveness Reviews

a. Inspection Scope

The inspectors conducted a review of the maintenance effectiveness for Instrument Air Compressors C-2A and C-2C.

The inspectors reviewed the licensee's implementation of the maintenance rule requirements to verify that equipment failures were evaluated and appropriately dispositioned. The inspectors also verified that the selected components were scoped into the maintenance rule and properly categorized as (a)(1) or (a)(2) in accordance with 10 CFR 50.65.

The inspectors reviewed the licensee's maintenance rule performance indicators to verify that the equipment status had been appropriately categorized in accordance with the maintenance rule program; reviewed a sample of related condition reports written over the last six months to verify that the corrective actions for identified problems were appropriate; and reviewed completed work orders and work order histories to determine if there was an adverse trend in equipment performance that could be attributed to inappropriate work practices and to determine if there were any common cause issues that had not been addressed. Additionally, the inspectors reviewed the licensee's performance criteria to verify that the criteria adequately monitored equipment performance.

b. Findings

No findings of significance were identified.

.2 Operability Evaluations

a. Inspection Scope

The inspectors reviewed six operability assessments as documented in the associated condition reports for the following risk-significant plant equipment:

- Emergency Diesel Generator 1-1 (Condition Report CAP040293)
- Emergency Diesel Generator load shed capability (Condition Report CAP040945)
- Control Rod Drives CRD-19 and CRD-29 (Condition Report CAP041608)
- High Pressure Safety Injection Pumps P-66A, P-66B and Auxiliary Feedwater Pumps P-8C (Condition Report CAP041846)
- Containment (Condition Report CAP041841)
- Pressurizer Shed Fans (Condition Report CAP041964)

The inspectors interviewed the cognizant engineers and reviewed the supporting documents to assess the adequacy of the operability assessments for the current plant mode or past operability as applicable. The inspectors also reviewed the applicable sections of the Technical Specifications, Updated Final Safety Analysis Report, and design basis documents to verify that the operability assessments were technically adequate and that the components remained available, such that no unrecognized increase in plant risk had occurred.

In addition, the inspectors verified that the condition reports generated for equipment operability issues were entered into the licensee's corrective action program with the appropriate significance characterization and corrective actions.

b. Findings

No findings of significance were identified.

.3 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed documentation for one temporary modification which bypassed the lower bearing oil level alarm for Motor EMA-2104 on Primary Coolant Pump P-50C. The inspectors reviewed the 10 CFR 50.59 screening evaluation to verify that bypassing this alarm would not adversely impact safety-related equipment. The inspectors also conducted documentation reviews and plant walkdowns using the prescribed procedure attachment and plant drawings to verify that the modification was implemented as designed.

In addition, the inspectors reviewed a condition report to verify that it was entered into the licensee's corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

1EP6 Emergency Preparedness Drill Evaluation (71114.06)

a. Inspection Scope

On May 18, 2004, the inspectors observed an emergency preparedness training drill regarding a security event. The inspectors assessed the coordination between the on-site security personnel and the Shift Manager during implementation of the emergency plan in response to the simulated security threat information.

The inspectors verified that the Shift Manager classified the emergency condition and completed the required notifications to State and Local Police authorities as required by the emergency plan implementing procedures. The inspectors also reviewed the emergency preparedness drill report to verify that licensee evaluators appropriately identified performance deficiencies demonstrated by security and emergency response personnel during the drill.

In addition, the inspectors reviewed condition reports to verify that identified problems regarding emergency preparedness were entered in the licensee's corrective action program with the appropriate significance characterization. For select condition reports, the inspectors verified that planned and completed corrective actions were appropriate to address the problem and implemented in a timely manner commensurate with the safety significance of the issue.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed the licensee's physical and programmatic controls for highly activated and/or contaminated materials (non-fuel) stored within spent fuel or other storage pools. The inspectors reviewed the adequacy of these controls in that, if removed from the storage pools, the unshielded materials could create High Radiation Areas (HRAs) and/or Very High Radiation Areas (VHRAs).

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 High Risk Significant, High Dose Rate HRA and VHRA Controls

a. Inspection Scope

The inspectors held discussions with the Radiation Protection Manager concerning high dose rate-HRA and VHRA controls, including procedural changes that had occurred since the last inspection, in order to verify that installed modifications did not substantially reduce the effectiveness and level of worker protection.

The inspectors discussed with Radiation Protection (RP) supervisors the controls that were in place for special areas that had the potential to become VHRAs during certain plant operations, and to determine if these plant operations required communication beforehand with the RP group, so as to allow corresponding timely actions to properly post and control the radiation hazards.

The inspectors conducted plant walkdowns to verify the posting and locking of all accessible entrances to high dose rate-HRAs and VHRAs.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.3 Radiation Worker Performance

a. Inspection Scope

The inspectors reviewed six corrective action program reports 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 perspective matched the corrective action approach taken by the licensee to resolve the reported problems. These problems, along with planned and implemented corrective actions were discussed with Radiation Protection management.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Radiation Protection Technician Proficiency

a. Inspection Scope

The inspectors reviewed six corrective action program reports which found that the cause of the event was radiation protection technician error to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the plant Updated Final Safety Analysis Report (UFSAR) to identify radiation monitors associated with transient high and very high radiation areas including those used in remote emergency assessment. The inspectors identified the types of portable radiation detection instrumentation used for job coverage of high radiation area work, other temporary area radiation monitors currently used in the plant, continuous air monitors associated with jobs with the potential for workers to receive 50 millirem committed effective dose equivalent, whole body counters, and the types of radiation detection instruments utilized for personnel release from the radiologically controlled area.

The inspectors verified calibration, operability, and alarm setpoint (if applicable) of the following 12 instruments:

- Containment High Range Monitor;
- Spent Fuel Pool Area Monitor;
- Containment 649' Area Radiation Monitor (Refueling Isolation Monitor);
- Radwaste Demineralizer Roof Monitor;
- Portable Area Radiation Monitor in the East RadWaste Building (including its associated auto dialing function);
- Canberra FastScan Whole Body Counting System;
- Lapel Air Sampler;
- Neutron Survey Instrument (Rem-Ball);
- Ion Chamber Survey Meter;
- Electronic Dosimetry (DMC 2000);
- Telescan Meter; and
- Personnel Hand Friskers.

The inspectors determined what actions were taken to address instruments found significantly out of calibration or had failed source checks, including the potential consequences of instrument use since the last successful calibration or source check, and verified that the issue was entered into the licensee's corrective action program. The inspectors also reviewed the licensee's 10 CFR 61 source term reviews to verify that the calibration sources used were representative of the plant source term.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments and audits, as available, that involved personnel contamination monitor alarms due to personnel internal exposures to verify that identified problems were entered into the corrective action program for resolution. All event reports involving internal exposures greater than 50 millirem committed effective dose equivalent were reviewed to determine if the affected personnel were properly monitored utilizing calibrated equipment and if the data was analyzed, and internal exposures properly assessed in accordance with licensee procedures.

The inspectors reviewed corrective action program reports related to exposure-significant radiological incidents that involved radiation monitoring instrument deficiencies since the last inspection in this area. Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- 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 (NCVs) tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

The inspectors determined if the licensee's self-assessment activities were identifying and addressing repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.3 Radiation Protection Technician Instrument Use

a. Inspection Scope

The inspectors reviewed the calibration expiration and source response check information on radiation detection instruments staged for use to verify they were current, and observed radiation protection technicians for appropriate instrument selection and self-verification of instrument operability prior to use.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

Reactor Safety Performance Indicators

a. Inspection Scope

The inspectors used the definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2, to verify the accuracy of the data submitted for the following three performance indicators:

- Unplanned Scrams Per 7000 Critical Hours;
- Scrams with Loss of Normal Heat Removal; and
- High Pressure Injection System Unavailability.

The inspectors reviewed the data submitted by licensee personnel dated April 2003 through April 2004 to verify that the performance indicators were reported accurately. Regarding the high pressure safety injection pump unavailability time, the inspectors also reviewed logs and completed surveillances that were maintained by the system engineer to verify that data reported to the NRC was accurate.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that condition reports were being generated and entered into the corrective action program with the appropriate significance characterization. For select condition reports, the inspectors also verified that identified corrective actions were appropriate and had been implemented or were scheduled to be implemented in a timely manner commensurate with the significance of the identified problem.

.3 Selected Issue Follow-up Inspection

a. Inspection Scope

The inspectors reviewed one root cause evaluation regarding Condition Report CAP033437, "Received EK-1129 Service Water Bay Low Level Alarm," to verify that: (1) the problem was accurately identified; (2) the root and contributing causes were adequately justified; (3) extent of condition and generic implications were appropriately addressed; (4) previous occurrences were considered; and (5) corrective actions were appropriately focused to address the problem and implemented commensurate with the safety significance of the issue.

b. Findings

Introduction

The inspectors identified a finding of very low safety significance (Green) and an associated Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," when licensee personnel failed to adequately review operating experience information. As a result, frazil ice formed on the intake crib on February 16, 2003, which partially blocked flow from the ultimate heat sink to the intake structure resulting in an unplanned plant downpower.

Description

On February 16, 2003, at approximately 1:50 a.m., a service water bay low level alarm annunciated in the control room. Operators responded by taking the manual actions specified in Alarm Response Procedure 7 and Off-Normal Procedure 6.1, "Loss of Service Water." Operator actions included securing the largest service water load, the dilution water pumps, and lowering plant power level from 100 percent to approximately 90 percent which mitigated the lowering level in the service water bay.

Subsequent inspections by divers identified that two sides of the intake crib were encased in frazil ice. Consequently, flow from the ultimate heat sink, Lake Michigan, to the intake structure was reduced which caused the water level to lower in the service

water bay. This issue also resulted in an Unusual Event being declared which was terminated on February 19, 2003, after inspections were completed of the intake crib and intake piping which revealed that no frazil ice remained and that the intake crib and piping was not damaged.

The inspectors noted that the root cause evaluation referenced two industry operating experience reports that licensee personnel received regarding occurrences of frazil ice forming on intake cribs. These problems occurred at two separate power plants in January 2000 and December 2001, and in each instance the frazil ice partially blocked flow to the intake structures. However, licensee personnel in the operating experience program screened the reports with no actions required. Consequently, the operating experience reports were not evaluated for applicability to Palisades. The inspectors considered this as missed opportunities to develop effective corrective actions to preclude frazil ice from forming on the intake crib.

While no corrective actions were developed to preclude frazil ice from forming on the intake crib, the inspectors noted that licensee personnel had developed corrective actions from past problems where frazil ice formed on the traveling screens. The actions included enhanced operator training and a revision to plant procedures to mitigate the event. The inspectors concluded that those actions were effective in preventing a more significant event when frazil ice formed on the intake crib in February 2003. However, the corrective actions were not effective in preventing the event.

Analysis

The failure to evaluate industry operating experience regarding frazil ice forming on intake cribs was a licensee performance deficiency which warranted a significance evaluation. The Initiating Events cornerstone was affected. The inspectors determined that this finding was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," because the finding was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting events that upset plant stability and challenge critical safety functions during power operations since a downpower was required to address the event.

Specifically, industry operating experience regarding frazil ice forming on intake cribs was not evaluated for applicability to Palisades. Consequently, corrective actions were not developed to prevent a similar issue at Palisades and in February 2003, frazil ice formed on the intake crib. As a result, flow from the ultimate heat sink to the intake structure was partially blocked which resulted in a lowering water level in the service water bay and necessitated an unplanned power reduction.

The inspectors evaluated the finding using IMC 0609, "Significance Determination Process (SDP)," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening. The inspectors determined that the Initiating Events cornerstone was adversely impacted and that the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment would not be available. Specifically, a substantial loss of flow from the

ultimate heat sink to the intake structure due to frazil ice on the intake crib could result in a loss of service water. A loss of service water would necessitate a reactor trip due to a loss of cooling to the main generator and would also result in a loss of cooling to the component cooling water system. Consequently, High Pressure Safety Injection Pumps would lose cooling and were assumed to fail during recirculation. Therefore, a Phase 2 SDP analysis was performed.

Using the Loss of Service Water SDP Worksheet for the Palisades Nuclear Plant, the inspectors determined the risk significance for the two cut sets pertaining to a loss of service water event. In one cut set, the auxiliary feedwater system was available to mitigate the event and in the other cut set, operator action to secure the reactor coolant pumps was assumed successful which mitigated the event. As a result, the risk significance of the sequences evaluated were less than the 1E-6 Green-to-White threshold. Therefore, the inspectors concluded that the finding was of very low safety significance (Green).

Enforcement

10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires in part that measures be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to this, the failure in December 2000 and January 2001 to evaluate industry operating experience regarding frazil ice forming on intake cribs precluded the development of corrective actions to prevent a similar issue at Palisades. Consequently, on February 16, 2003, frazil ice formed on the intake crib which partially blocked flow from the ultimate heat sink to the intake structure. However, because this violation was of very low safety significance and because it was entered into the licensee's corrective action program, this violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy (NCV 50-255/2004007-01).

This issue was entered in the licensee's corrective action program as Condition Report CAP033437, "Received EK-1129 Service Water Bay Low Level Alarm." Corrective actions to address the root and contributing causes were developed and included the following:

- two sections of bar racks from the intake crib were removed during the winter of 2003-2004 to create a large enough gap to minimize the potential for frazil ice to block flow to the intake;
- Off Normal Procedure - 6.1, "Loss of Service Water," was revised to add alternate methods of supplying water to the intake structure;
- the service water bay low level alarm setpoint was revised from 574 feet to 575 feet 6 inches to provide the operators more time to respond to a lowering service water bay level; and
- System Operating Procedure - 15, "Service Water System," Attachment 10, "Frazil Ice Information/Prevention/Mitigation," was revised to include information about the potential for frazil ice to form on other components in the intake structure such as the service water basket strainers and fire pump suction strainers when environmental conditions were favorable for frazil ice formation.

A separate Condition Report, CAP034150, "Operating Experience Process Did Not Adequately Address Frazil Ice at the Intake Crib," was generated in March 2003 to address the failure of the operating experience program to evaluate relevant information. The condition report was subsequently closed to Root Cause Evaluation RCE000326, "Loss of Off-Site Power That Results in Loss of Shutdown Cooling," which was conducted to evaluate a loss of offsite power event which occurred on March 25, 2003.

A contributing cause to the loss of offsite power event was determined to be that the Operating Experience program was not sufficiently robust to process significant similar experiences that occurred at other facilities. (The loss of offsite power event is discussed in NRC Inspection Report 05000255/2004005.) Therefore, corrective actions to address the operating experience program failure to evaluate relevant information regarding frazil ice at the intake crib were developed from RCE000326.

Corrective actions pertaining to the Operating Experience program included the following:

- Palisades Administrative Procedure 3.16, "Industry Operating Experience Review," was canceled and NMC (Nuclear Management Company) fleet procedure, FP-PA-OE-01, "External Operating Experience," was endorsed for use and implemented at Palisades.
- Responsibilities of the licensee's Operating Experience Coordinator and the Operating Experience Administrative Specialist were combined with the Operating Experience Supervisor to ensure that the individuals who conducted operating experience pre-screening activities had adequate experience and training.

In addition to the finding, the inspectors noted one issue of minor significance regarding the planned effectiveness review for the corrective actions. Specifically, the Corrective Action Review Board had requested that the originally proposed effectiveness review be revised and returned at a later date for approval. One factor driving this decision documented in the root cause evaluation was "frazil ice blockage at the intake crib may not occur for a number of years due to environmental conditions necessary to initiate the event." Subsequently, an effectiveness review was developed and approved per corrective action CA019187 which stated, "evaluate the number of times the dilution pumps are secured due to lowering service water bay levels over the following winter (December 2003 through March 2004)."

However, the inspectors noted that there was no requirement to evaluate environmental conditions during the winter time frame to ascertain whether or not conditions were conducive for frazil ice formation. Consequently, if environmental conditions necessary for frazil ice formation never existed, then evaluating the number of times the dilution pumps were secured would not necessarily be a meaningful measure for the effectiveness of the corrective actions. Based on the inspectors comments, licensee personnel revised the effectiveness review to include an evaluation to determine if environmental conditions existed which were necessary for frazil ice to form.

4OA5 Other

.1 (Closed) URI 05000255/2003008-04: RGEM System Configuration May Not Obtain A Representative Gaseous Effluent Sample From The Plant Stack.

During the biennial Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems inspection in December 2003 (Section 2PS1.2 of NRC Inspection Report 05000255/2003008), the inspectors identified that the installed configuration of the sample piping between the isokinetic sampling head within the station's gaseous effluent stack leading and the Radioactive Gaseous Effluent Monitoring (RGEM) system radiological monitors contained at least four piping bends (i.e., elbows) of approximately 90 degrees each. The inspectors questioned what assurances there were that the piping configuration did not promote plate-out of iodines and particulates from the effluent stream and whether the system was obtaining a representative sample of the station's gaseous effluents as required by 10 CFR 20.1302. This was identified as an unresolved item (URI) pending the completion of the licensee's evaluation of this condition.

The licensee's evaluation addressed two aspects of this issue: (1) whether the RGEM system was installed in accordance with design documentation (circa 1983), and (2) what impact (in terms of radioactivity and dose consequences) did the installed configuration have on the system's ability to obtain a representative gaseous effluent sample.

Relative to the first issue, the licensee's Design Engineering staff evaluated the installation drawings as compared to the original design documents. The licensee determined that the RGEM system was not installed in accordance with the original design when elbows were used in the sampling line since the design documents required that changes in direction be accomplished by turn radii of no less than 2.5 times the diameter of the sampling line tubing. The licensee's current evaluation of station drawings determined that there were no locations where the diameter design requirement could not have been met. However, the licensee was unable to identify any engineering analyses (circa 1983) to justify the use of the 90 degree elbows.

In order to evaluate the second element of this issue, the licensee obtained the services of a recognized expert in the field of radiological effluents. This consultant evaluated the deposition/transmission of particulates and radioiodines within the RGEM sampling line utilizing NRC-endorsed and/or peer-reviewed empirical models and computer codes. In accounting for the physical characteristics of the RGEM sample piping and effluent flow rate, the consultant determined that particulate deposition in the sampling line would be approximately 3.4 percent. However, for the worst case conditions, radioiodine deposition in the RGEM sampling line would approach 33 percent. Therefore, since the installation of the RGEM system (July 1983), the licensee could have failed to identify up to 33 percent of the radioiodine contribution in its gaseous effluents.

In considering the potential public dose consequences that may have been underreported, the licensee reviewed the approximately 20 years of effluent data since the RGEM system installation. The greatest quantity of iodine released via

gaseous effluents in this period occurred in 1985 (approximately 0.017 curies per quarter). This release rate resulted in a maximum organ dose (to the child thyroid) of 0.159 millirem, or 1.06 percent of the 15 millirem per year limit for this effluent exposure pathway. However, adding in the consultant's worst case 33 percent "missed" iodine assumption, the licensee re-calculated the 1985 maximum organ (child thyroid) dose as 0.207 millirem, or 1.38 percent of the 15 millirem annual limit (i.e., an increase of 0.32 percent).

The licensee determined that the consultant's worst case iodine deposition was highly dependent on the total length of the sampling piping (in this case 37 meters), and the relative humidity of the effluent stream. Though not implicitly accounted for by the models, given that the RGEM sampling line was heat traced (and operability of the heat tracing is maintained), the relative humidity of the gaseous sample would remain low, and less radioiodines would plate out in the sampling line. The modeling determined that at 5 percent relative humidity, RGEM sampling radioiodine plate out would decrease to 11 percent (versus 33 percent). Additionally, the licensee compared weekly at-power radioiodine samples obtained for the 14 consecutive weeks prior to the RGEM system installation and for the 6 consecutive weeks after the RGEM system was installed, and found that the mean curies of iodines release in those time periods were not statistically different.

Therefore, based on the inspectors' independent review of the licensee's and consultant's evaluations and interviews with the licensee's staff, the inspectors determined that the licensee failed to install the RGEM sampling line per the design documentation which had the potential to impact the adequacy of the licensee's surveys of gaseous effluents. However, the worst case of 33 percent of the effluent radioiodines not being sampled resulted in a negligible impact on public dose. Additional data, such as the impact of heat tracing on the relative humidity, and sampling data before and after RGEM installation, indicates that the dose impact may be even less. As such, the inspectors determined utilizing Manual Chapter 0612, Appendix B, "Issue Screening," that this issue was of minor safety significance in that: (1) it could not be reasonably viewed as a precursor to a significant event; (2) it would not be a more significant safety concern if left uncorrected; (3) it did not involve a performance indicator crossing a threshold; and (4) while it may be associated with an attribute of the Public Radiation Safety cornerstone, it did not affect the cornerstone objective. However, given the new information developed in their evaluation, the licensee implemented corrective actions to address this issue by: (1) initiating an engineering analysis to document and justify the deviation from the RGEM design documentation; (2) modifying the offsite dose calculation methodology to account for the potential plate-out of radioiodines in the RGEM sampling lines; and (3) documenting the change in methodology and its potential dose impact since 1983 in the Palisades 2004 Annual Radioactive Effluent and Waste Disposal Report.

.2 (Closed) TI 2515/156: Offsite Power System Operational Readiness.

a. Scope

The inspectors collected data from licensee maintenance records, event reports, corrective action documents and procedures, and through interviews of station engineering, maintenance, and operations staff, as required by TI 2515/156. The data was gathered to assess the operational readiness of the offsite power systems in accordance with NRC requirements such as Appendix A to 10 CFR 50, General Design Criteria (GDC) 17; Criterion XVI of Appendix B to 10 CFR 50; Technical Specifications for offsite power systems; 10 CFR 50.63; 10 CFR 50.65(a)(4), and licensee procedures. Documents reviewed for this TI are listed in the attachment.

b. Findings

No findings of significance were identified. Based on the results of the inspection, no immediate operability issues were identified. In accordance with TI 2515/156 reporting requirements, the inspectors provided the required data to the headquarters staff for further analysis.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to members of licensee management on June 30, 2004. Licensee personnel acknowledged the findings presented. The inspectors asked licensee personnel 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:

- Occupational Radiation Safety - radiological instrumentation and access control programs inspection with Mr. D. J. Malone on May 21, 2004.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Malone, Site Vice President
P. Harden, Site Director
J. Beer, Technical Supervisor, Chemistry and Radiation Protection
T. Blake, Emergency Preparedness Supervisor
M. Carlson, Engineering Director
W. Doolittle, Supervisor/Shipper, Chemistry and Radiation Protection
G. Hettel, Plant Manager
L. Lahti, Licensing Manager
G. Packard, Operations Manager
D. Williams, Chemistry and Radiation Safety Manager

Nuclear Regulatory Commission

J. Stang, Project Manager, NRR
S. Klementowicz, Senior Health Physicist, NRR

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000255/2004007-01	NCV	Failure to Evaluate Operating Experience Information Precluded Implementation of Effective Corrective Actions For Frazil Ice at the Intake Crib
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Closed

05000255/2004007-01	NCV	Failure to Evaluate Operating Experience Information Precluded Implementation of Effective Corrective Actions For Frazil Ice at the Intake Crib
05000255/2003008-04	URI	RGEM System Configuration May Not Obtain A Representative Gaseous Effluent Sample From The Plant Stack

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 of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of documents 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

Plant Procedures

System Operating Procedure - 23, Attachment 10; Warm Weather Checklist, Checklist 1; Revision 18
System Operating Procedure - 22, Emergency Diesel Generators; Revision 36
System Operating Procedure - 24; Ventilation and Air Condition System; Revision 38

Condition Reports Reviewed to Assess Corrective Actions

CAP039606; PI-1345 Found Reading Abnormally High
CAP041046; Intake Structure Ventilation Supply Unit Failed on Full Recirculation
CAP039613; Minimum/Maximum Temperature Requirements for Screenhouse

1R04 Equipment Alignment

Plant Procedures

System Operating Procedure - 3, Attachment 10, Checklist 3.1; Engineered Safeguards System Checklist; Revision 57
System Operating Procedure - 20, Attachment 5; Engineered Safeguards System Air Operated Valve Operability Bands; Revision 21
System Operating Procedure - 20; High Pressure Control Air System; Revision 21
System Operating Procedure - 22, Attachment 8; Emergency Diesel Generator System, Checklist 22.1; Revision 36
System Operating Procedure - 12, Attachment 14; Auxiliary Feedwater System Checklist, Checklist 12.5; Revision 44
System Operating Procedure - 12, Attachment 15; K-8 Steam Supply Checklist, Checklist 12.6; Revision 44

Miscellaneous Documents

Piping and Instrument Diagram; M-225, Sheets 1 and 1A; High Pressure Air Operated Valves; Revisions 50 and 3
Piping and Instrument Diagram; M-207, Sheet 2; Auxiliary Feedwater System

Condition Reports Reviewed to Assess Corrective Actions

CAP040277; SOP-19, Instrument Air System, Does Not Have Enough Detail For Resetting a Tripped Compressor
CAP039656; #3 Startup Transformer Nitrogen Bottle Found Isolated

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP042163; Multiple Examples of Inadequate Valve Labeling

1R05 Fire Protection

Plant Procedures

ONP25.1; Off-Normal Procedure - Fire Which Threatens Safety-Related Equipment for Fire Areas 5, 17, 4, 26, 28, 15
FPSP-SI-1; Data Sheet for Alarm Bells and Ionization Smoke Detectors for Fire Areas 4, 17, 26, 28, 15
FPSP-RP-11; Fire Barrier Penetration Seal/Conduit Seal Inspection Form for Fire Areas 5, 17, 4, 26, 28, 15
FPSP-SO-2; Safety-Related Fire Door Data Sheet for Fire Areas 5, 17, 4, 26, 28, 15
FPSP-WP-1; Safety-Related Fire Door Data Sheet Fire Areas 5, 4, 26, 28, 15
FPSP-MO-1; Fire Suppression Water System Valve Alignment Verification Checkoff Sheet for Fire Area 5, 4, 26; Revision 5
FPSP-RO-9; Sprinkler Head Locations for Fire Areas 5, 4, 26; Revision 0
FPSP-AO-2; Fire Suppression Water System Fire Valve Operation Data Sheet for Fire Areas 5, 4, 26; Revision 3
FPSP-QO-2; Fire Protection Sprinkler System Water Flow Switch Alarm Check Sheet for Fire Areas 5, 4, 26; Revision 1
FPSP-RO-7; Inside Fire Hose Hydrostatic Pressure Test for Fire Area 17; Revision 2
FPSP-MO-2; Fire Hose Reel Station on and Fire Hose Rack Station Checkoff Sheet for Fire Area 17; Revision 0

Miscellaneous

Palisades Nuclear Plant Fire Hazards Analysis for Fire Areas 5, 17, 4, 26, 28, 15; Revision 5
EA-PSSA-00-001; Palisades Post Fire Safe Shutdown Summary Report; Revision 2
Section 9.6 of Final Safety Analysis Report; Fire Protection System; Revision 24
FPIP-4; Fire Protection Systems and Fire Protection Equipment; Revision 17
A-130; Palisades Plant Technical Specification for Painting; Revision 13

Condition Reports Reviewed to Assess Corrective Actions

CAP036139; Intake Structure Transient Combustibles 20 Foot Separation Zone
CAP034266; Need for FSAR Revision Missed in 50.59 Screening for FPIP-4 Change
CAP036340; Revise Security Fire Tour Post Order
CAP035426; Evaluate Process of Performing Required Hourly Fire Tours by Camera

CAP036139; Intake Structure Transient Combustibles 20-Foot Separation Zone is Unrestricted

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP042207; NRC Resident Identified Two Differences Between ONP 25.1 and EA-PSSA -001

1R06 Flood Protection

Condition Reports Reviewed to Assess Corrective Actions

CAP040235; Boot Seal In West Engineered Safeguards has a Hole in it
CAP040260; XJ-0430 Failed Watertight Barrier Inspection
CAP040413; XJ-0416 Failed Annual Watertight Barrier Inspection
CAP040412; XJ-0408 Failed Annual Inspection of Watertight Barriers
CAP040414; XJ-0420 Failed Annual Watertight Barrier Inspection
CAP040261; XJ-0431 Failed Watertight Barrier Inspection

Miscellaneous Documents

PPAC X-OPS014; Lube and Test Engineered Safeguards Sump Pumps P-72A and B and P-73A and B; February 29, 2004
Design Basis Document 7.08; Plant Protection Against Flooding; Revision 4
M-83; Plumbing and Drainage Drawing Plan at EL 570'; Revision 7
C-48; Auxiliary and Reactor Buildings Drawing Plans—EL 570'-590'
Proc No 4.02; Control of Equipment; Revision 24
SOP-3; Plant Flood Door System Checklist; Revision 57

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP041202; P-73A/A and P-72B Safeguards Sump Pumps Have Cracked/Loose Shaft Sleeves
CAP041199; Error Identified in Design Basis Document 7.08 "Protection Against Flooding"

1R11 Licensed Operator Requalification

Job Performance Measures

CVCS-JPM-03A; Recirculate a Boric Acid Storage Tank for Sampling; Revision 0
TBAR-JPM-04; Reduce Station Battery 1 to Less Than or Equal to 150 Amps; Revision 3
TBD-JPM-01; Outside Control Room B Steam Generator ESDE Isolation IAW EOP Supplement; Revision 0
TBAM-JPM-17; Operate P-8B Steam Driven Auxiliary Feedwater Pump From Panel C-150; Revision 0
SIS-JPM-04; Manually Initiate / Verify Safety Injection Actuation Signal; Revision 0

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

Operator's Risk Reports; March 30-31, April 14-17; April 29-30; May 23-28; June 3-4
Daily Maintenance Work Schedules; March 30-31, April 14-17; April 29-30; May 23-28;
June 3-4
Operations Log entries; March 30-31, April 14-17; April 29-30; May 23-28; June 3-4

Miscellaneous Documents

CV-0574 Governor Valve #3 Position Change Action Plan
Work Order 24420689; Emergency Diesel Generator 1-1
Administrative Procedure 4.02; Control of Equipment; Revision 24

Condition Reports Reviewed to Assess Significance Characterization and Corrective Actions

CAP041086; ENS Attempted to Perform Unscheduled Work in the Switchyard
CAP041294; Apparent Damage to Wiring for Governor Valve #3 LVDT
CAP041835; Smoke Coming From P-66B, HPSI Pump, During Testing
CAP041858; WW2423: Violation of Administrative Procedure 4.02, Section 9.9
Requirements for UHS

1R14 Operator Performance During Non-Routine Evolutions and Events

Plant Procedures

Off Normal Procedure - 9; Excessive Load; Revision 7
General Operating Procedure - 8; Power Reduction and Plant Shutdown to Mode 2 or
Mode 3; Revision 20
System Operating Procedure - 8; Main Turbine and Generating Systems; Revision 66
Special Operating Procedure - 3; Removal From Service SFP Cooling System for
Maintenance; Revision 8

Condition Reports Reviewed to Assess Significance Characterization for Identified Problems

CAP041303; ONP-9 Entry Required Related to Troubleshoot and Repair of No. 3
Governor Valve

1R17 Permanent Plant Modifications

EAR 2002-0384; Thermal Margin/ Low Pressure Trip Setpoint Change; Revision 0
Procedure Number 3.07; Palisades Nuclear Plant 50.59 Screen; Revision 13
QI-25; Thermal Margin Monitor Constant Checks; Revision 12

1R19 Post Maintenance Testing

Work Orders

24323190; Install New Motor Mount Base on Air Compressor C-6A; May 12, 2004
24420199; Perform Preventive Maintenance on C-6A; May 12, 2004

24323806; K-6B (Air Motor B) Starting Air Instrument; April 13, 2004
24323837; SV-1471, Replace SV-1471; April 14, 2004
24420702; Replace 4R Cylinder Head; April 14, 2004
24324503; 72-407, Test DC Breaker; April 14, 2004
24323965; Diesel Generator 1-2 to Bus 1D; April 13, 2004
24322975; Perform Selected Portions of EPS-M-14; April 13, 2004
24014967; Diesel Generator 1-2 K-6B Lube Oil Priming Pump; April 13, 2004
24420273; P-52A Coupling PM; May 27, 2004
24420188; Diesel Driver K-5 and Fire Pump P-9B; June 1, 2004
24322507; Replace Circ Water Temp Gauge and Element with New One; June 1, 2004
24420034; 'A' Start Solenoid Has Evidence of Corrosion on One Screw; June 1, 2004
24321736; Diesel Driven Fire Pump P-9B Battery Bank #2; June 1, 2004
24421565; High Pressure Safety Injection Pump P-66B; June 4, 2004
24323885; Charging Pump P-55B Discharge Safety Relief; June 10, 2004
24420885; P-55B Accumulator Pressure Test; June 10, 2004
24322727; 'B' Charging Pump; June 13, 2004

Plant Procedures

System Operating Procedure - 22; Emergency Diesel Generators, Revision 36
MO-7A-2; Emergency Diesel Generator 1-2; Revision 57
QO-15; Inservice Test Procedure—Component Cooling Water Pumps; Revision 20
MO-7B; Fire Water Pumps P-9A, P-9B, and P-41; Revision 28
QO-19; Inservice Test Procedure; High Pressure Safety Injection Pumps and
Engineered Safeguards System Check Valve Operability Test; Revision 23
QO-17; Periodic Test Procedure-Charging Pumps; Revision 19

Condition Reports Reviewed to Assess Corrective Actions

CAP030410; Weaknesses Identified in Post Maintenance Testing
CAP030659; Post Maintenance Testing
CAP038543; DG Breaker Close Permissive Relay Calibration PPAC Not Incorporated
CAP041757; Motor Coupling Found Loose on CCW Pump P-52A

1R22 Surveillance Testing

Completed Surveillance Test Procedures

MC-11B; Safeguards Boron Sample: Safety Injection Tanks
RI-1D; Reactor Coolant Flow Channel D Calibration; Revision 1
DWO-13; LLRT—Local Leak Rate Tests for Inner and Outer Personnel Air Lock Door
Seals; Revision 17
RO-127; Auxiliary Feedwater System, 18-month Test Procedure; Revision 5
FPSP-QE-1; Diesel Fire Pump Battery Surveillance; Revision 4

Miscellaneous Documents

MC-11B/C; Safeguards Boron Sample Technical Specification Surveillance Test Basis
Document

RI-1; Reactor Coolant Flow Calibration; Revision 6
DWO-13; Technical Specification Surveillance Test Basis Document for LLRT–Local
Leak Rate Tests for Inner and Outer Personnel Air Lock Door Seals;
SOP-3; Safety Injection and Shutdown Cooling Systems; Revision 57
RO-127; Auxiliary Feedwater System, 18-month Test Procedure Technical Specification
Surveillance Test Basis Document

Condition Reports Reviewed to Assess Corrective Actions

CAP040073; Potential Past Procedure Non-Compliance During RO-98
CAP030772; Potential Pre-Conditioning Concern for Emergency Diesel Generator
Surveillance Testing
CAP036361; Acid Corrosion Was Found in Diesel Fire Pump P-41 Batteries (Electrolyte)
CAP037354; P-41 Diesel Fire Pump Batteries

1REP Equipment Availability and Functional Capability

Maintenance Effectiveness

Plant Procedures

EGAD-EP-10, Maintenance Rule Scoping Document; Instrument Air System

Miscellaneous Documents

Maintenance Rule Performance Indicator Data; Instrument Air Compressors C-2A and
C-2C; Data through April 2004
Maintenance Rule Expert Panel Meeting Minutes; Proposed Removal of Instrument Air
Compressors C-2A/C From Maintenance Rule Category (a)(1); December 10, 2003

Condition Reports Reviewed to Assess Maintenance Rule Evaluations and Corrective Actions

CAP040265; Entered ONP-7.1, Loss of Instrument Air, When Instrument Air
Compressor C-2C Tripped
CAP039746; Received Alarm ED-1101, Containment Instrument Air Low Pressure,
Unexpectedly
CAP039406; Entered ONP-7.1, Loss of Instrument Air
CAP039286; Trip of Instrument Air Compressor C-2C
CAP039412; Instrument Air Compressor C-2A Trip on Low Oil Pressure
CAP039413; Instrument Air Compressor C-2A Trip on Low Oil Pressure
CAP041600; Instrument Air Compressor C-2C Maintenance Rule Unavailability Entries
Missed for January 2004 Events

Operability Evaluations

Condition Reports Associated with Operability Determinations

CAP040293, K-6A Diesel 1-1 #6 R Connecting Rod Bearing Found Potentially Installed
Wrong

CAP040945; RT-8C/RT-8D Do Not Adequately Test Load Shed Contacts Associated with Blocking Instrument Air Compressors
CAP041031; Failure to Consider EA-E-PAL-92-044 In Operability Determination (OPR000055)
CAP041608; Additional Information for Control Rod Drive CRD-19 and CRD-29 Tripability
CAP041846; Potential Non-conforming Condition on HPSI P-66A/B and AFW P-8C
CAP041841; Discrepancy Between Design Drawing and Calcs for 649 Containment Slab
CAP041964; Last Operating Pressurizer Shed Fan (V-61C) Tripped

Miscellaneous Documents

Letter from Fairbanks Morse to Palisades System Engineering; April 8, 2004
Ingersoll-Rand 'Sierra' Operation and Maintenance Manual; issued January 1, 2003
NEMA Standards Publication ICS 2-2000
EA-BHS-EQ-2002-01; Pressurizer Shed Cooling Fan Failures' Effects on Qualified Life of EEQ Equipment; Revision 2

Condition Reports Reviewed to Assess Corrective Actions

CAP032803; HPSI Pumps and AFW Pump P-8C Aux Packing Not Functional Due to Seal Configuration

Temporary Plant Modifications

TM-2003-26; Bypass Lower Bearing Oil Level Alarm for Primary Coolant Pump P-50C Motor EMA-2104
E-291, Sheet 3; Schematic on Annunciators for Primary Coolant Pump, Steam Generators and Control Rod Drives
M-214, Sheet 4; Piping and Instrumentation Diagram for Lube Oil, Fuel Oil and Diesel Generator System
Annunciator Response Procedure

Work Orders

24324214; Lower TIA-0147A Setting; September 19, 2003
24323215; Restore TIA-0147A Setting; September 19, 2003
24323216; Install Jumper to Bypass Input to Annunciator Window; September 19, 2003
24323217; Remove Jumper to Restore LIA-0147A to Normal; September 19, 2003

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP041095; Error in Fire Protection Evaluation of TM 2003-026

1EP6 Emergency Preparedness Drill Evaluation

Emergency Plan Implementing Procedures

EI-1; Emergency Classifications and Actions; Revision 42
EI-3; Communications and Notifications; Revision 19

Miscellaneous Documents

Palisades 2nd Quarter Exercise EP/Security Drill Report; May 18, 2004

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP041598; Security Accountability Report Not Working Properly

Condition Reports Reviewed to Assess Corrective Actions

CAP039699; Emergency Classification Notification Inaccuracy
CAP039470; Emergency Plan Notification Form Questions

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

Calibration of the Canberra FastScan WBC System at the Nuclear Management Company Palisades Nuclear Plant; dated March 21, 2004
CAP 036471; RIA-2301, Radwaste Service Corridor Monitor, Found Out of As-Found Tolerance; dated July 2, 2003
CAP 037195; RIA-1806 and RIA-1808, Containment Radiation Monitors, Downward Spike; dated August 24, 2003
CAP 040533; Potential Installation in Plant Equipment of 10 CFR Part 21; dated March 12, 2004
CE 007753; Area for Improvement - PM-7 Portal Monitor Alarm Set Point; dated December 8, 2003
EA-JBB-99-001; Plant Radionuclide Mixture and Calibration Sources; dated March 10, 1999
Electronic Dosimeter Calibration Reports for MGP DMC-2000, Serial Numbers 201905, 202838, 203604, and 204073; all dated May 13, 2004
FSAR Chapter 11; Radioactive Waste Management and Radiation Protection, Section 11.6; Revision 24
Health and Status Report, Radiation Monitoring; dated May 19, 2004
HP 2.8; Response to Unusual Radiological Occurrences; Revision 14
HP 6.8; Process Monitor Operational Check - Quarterly, Section 5.8; Revision 12
HP 9.13; Eberline Model RO-2/RO-2A and Model RO-20 Portable Ion Chambers; Revision 9
HP 9.13, Attachment 1; Certificate of Calibration - Eberline Model RO-2, Consumers Number 2325; dated May 18, 2004
HP 9.13, Attachment 1; Certificate of Calibration - Eberline Model RO-20, Consumers Number 1732; dated January 12, 2004
HP 9.15; Operation and Calibration of the Eberline Model 6112 Teletector and Xetex Model 330A Telescan; Revision 10

HP 9.15, Attachment 2; Certificate of Calibration - Xetex Model 330A Telescan, Instrument Number 45278; dated November 4, 2003
HP 9.19; Operation and Calibration of the Eberline Model ASP-1 with NRD-1 Neutron Rem-Meter; Revision 11
HP 9.19, Attachment 1; Certificate of Calibration for Eberline Model ASP-1 with NRD-1, Consumers Number 2574; dated September 30, 2003
HP 9.21; Ludlum Model 177 Ratemeter; Revision 5
HP 9.21, Attachment 1; Certificate of Calibration - Ludlum Model 177, Consumers Number 723; dated May 18, 2004
HP 9.44; SKC Universal Sample Pump, Models 224-PCXR3/224-PCXR4 (Lapel Air Sampler); Revision 3
HP 9.44, Attachment 1; Certificate of Calibration - SKC Universal Sample Pump, Models 224-PCXR3/224-PCXR4, Consumers Number 602221; dated March 9, 2004
HP 9.45; Operational and Functional Checks of Health Physics Portable Instrumentation; Revision 4
HP 9.65; Dosimeter Corp Area Monitor (AM-2) - Models 3090-3 and 3096-3; Revision 1
HP 9.65, Attachment 1; Dosimeter Corp 3096-3 Certificate of Calibration, Consumers Number 17392; dated January 14, 2004
HP 9.83; Calibration of the Eberline PCM-2 Personnel Contamination Monitor; Revision 0
Palisades Part 61 Isotopic Analysis Results Evaluated for Hard-to-Detect Nuclides; dated November 13, 2002
RI-86A-13; Spent Fuel Pool Area Monitor RIA-2313 Calibration; dated January 20, 2003
RI-86B-9; Fuel Pool Area Monitor RIA-5709 Calibration; dated September 25, 2003
RI-86E; Refueling Isolation Monitors Calibration; dated March 20, 2003
RI-86G; High Range Containment Monitor Calibration; dated April 9, 2003
RIA-I-3; Analog Area Radiation Monitors Calibration; Revision 4
RIA-I-4; Digital Area Radiation Monitors Calibration; Revision 8
RIA-I-9; Area Monitor Functional Check - For All Area Radiation Monitors; dated December 29, 2003
SA005086; SnapShot Self-Assessment Report - Radiation Monitoring Instrumentation; dated April 30, 2004

4OA1 Performance Indicator Verification

Miscellaneous Documents

NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 2
Administrative Procedure 3.09; NRC Performance Indicators for Unplanned Scrams and Unplanned Scrams with Loss of Heat Removal Per 7000 Critical Hours

Condition Reports Reviewed to Assess Corrective Actions

CAP038667; NRC Performance Indicator Database Not Corrected with Revised Data
CAP038969; Failure to Recognize Fault Exposure for NRC Performance Indicator

4OA2 Identification and Resolution of Problems

Corrective Action Program Documents

RCE000319; Root Cause Evaluation, Received EK-1129 Service Water Bay Low Level Alarm
CE004326; Condition Evaluation, OE Process Did Not Adequately Address Frazil Ice at Intake Crib
RCE000326; Root Cause Evaluation, Loss of Off-Site Power that Results in Loss of Shutdown Cooling

Miscellaneous Documents

Technical Specification 3.7.9 and associated basis; Ultimate Heat Sink Operating Experience 13882; Decline in Intake Forebay Water Level Due to Frazil Ice; December 30, 2001
Operating Experience 10714; Frazil Ice Caused Partial Blockage of the Circulating Water Intake Structure; January 19, 2001
Operating Experience 10793; Downpowers Due to Apparent Frazil Ice; February 12, 2000

4OA5 Other

Corrective Action Program Documents

CAP039097; Question Concerning Plant Stack Sample Line
CA022658; Plant Stack Sample Line
CE008189; Question Concerning Plant Stack Sample Line
ACE03217; Apparent Cause Evaluation, 2004 Palisades Focus Area - CAP Trending
CAP040636; Fire Protection and Appendix R Identified Potential Fire Tour Trend
CAP039731; ESS Pump Oil Leaks are Creating Housekeeping Issue
CAP041406; Potential Trend for Leaks on Emergency Diesel Generators
CAP040512; Potential Trend in Watertight Door Problems Due to Aging
CAP039988; Apparent Low Level Trend in Identification of Equipment Deficiencies by Non-Ops Personnel
CAP041359; Apparent Negative Trend in Traveling Screen (F-4B/F-4C) Nozzle Plugging

Miscellaneous Documents

Evaluation of Radioiodine and Particulate Deposition for the Radioactive Gaseous Effluent Monitoring System (RGEMS) Sample Line (Chesapeake Nuclear Services, Inc.); dated April 1, 2004
Station Trend Reports; 4th Quarter 2003 and 1st Quarter 2004
Maintenance Department Trend Report; May 2004
Operations Department Trend Report; May 2004
Systems and Reactor Engineering CAP Trend Review; March 1, through May 31, 2004

TI 2515/156, Offsite Power System Operational Readiness

Miscellaneous Documents

Palisades Interface Supplement to the Generator Interconnection Agreement Between Michigan Electric Transmission Company; as of April 1, 2001
Procedure Number 4.02; Control of Equipment; Revision 24
Procedure Number 4.28; Control of Palisades Switchyard Activities; Revision 0
SOP-8; Main Turbine and Generating Systems; Revision 66
SOP-30; Station Power; Revision 40
EGAD-EP-10; Maintenance Rule Scoping Document for the Switchyard; Revision 2
Regulatory Issue Summary 2004-05; Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power
RE-137/138; Technical Specification Surveillance Procedure Basis Document for Calibration of Bus 1C/1D Undervoltage and Time Delay Relays; Revision 1
RE-138; Calibration of Bus 1D Undervoltage and Time Delay Relays; Revision 2
RE-137; Calibration of Bus 1C Undervoltage and Time Delay Relays; Revision 2
Licensee Event Report 98-13; Safeguards Transformer Tap Changer Failure Causes Inadvertent Diesel Generator Start
Licensee Event Report 84-01; Loss of Communication
Licensee Event Report 87-24; Startup Transformer Failure Results in Loss of Offsite Power and Manual Reactor Trip
Licensee Event Report 92-32; Unplanned Actuation of the Right Channel of the Safety Injection System Relays While Performing a Technical Specification Surveillance Test
Licensee Event Report 03-03; Loss of Shutdown Cooling and Emergency Diesel Generator Start

Condition Reports Reviewed to Assess Corrective Actions

CAP037095; Grid Disturbance Experienced—Conditions/Alarms Received and Actions Taken
CAP037424; (OE) SEN-242—Loss of Grid Event, August 14, 2003
CAP041169; NRC RIS 04-5, Grid Reliability and the Impact on Plant Risk

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP041828; Reference Change Needed to EGAD-EP-10 Switchyard Maintenance Rule Scoping Data

Corrective Action Program Documents

CA022683; SOER 99-1 Recommendation 4 Review
CAP039045; Apparent Trend in Electrical System Grid Related Challenges to Plant Operations

LIST OF ACRONYMS USED

ADAMS	Agency-Wide Document and Management System
CAP	Corrective Action Program
CRD	Control Rod Drive
CFR	Code of Federal Regulations
GDC	General Design Criteria
HRA	High Radiation Areas
IMC	Inspection Manual Chapter
IR	Inspection Report
NCV	Non-Cited Violation
NMC	Nuclear Management Company
PARS	Publicly Available Records
RGEM	Radioactive Gaseous Effluent Monitoring
RIS	Regulatory Information Summary
RP	Radiation Protection
SDP	Significance Determination Process
TI	Temporary Instruction
URI	Unresolved Item
VHRA	Very High Radiation Areas
UFSAR	Updated Final Safety Analysis Report