



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

November 13, 2008

Mr. Christopher J. Schwarz  
Vice President, Operations  
Entergy Nuclear Operations, Inc.  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043-9530

**SUBJECT: PALISADES NUCLEAR PLANT INTEGRATED INSPECTION REPORT  
05000255/2008004**

Dear Mr. Schwarz:

On September 30, 2008, 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 October 14, 2008, with you and 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, three NRC-identified findings of very low safety significance (Green) were identified. The findings involved violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program (CAP), the NRC is treating the issues as Non-Cited Violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of these NCVs, 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, DC 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, DC 20555-0001; and the Resident Inspector Office at the Palisades Nuclear Plant.

C. Schwarz

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Sincerely,

**/RA/**

John Giessner, Chief  
Branch 4  
Division of Reactor Projects

Docket No. 50-255; 72-007  
License No. DPR-20

Enclosure: Inspection Report 05000255/2008004  
w/Attachment: Supplemental Information

cc w/encl: Senior Vice President  
Vice President Oversight  
Senior Manager, Nuclear Safety & Licensing  
Senior Vice President and COO  
Assistant General Counsel  
Manager, Licensing  
W. DiProfio  
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G. Randolph  
Supervisor, Covert Township  
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Michigan Department of Environmental Quality  
Michigan Office of the Attorney General

C. Schwarz

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05000255/2008004

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000255/2008004

Licensee: Entergy Nuclear Operations, Inc.

Facility: Palisades Nuclear Plant

Location: Covert, MI

Dates: July 1, 2008, to September 30, 2008

Inspectors: J. Ellegood, Senior Resident Inspector  
J. Giessner, Resident Inspector  
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Approved by: John Giessner, Chief  
Branch 4  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000255/2008-004; 07/01/2008 – 09/30/2008; Palisades Power Plant; Integrated Inspection Report; Radiological Environmental Monitoring Program and Radioactive Material Control Program; Other Activities.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three Green findings were identified by the inspectors. These findings were NCVs of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 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. NRC-Identified and Self-Revealed Findings

#### **Cornerstone: Mitigating Systems**

Green. The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of license condition 2.C.(3), Fire Protection, for failure to maintain a three hour barrier between two safety-related rooms. Specifically, the inspectors noted a through-wall crack in the three hour fire wall between the 1-1 and 1-2 diesel rooms. The licensee entered the issue in the corrective action program (CAP) as CR-PLP-2008-02696, and repaired the crack.

The finding is more than minor because it is associated with the protection against external factors (fires) attribute of the mitigating system cornerstone and affected the objective to maintain the reliability and capability of systems that respond to events to prevent undesirable consequences. In accordance with IMC 0609, Appendix F, Fire Protection SDP, the inspectors conducted a Phase I SDP screening. The inspectors determined the finding is of very low safety significance (Green), because the fire areas had fully functional, automatic water-based fire suppression, which provided adequate coverage in both rooms and no transient combustible loads were present in either room. (Section 4OA5.2)

Green. The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to protect the auxiliary feedwater (AFW) pumps from damage due to the loss of the condensate storage tank (CST) due to tornado born missiles. Specifically, the licensee used low CST level trips to protect the AFW pumps but the trips did not protect the pumps during certain severe weather conditions (tornado). This issue was entered into the licensee's CAP as CR-PLP-2006-00659 and CR-PLP-2006-00961; and the licensee has implemented compensatory actions to ensure the AFW function is available during severe weather.

The finding is more than minor because it impacted the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the objective to ensure availability, reliability and capability of the systems which respond to initiating events (namely tornado missiles). Based on a phase three significance determination, the senior risk analyst determined that because the condensate storage tank could

withstand tornado winds, the only risk to the tank was from tornado missiles. With the low frequency of tornado missiles, this screens as very low safety significance, green. (Section 4OA5.3)

**Cornerstone: Public Radiation Safety**

Green. The inspectors identified a finding of very low safety significance (Green) and associated NCV of Technical Specification (TS) 5.5.1 for the failure to revise the Off-Site Dose Calculation Manual (ODCM) to include the results from the 2007 annual land use census. Specifically, the results of the annual land use census were not evaluated to ensure that the Radiological Environmental Monitoring Program (REMP) continued to verify the impact of radioactive effluent releases to the environment and to sufficiently validate the integrity of the radioactive gaseous and liquid effluent release program. As corrective actions, the licensee will evaluate the procedure used to conduct the land use census. The licensee entered the issue into the CAP as CR-PLP-2008-03272.

This finding is more than minor because it affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain, in that, these conditions could result in reduced capability to detect potential impacts associated with this pathway. The finding was determined to be of very low safety significance because: 1) it was not a radioactive material control issue; 2) it did not involve the effluent release program; and 3) it was associated with the environmental monitoring program. The finding includes a cross-cutting aspect in the area of human performance, in that the licensee failed to have accurate and up-to-date procedures necessary to fully implement the REMP (H.2(c)). (Section 2PS3.2)

**B. Licensee-Identified Violations**

No violations of significance were identified.



## REPORT DETAILS

### Summary of Plant Status

The plant began the inspection period at or near 100 percent reactor power. On August 5, the licensee shut the plant down to repair a control rod drive mechanism with excessive leakage. The plant was restarted on August 9, 2008 and synchronized to grid on August 10, 2008. The plant attained 100 percent power on August 11, 2008 and remained at or near 100 percent for the rest of the inspection period.

### **1. REACTOR SAFETY**

#### 1R04 Equipment Alignment (71111.04)

##### .1 Quarterly Partial System Walkdowns

##### a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- 1-1 emergency diesel generator with the 1-2 emergency diesel generator not available
- Left train of containment spray with 'A' spray pump not available due to maintenance
- Left train of on-site electrical power with right train not available due to maintenance

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report (UFSAR), TS requirements, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

These activities constituted three partial system walkdown samples as defined in Inspection Procedure (IP) 71111.04-05.

##### b. Findings

No findings of significance were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

From September 4 through September 8, 2008, the inspectors performed a complete system alignment inspection of the auxiliary feedwater system to verify the functional capability of the system. This system was selected because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line-ups, electrical power availability, significant system pressure and temperature indications, component labeling, component lubrication, component and equipment cooling, hangers and supports. In addition, the inspectors checked operability of support systems and verified that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders (WOs) was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- 'D' electrical bus room
- Turbine building 608 foot mezzanine
- Turbine building 647 foot elevation turbine deck
- Electrical equipment room
- Control room ventilation room during a period of inaccessibility

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a

plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted five quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The inspectors performed a walkdown of the following plant area(s) to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Emergency diesel generator rooms, 'D' switchgear and cable spreading rooms

In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The specific documents reviewed are listed in the Attachment to this report.

This inspection constituted one internal flooding sample as defined in IP 71111.06-05.

b. Findings

No findings of significance were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's biofouling treatment of the service water system including potential impact to component cooling water heat exchangers and other service water components. The inspectors reviewed plant data and conditions to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. Finally the inspectors evaluated possible fouling of the ultimate heat sink which could result in common mode failures. The specific documents reviewed are listed in the Attachment to this report.

This inspection constituted one sample as defined in IP 71111.07-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On July 10, 2008, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- Instrument air system (currently in a(1) status)
- High pressure safety injection (HPSI)
- Nuclear instrumentation – excore (currently in a(1) status)

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following as appropriate:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted three quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Orange risk during forced outage;
- 'A' containment spray pump motor replacement coincident with safety related valve testing and control room chiller testing; and
- HPSI maintenance during switchyard work and control room chiller testing

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Documents reviewed are listed in the Attachment to this report.

These activities constituted three samples as defined by IP 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- 1-1 emergency diesel generator supply damper missing hardware;
- Potential bypass of containment sump strainers; and
- Spent fuel pool racks provide less neutron absorption than assumed in calculations.

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in

risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This inspection constituted three samples as defined in IP 71111.15-05.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

Permanent Plant Modifications

a. Inspection Scope

The following engineering design package was reviewed and selected aspects were discussed with engineering personnel:

- Replacement of 'B' service water (SW) pump

This document and related documentation were reviewed for adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design parameters, implementation of the modification, post-modification testing, and relevant procedures, design, and licensing documents were properly updated. The inspectors observed ongoing and completed work activities to verify that installation was consistent with the design control documents. The modification replaced the 'B' SW pump with a rebuilt pump from the vendor. The modification evaluated the impact on the service water flow analysis of record. The specific documents reviewed are listed in the Attachment to this report.

This inspection constituted one permanent plant modification sample as defined in IP 71111.18-05.

b. Findings

No findings of significance were identified.

## 1R19 Post-Maintenance Testing (71111.19)

### .1 Post-Maintenance Testing

#### a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Repairs to underground piping for tritium remediation;
- CV-3037 HPSI train cross-tie valve for oiler replacement;
- Letdown relief valve RV-2006 replacement;
- Reactor vessel head vent replacement PRV 1071;
- 'A' containment spray pump motor replacement;
- Emergency diesel generator 1-2 auto voltage adjuster cleaning;
- 'C' SW pump repack; and
- VC-11 chiller overhaul.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable):

- the effect of testing on the plant had been adequately addressed;
- testing was adequate for the maintenance performed;
- acceptance criteria were clear and demonstrated operational readiness;
- test instrumentation was appropriate;
- tests were performed as written in accordance with properly reviewed and approved procedures;
- equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion), and
- test documentation was properly evaluated.

The inspectors evaluated the activities against TS, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted eight samples as defined in IP 71111.19-05.

#### b. Findings

No findings of significance were identified.



1R20 Outage Activities (71111.20)

.1 Forced Outage Activities

a. Inspection Scope

The inspectors evaluated activities for a forced outage to replace control rod drive seals that began on August, 5, 2008, and continued through August 10, 2008. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule.

The inspectors observed plant shutdown activities for a forced outage which required a cool-down to mode five to replace control rod drive seal packages. The inspectors reviewed outage equipment configuration and risk management, electrical lineups, control and monitoring of decay heat removal, control of containment activities, and startup activities. The inspectors reviewed identification and resolution of problems identified during the outage. The inspectors conducted a containment walkdown inspection, monitored reactor start-up, and portions of power ascension. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one other outage sample as defined in IP 71111.20-05.

b. Findings

The issues associated with an unplanned orange risk condition and an inability to exit the containment are discussed in Inspection Report 05000255/2008-010 as part of a special inspection team inspection.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- Boron areal density testing of spent fuel pool (SFP) racks;
- Power range safety channel alignment – channel B;
- In-service testing 'A' auxiliary feedwater pump; and
- Control room chiller performance testing

The inspectors observed in plant activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were 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. The inspectors also observed if plant equipment calibration was correct, accurate, and properly documented; as-left setpoints were within required ranges; and the calibration frequencies were in accordance with TSs, the UFSAR, procedures, and applicable commitments.

The inspectors verified as applicable: that 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 frequencies met TS requirements to demonstrate operability and reliability; 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 and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers Code, and reference values were consistent with the system design basis. Where applicable the inspectors observed that:

- test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- 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 CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted three routine surveillance testing samples and one inservice inspection sample as defined in IP 71111.22, sections -02 and -05.

## **2. RADIATION SAFETY**

### **2PS3 Radiological Environmental Monitoring Program (REMP) And Radioactive Material Control Program (71122.03)**

#### **.1 Inspection Planning**

##### **a. Inspection Scope**

The inspectors reviewed the most current Annual Environmental Monitoring Report and licensee assessment results to verify that the REMP was implemented as required by TS and the ODCM. The inspectors reviewed the report for changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data. The inspectors reviewed the ODCM to identify environmental monitoring stations and reviewed licensee self-assessments, audits, Licensee Event Reports (LERs), and inter-laboratory comparison program results. The inspectors reviewed the UFSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation. The inspectors reviewed the scope of the licensee's audit program to verify that it met the requirements of 10 CFR 20.1101(c). The specific documents reviewed are listed in the Attachment to this report.

This inspection constituted one sample as defined in IP 71122.03-5.

b. Unresolved Item: ODCM Changes

The inspectors identified an Unresolved Item (URI) regarding changes to the ODCM with respect to environmental monitoring commitments in terms of sampling locations, monitoring and measurement frequencies. In some cases, the requirements that were last approved by the NRC in 1993 were no longer present in the current revision of the ODCM. Examples of the discrepancies included the discontinuation of drinking water (well) samples and a reduction of the frequency for vegetation samples. At the time of the inspection, the licensee could not provide evaluations or justification for the changes. The licensee indicated that an in-depth review of the current revision of the ODCM against the requirements last approved by the NRC would be completed. As part of the review, the licensee planned to locate any evaluations that had been previously performed to justify changes to the ODCM. As a result, the inspectors could not review the appropriate analyses or assess the evaluations justifying the changes. Therefore, this issue remains under review by the NRC and is categorized as an URI: URI 05000255/2008004-01, ODCM Changes.

.2 Onsite Inspection

a. Inspection Scope

The inspectors walked down more than 30 percent of the air sampling stations and approximately 10 percent of the thermoluminescence dosimeter (TLD) monitoring stations to determine whether they were located as described in the ODCM and to determine the equipment material condition.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors observed the collection and preparation of a variety of environmental samples (e.g., ground and surface water, milk, vegetation, sediment, and soil) and verified that environmental sampling was representative of the release pathways, as specified in the ODCM, and that sampling techniques were in accordance with procedures.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors verified that the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the UFSAR, NRC Safety Guide 23, and licensee procedures. The inspectors verified that the meteorological data readout and recording instruments in the control room and at the tower were operable. The inspectors compared readout data (i.e., wind speed, wind direction, and delta temperature) in the control room and at the meteorological tower to identify if there were any line loss differences.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors reviewed each event documented in the Annual Environmental Monitoring Report which involved a missed sample, inoperable sampler, lost TLDs, or anomalous measurement for the cause and corrective actions. The inspectors also conducted a review of the licensee's assessment of any positive sample results (i.e.,

licensed radioactive material detected above the lower limits of detection). The inspectors reviewed the associated radioactive effluent release data that was the likely source of the released material.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors reviewed significant changes made by the licensee to the ODCM as the result of changes to the land census or sampler station modifications since the last inspection. The inspectors reviewed technical justifications for changed sampling locations. The inspectors verified that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors reviewed the calibration and maintenance records for five air samplers. The inspectors also reviewed calibration records for the environmental sample radiation measurement instrumentation (i.e., count room). The inspectors verified that the appropriate detection sensitivities with respect to TS/ODCM were utilized for counting samples (i.e., the TS/ODCM required lower limits of detection). The inspectors reviewed quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance.

The inspectors reviewed the results of the REMP sample vendor's quality control program, including the interlaboratory comparison program, to verify the adequacy of the vendor's program and the corrective actions for any identified deficiencies. The inspectors reviewed audits and technical evaluations the licensee performed on the vendor's program. The inspectors reviewed audit results of the program to determine whether the licensee met the TS/ODCM requirements.

This inspection constituted one sample as defined in IP 71122.03-5.

b. Findings

Introduction: The inspector identified a finding of very low safety significance (Green) and an NCV of Technical Specification 5.5.1 associated with the failure to incorporate the annual land use census in the REMP.

Description: Technical Specification 5.5.1 required that the ODCM and its REMP be established, implemented, and maintained. ODCM Appendix A, Section J.3 defined the surveillance requirements for the REMP. Step c of this section provided requirements for the annual land use census, including that the results shall be incorporated in a revision of the ODCM for use in the following year.

The results from the 2007 land use census conducted by the licensee identified changes which included new milk producing animals and a new vegetable garden. The licensee did not revise the ODCM with these results. Additionally, the new milk producing animal location was substantially closer to the plant site than the farms currently in the milk sampling program. The current milk samples were obtained between seven and eleven miles from the site, which are locations that would not likely be impacted by site effluents. The new garden was also closer to the site than indicated in the existing

ODCM. In both of these cases the newly identified locations would provide a more appropriate indication of site impact on the environment.

Procedure No HP 10.11, "Land Use Census" Revision 3, was used to conduct the 2007 land use census at the Palisades Nuclear Plant. The data sheets were completed and the software used for the effluent program was modified with the results of the land use census. However, this procedure does not direct the user to evaluate the existing REMP locations against the results from the land use census to ensure that the REMP continues to verify the impact of radioactive effluent releases to the environment and to sufficiently validate the integrity of the radioactive gaseous and liquid effluent release program.

Analysis: The failure to implement TS environmental monitoring requirements is a performance deficiency, in that, requirements were not met by Palisades which were reasonably within its ability to foresee and correct and which should have been prevented.

The finding is not subject to traditional enforcement, in that, the finding did not have any actual safety consequence, did not have the potential for impacting the NRC's ability to perform its regulatory function, and was not willful.

The finding is greater than minor because it affected the Public Radiation Safety Cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain, in that these conditions could result in reduced capability to detect potential impacts associated with this pathway.

Using NRC Manual Chapter 0609, Appendix D, Public Radiation Safety Significance Determination Process, inspectors determined that this finding was of very low safety significance (Green) because: 1) it was not a radioactive material control issue; 2) it did not involve the effluent release program, and 3) it was associated with the environmental monitoring program.

As described above, the licensee's procedure for implementing the annual land use census does not provide the necessary guidance to instruct the user that further actions are required. Therefore, the finding has a cross-cutting aspect in Human Performance; specifically, Resources - complete, accurate and up-to-date procedures H.2(c).

Enforcement: TS 5.5.1 requires that the ODCM and its REMP be established, implemented, and maintained. ODCM Appendix A, Section J.3.c provides requirements for the annual land use census, including that the results shall be incorporated in a revision of the ODCM for use in the following year. Contrary to TS 5.5.1, as of July 31, 2008, the ODCM was not revised to include the results from the 2007 annual land use census. Specifically, the results of the annual land use census was not evaluated to ensure that the REMP continues to verify the impact of radioactive effluent releases to the environment and to sufficiently validate the integrity of the radioactive gaseous and liquid effluent release program. Because the failure to comply with TS 5.5.1 was of very low safety significance and was entered into the licensee's CAP as CR-PLP-2008-03272, the violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000255/2008004-02, Failure To Incorporate Results From The Annual Land Use Census.

### .3 Unrestricted Release of Material from the Radiologically Controlled Area

#### a. Inspection Scope

The inspectors observed several locations where the licensee monitors potentially contaminated material leaving the radiologically controlled area and inspected the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use to verify that the work was performed in accordance with plant procedures.

This inspection constituted one sample as defined in IP 71122.03-5.

The inspectors verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was calibrated with appropriate radiation sources. The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material and verified that there was guidance on how to respond to an alarm which indicates the presence of licensed radioactive material. The inspectors reviewed the licensee's equipment to ensure the radiation detection sensitivities were consistent with the NRC guidance contained in Circular 81-07 and Information Notice 85-92 for surface contamination and HPPOS-221 for volumetrically contaminated material. The inspectors verified that the licensee performed radiation surveys to detect radionuclides that decay via electron capture. The inspectors reviewed the licensee's procedures and records 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.

This inspection constituted one sample as defined in IP 71122.03-5.

#### b. Findings

No findings of significance were identified.

### .4 Identification and Resolution of Problems

#### a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, LERs, and Special Reports related to the REMP since the last inspection to determine if identified problems were entered into the CAP for resolution. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors reviewed corrective action reports concerning environmental monitoring, sample analysis, and meteorological monitoring instrumentation since the previous inspection, 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 NCVs tracked in the corrective action system; and
- implementation/consideration of risk significant operational experience feedback.

This inspection constituted one sample as defined in IP 71122.03-5.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System performance indicator (PI) for the period from the third quarter 2007 through the second quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC Integrated Inspection Reports for the period of third quarter 2007 through the second quarter 2008 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable Nuclear Energy Institute guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI emergency AC power system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Residual Heat Removal System PI for the period from the third quarter 2007 through the second quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, condition reports, MSPI margin reports, event reports and NRC integrated inspection reports for the period of third quarter 2007 through the second quarter 2008 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's condition report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI residual heat removal system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system specific activity PI for the period from the third quarter 2007 through second quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's reactor coolant system chemistry samples, TS requirements, issue reports, event reports, and NRC integrated inspection reports for the period of the third quarter 2007 through second quarter 2008 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a reactor coolant system sample. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one reactor coolant system specific activity sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.



.4 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Radiological Occurrences PI for the period from the third quarter 2007 through second quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if indicator related data was adequately assessed and reported. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic dosimetry dose rate and accumulated dose alarm and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one occupational radiological occurrences sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.5 Radiological Effluent TS/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent TS (RETS)/ODCM Radiological Effluent Occurrences PI for the period from the third quarter 2007 through second quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates between the third quarter 2007 through second quarter 2008 to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Additionally, the inspectors reviewed the licensee's historical 10 CFR 50.75(g) file and selectively reviewed the licensee's analysis for discharge pathways resulting from a spill, leak, or unexpected liquid discharge focusing on those incidents which occurred over the last few years. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one RETS/ODCM radiological effluent occurrences sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

**Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection**

.1 Routine Review of items Entered Into the CAP

a. Inspection Scope

As part of the various baseline IPs discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included:

- the complete and accurate identification of the problem;
- the timeliness was commensurate with the safety significance;
- the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and
- the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue.

Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the attached List of Documents Reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily CAP Reviews

a. Inspection Scope

In order to assist with the identification of issues, including repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished

through inspection of the station's daily condition report packages and/or attending daily screening meeting.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Unresolved Item for Unexpected Activity Through Turbine Building Monitor During Gas Release

During Condition Report (CR) review, the inspectors noted that CR-PLP-2008-03433 documented a situation in mode three where control room operators received an unexpected alarm from the condenser off-gas monitor RIA-0631 in the turbine building. The alarm was received about four minutes after commencing a waste gas decay tank release. The normal exhaust path for waste gas and other gasses with activity is up and out of the plant stack. The licensee initially evaluated the alarm as spurious and closed the CR during the Condition Report Review Group meeting. The inspectors reviewed historical charts of both the stack activity and the condenser off-gas activity and concluded that the alarm was not an electrical anomaly because the gas activity trends showed an increase of activity flowing to the turbine building during the release. The inspectors determined that if the flow of all gaseous activity was not out through the stack as assumed in the UFSAR, then there could be an impact on the site's dose calculations. The licensee wrote CR-PLP-2008-3626 and CR-PLP-2008-4104. The mechanism for activity to flow to the turbine building is not known and a review of the CR database revealed a similar occurrence in 2007. Until the cause evaluation of the activity flow to the turbine building and the impact on licensing basis dose calculations are completed and reviewed by the NRC, this item will remain an unresolved item: URI 05000255/2008004-03, Unexpected Activity Detected in Condenser Off-gas During Waste Gas Release.

.3 Selected Issue Follow-Up Inspection: Human Performance Improvement at Palisades

a. Inspection Scope

Based on a Substantive Cross-cutting Issue issued on March 3, 2008, the inspectors assessed the progress made by the site in improving human performance. The assessment included review of the site's detailed human performance plans, individual department plans and assessments by the site and quality assurance group. In addition, the inspectors reviewed the site's performance metrics as well as corrective action documents for the last nine months. In order to evaluate current human performance, the inspectors attended meetings, pre-job briefs, post-job briefs, infrequently performed tests and evolutions briefs, and monitored work in the field. Finally, the inspectors interviewed personnel involved with the improvement plan. The objective was to independently assess the site's performance in the area of human performance and compare it to the site's assessment.

b. Assessment:

Because of a Substantive Cross-cutting Issue documented in the 2007 End of Cycle report issued on March 3, 2008 and internal assessments by the licensee, the site updated their site human performance improvement plan to address the issues identified

by the NRC and their own staff. The plan included site wide high intensity training similar to what Operations had been through a year earlier for a significant event. All maintenance personnel have attended this training. The site has refresher training scheduled this quarter, as well as detailed oral interviews of the work force and supervisors to assess the sustainability of their effort. Ownership by line managers and supervisors has increased. At the various plant meeting, the managers and supervisors have discussed the importance of human performance and the most appropriate tools to be used for risk assessed tasks. In addition, there are more supervisors in the field for all disciplines e.g. maintenance, radiation protections, chemistry and operations. The site's metrics show a reduction in human performance errors. The licensee's Quality Assurance (QA) organization validated the reduction in errors.

When the inspectors reviewed the metrics for the human performance, they noted some inconsistencies which may contribute to a more optimistic assessment of performance. One metric, the site event clock for human performance, set a record for time between resets from December 27, 2007 to July 2008. The previous record was around four to five months. The inspectors reviewed data in that time since there were over ten findings during that time with cross-cutting aspects in the area of human performance, two plant trips and one Notice of Enforcement Discretion. The site's guidance is a fleet procedure EN-HU-101, Human Performance Program. The inspectors compared these issues against the program. The inspectors concluded three events could meet the threshold for site clock reset. The three events were: 1) failure to validate an emergency core cooling valve was in its safety position when it was declared inoperable on December 18, 2007 resulting in an LER; 2) a plant trip and licensee event report (LER) due to a loss of a main feed pump on January 13, 2008; and 3) the unplanned entry into the (Limiting Condition for Operations) LCO for one offsite power source inoperable which required a Notice of Enforcement Discretion on April 1, 2008. All the events had human performance as a major cause and all were findings by the NRC. The licensee acknowledged these examples as meeting their threshold for site clock resets and wrote CR-PLP-2008-03515 to address the issue.

The licensee also uses less significant human performance errors to trend performance and to take action to ensure high level events do not occur. These are binned by the licensee to department clock resets and non-consequential errors. The inspectors identified fifteen cases of an apparent human error that the licensee did not consider either a human performance error or department clock reset. In most cases, the inspectors did not attempt to distinguish between department clock reset and non-consequential human error since there was much overlap.

Overall for metrics, the inspectors were concerned that the threshold for considering human error using the guidelines in the site's procedure were not being applied consistently and were not focusing on identifying real precursors. For example, about one quarter of the 85 identified human errors for the first two quarters of 2008 were for items with low impact to the plant. These included missed training and not completing corrective actions on time. However, specific plant issues such as finding a valve out of position during surveillance, connecting a pressurized cylinder to the wrong line, or having the dry fuel storage canister immovable on the pad due to human performance issues were not considered human performance errors. After considering the issues that should have been included, the inspectors noted the significance and the number of errors is trending downward from first quarter of 2008. The site has made improvement in the human performance area.

Finally the inspectors reviewed the human performance health reports, a major program for continuous improvement at the site. The inspectors attended a meeting for the first quarter review for some departments. The program is new having been put in place within the last six months. The objective of the health reports appears reasonable: assess the performance against standards in key areas such as industrial safety, human performance errors, procedural use and adherence, organizational weakness, leadership effectiveness and post-job reviews. The data obtained from the coding of issues in the CAP discussed above, was evaluated against goals with actions plans established at the department level. The inspectors noted the licensee held the first quarter meeting with senior management 2-1/2 months after the first quarter was over. The delay limited the value of the discussion. Although some departments collected data on second quarter performance, the lists were not complete and some departments did not include data from the CAP. These departments missed an opportunity to identify performance issues and initiate corrective action. Security does not have a health report. Although, there were some good actions listed for some of the plans, the inspectors determined that, as they exist today, the human performance health reports had limited value. Nevertheless, the program has potential to assist the plant.

In summary, there has been improvement in the area of human performance especially in the performance of the front line supervisors, but the programs and plans in place to continue the improvement, assess the needed scope, and sustain it, have limited value.

c. Findings:

No findings of significance were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) LER 05000255/2008-003-00, Reactor Protection System and Auxiliary Feedwater Actuation

On May 23, 2008, with the plant at 100 percent power, an actuation of the main generator negative sequence relay caused the main generator output breakers to open, causing a turbine trip which actuated the reactor protection system to trip the reactor. As expected, the auxiliary feedwater system started on low level in the steam generators and level was restored. An offsite vendor could not duplicate the relay problem. The cause of the relay actuation could not be determined, but the licensee validated there was not a fault on the main generator. All safety system actuated as expected. The relay was replaced and retested satisfactorily. No additional safety issues were identified and the inspectors determined there were no findings associated with this event. This LER is closed.

This inspection constituted one sample as defined in IP 71153-05.

.2 (Open) LER 05000255/2008-004-00, Noncompliance with Technical Specification 4.3.1.1.b

On July 15, 2008 during testing of spent fuel pool storage racks to determine the efficacy of the rack's absorber, the licensee identified that the absorber did not meet acceptance criteria. The licensee established acceptance criteria based on assumptions used in the criticality analysis to support TS 4.3.1.1.b, criticality requirements. Because the

absorber does not meet acceptance criteria, the licensee does not comply with TS 4.3.1.1.b or 10 CFR 50.68(a)(4). In order to ensure the pool remains sub-critical, the licensee committed to the NRC to maintain controls on addition of fuel, reactivity, boron concentration, and pool temperature. The NRC issued a Confirmatory Action Letter, RIII-08-003, to acknowledge the condition and the controls. The inspectors reviewed the current pool inventory, soluble boron levels, and the licensee's analysis of the pool and concluded that the pool  $K_{eff}$  will remain below .95 with soluble boron and below 1 without soluble boron. Documents reviewed as part of this inspection are listed in the Attachment.

The inspectors noted that prior opportunities existed for the licensee to recognize the condition of the spent fuel pool racks but the licensee failed to adequately evaluate the racks. In 1988, the licensee identified that fuel could not be loaded into a storage location due to swelling of the rack. In 1992, the licensee discovered that a fuel bundle could not be removed from its storage location due to rack swelling. Between 1992 and 2008, additional rack swelling occurred; and as of September 2008, a total of eleven bundles are known to be stuck in the SFP and three additional locations are known to have swelling. Although the licensee consulted with the rack vendor, the licensee never identified the cause of the swelling nor understood the effects on absorption capability. In September 2007, the inspectors identified during daily condition report reviews that a storage location had swollen. After discussing the condition with the licensee and experts in Nuclear Reactor Regulation, the inspectors concluded additional testing was needed to determine the condition of racks and if actions were needed to ensure long term safety of the SFP. The licensee provided the inspectors with analysis that supported interim safety of the SFP. In response to the inspectors' inquiries, the licensee accelerated testing of a sample of the SFP racks to determine neutron absorption capability. The testing revealed that several panels did not meet minimum requirements for acceptability. In order to determine the regulatory and safety significance of this item, the licensee needs to complete analysis of the testing results and evaluate historical margins to criticality. Therefore, pending the licensee completion of this analysis, and our review of this analysis, this LER remains open.

This inspection constituted one sample as defined in IP 71153-05.

#### 4OA5 Other Activities

##### .1 Quarterly Resident Inspector Observations of Security Personnel and Activities

###### a. Inspection Scope

During the inspection period, the inspectors conducted random tours of the security alarm stations, security officer ready rooms and security officer response posts to observe security officer attentiveness. These tours and observations were conducted during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 Follow-up of Fire Barrier Deficiencies

a. Inspection Scope

In the second quarter of 2008, the inspectors identified a vertical crack in the three hour fire wall between the 1-1 and 1-2 diesel generator rooms. At the time, insufficient information existed to determine if the crack represented a performance deficiency that was more than minor. Subsequent information provided by the licensee supported a conclusion that the issue was more than minor.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of License Condition 2.C.(3), Fire Protection, during performance of a quarterly fire protection walkdown in accordance with IP 71111.05Q. During the walkdown, the inspectors located a 1/8" wide, eleven foot long crack in the three hour fire wall between the 1-1 and 1-2 diesel rooms.

Description: As part of the licensee's fire protection strategy, the licensee credits a three hour fire wall between the 1-1 and 1-2 diesel generator rooms. In order to ensure the wall maintains its three hour rating, the wall must be free of through wall cracks. However, the licensee identified the crack in 2002, but did not repair the crack. The inspectors independently identified the crack in 2008. After the inspectors informed the licensee of the crack, the licensee determined that the fire wall was impaired and entered the condition in the CAP. Subsequently, the licensee repaired the crack, thus restoring the fire barrier. The inspectors reviewed the fire barrier inspections conducted in procedure FPSP-RP-11 and determined the wall was last inspected in 2004 with no deficiencies noted. A functional fire suppression system existed in both diesel generator rooms.

Analysis: The inspectors determined that the failure to maintain the three hour barrier between two safety-related rooms was a performance deficiency that warranted a safety significance determination. The inspectors concluded that the finding was more than minor in accordance with IMC 0612 because the finding affects the Mitigating System cornerstone and it is associated with the attribute of protection from the external factor of fire. Specifically, the crack degraded the fire barrier function of the three hour fire wall. The inspectors discussed the finding with region based fire protection specialists and the Senior Reactor Analyst. The inspectors determined the finding represented a moderate degradation of a fire barrier. The inspectors determined the finding was of very low safety significance (Green) in accordance with Appendix F, task 1.3.2, because of the non-degraded sprinkler systems. Since the last inspection was conducted in 2004, the deficiency was not representative of current performance, therefore no cross-cutting aspect was assigned.

Enforcement: Renewed license DPR-20, License condition 2.C.(3), Fire Protection requires the licensee to implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility

and as approved in Safety Evaluation Reports dated 09/01/78. The fire protection program as described in the licensee's fire hazards analysis credits a three hour fire wall between the 1-1 and 1-2 diesel generator rooms. Contrary to this requirement, a crack developed in the wall that degraded the three hour fire barrier. Because this finding was entered into the licensee's CAP as CR-PLP-2008-02696, the violation is being treated as a NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000/2008003-04, Degradation of 3-hour Fire Barrier. The crack has been repaired.

.3 (Closed) URI 05000255/2006002-04, Non-conservative Auxiliary Feedwater Low Suction Trip Setpoints

a. Inspection Scope

During the first quarter of 2006, the inspectors identified an issue associated with potential non-conservative trip setpoints for AFW low suction pressure trips during severe weather (tornado). The item was entered into the corrective action process. This was an URI pending completion of an assessment by the licensee and review by the NRC. Current compensatory actions are in place to ensure the AFW safety function is maintained during tornado conditions. The inspectors reviewed the causal evaluations, current compensatory actions and planned corrective actions. This inspection closes URI 05000255/2006002-04.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to protect the auxiliary feedwater (AFW) pumps from damage due to the loss of the condensate storage tank (CST) due to tornado-borne missiles.

Description: While reviewing a surveillance procedure for the AFW low suction pressure trips, the inspectors discovered two items of concern with the setpoints of the low pressure suction trips. The setpoints are designed to remove the AFW pumps from service prior to being damaged if the CST is lost or damaged in a tornado. The licensing basis of the plant then credits manual operator action to align the safety-related water source, service water, to the suction of the AFW pumps which are then restarted to remove decay heat.

The first item concerns evaluation EA-FC-954-02, which is used to ensure the AFW pump is removed from service prior to unacceptable vortexing in the CST. The calculation for the setpoint for the low pressure suction trip includes the static height difference for the potential vortexing and subtracts off the head due to velocity effects (head loss and dynamic head). Although this is an accurate formula, the values of velocity used were based on a high AFW flow and would not be bounding under other circumstances where AFW flow could be lower. This non-conservative setpoint could result in the setpoint being lower than needed for the case of vortexing which may occur during a rapid loss to the tank during a tornado.

The second concern is related to the licensee's evaluation for the loss of the CST. Evaluation EA- SGK-02-001 was created to validate that an adequate water volume exists in the AFW suction pipe to ensure an air slug does not enter the pump before it



has stopped after the low pressure suction trip. The evaluation had potential non-conservatism present. One non-conservatism was that the coastdown time was assumed to be 3.5 seconds for the turbine driven AFW pump (P8-B). The most recent coastdown data shows the pump takes 23 seconds which indicates that more water would be pumped by the P8-B pump than assumed.

The inspectors concluded that during a tornado, winds and missiles could damage the CST in a manner that the low pressure trip may not remove the pump from service prior to ingestion of air or severe vortexing. This could damage the pump and impact heat removal function.

The licensee wrote AR 01014535 and AR 01017135 to document this issue and wrote an Operability Recommendation which determined the AFW pumps are Operable but Nonconforming. The licensee implemented compensatory actions to remove one of the three AFW pumps from automatic controls if weather conditions are favorable for a tornado. This action ensures survivability of an AFW pump until the issues could be resolved. The licensee's evaluation concluded that although not credited in the UFSAR, the condensate storage tank could withstand tornado winds and would survive. The analysis concluded that the tank is still susceptible to tornado missiles and that tornado missiles could impact survivability of the AFW pumps. The licensee plans to maintain the compensatory actions in place until permanent corrective actions are put in place. The licensee is performing modifications to resolve this issue.

Analysis: The inspectors determined that failure to ensure adequate protection for AFW pumps was a performance deficiency warranting further evaluation. The finding is more than minor because it impacted the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the objective to ensure availability, reliability and capability of the systems which respond to initiating events. Because the inadequate design impacted the ability of the AFW pumps to function during severe weather (namely tornado), the issue required a Phase Three screening in accordance with question five for Mitigating Systems, Table 4A, to Attachment 0609.04 for IMC 0609. The AFW pumps would survive due to wind loading on the CST, but would be impacted by tornado missiles.

The RIII Senior Reactor Analyst (SRA) performed a Phase Three Significance Determination for this finding. The inspectors determined that the scenario of concern is a tornado-generated missile which impacts the CST, rendering the CST unavailable, and causing loss of all of the AFW pumps.

The SRA performed an analysis assuming that a tornado of strength F2 or greater strikes Palisades and generates missiles which impact the CST, rendering it inoperable. An F2 tornado is characterized by wind speeds at a minimum of 113 miles per hour with the type of damage including generation of light object missiles. The SRA assumed that the tornado also causes a loss of offsite power.

The SRA used tornado data from the National Climatic Data Center for those Counties including and adjacent to Van Buren County (where Palisades is located). There were a total of 38 F2 or greater tornados in Van Buren County and its five adjacent counties in the last 58 years. The total (land) area of the counties was 3,567 square miles. Therefore, the initiating event frequency of a F2 or greater tornado striking a quarter

square mile around the site during plant operation (assumed 85 percent of the time), was estimated at 3.9E-5/yr.

Based on data from a 1978 Tornado Missile Risk Analysis Report sponsored by the Electric Power Research Institute supplied by the licensee, the SRA concluded that the probability of a damaging missile strike on the CST tank given a tornado was considerably less than 0.1. The SRA gave no credit for operator action to recover the AFW pumps during this scenario.

The SRA calculated a conditional core damage probability using NRC's Standardized Plant Analysis Risk SAPHIRE/GEM Model (Version 7.27) model for Palisades assuming that the tornado results in a weather-related loss of offsite power with common cause failure of all of the AFW pumps and no recovery. Under this condition, the calculated Conditional Core Damage Probability was 1.6E-1. The dominant core damage sequence involved successful reactor trip and actuation of emergency power, followed by failure of AFW and once-through-cooling (feed and bleed).

As a result, the Core Damage Frequency for this finding was calculated to be less than 1.0E-6. Therefore, this finding was best characterized as having very low safety significance (Green).

There is no cross-cutting aspect associated with this issue since the setpoints were established several years ago.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, Design Control, requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, as of July 29, 1995, the licensee did not adequately translate design basis information into a setpoint calculation for the AFW's low suction pressure trips. Specifically, calculation EA-FC-954-02 did not properly account for possible setpoints changes caused by different AFW flows. The licensee entered the finding into their CAP and is implementing compensatory actions. Because this violation was of very low safety significance and was entered into the licensee's CAP, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000255/2008004-05, Inadequate AFW low suction pressure trip setpoints. URI 05000255/2006002-04 is closed.

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On October 14, the inspectors presented the inspection results to C. Schwarz, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The results of the REMP and Radioactive Material Control Program inspection with the Site Vice President, Mr. C. Schwarz, on July 31, 2008.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

C. Schwarz, Site Vice President  
V. Beilfuss, Project Manager  
M. Sicard, Operations Manager  
J. Broschak, Engineering Director  
N. Brott, Emergency Preparedness Coordinator  
J. Burnett, RETS/REMP Specialist  
T. Davis, Operations Requal Supervisor  
B. Dotson, Regulatory Compliance  
T. Kirwin, Plant General Manager  
L. Lahti, Licensing Manager  
B. Nixon, Assistant Operations Manager  
T. Shewmaker, Chemistry Manager  
J. Ford, Corrective Action Manager  
C. Sherman, Radiation Protection Manager  
G. Sleeper, Assistant Operations Manager

#### Nuclear Regulatory Commission

J. Giessner, Chief, Branch 4

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

05000255/2008004-01	URI	ODCM Changes (2PS3.1)
05000255/2008004-02	NCV	Failure to incorporate results from the annual land use census. (2PS3.2)
05000255/2008004-03	URI	Unexpected Activity Through Turbine Building Monitor During Gas Release (4OA2)
05000255/2008004-04	NCV	Degradation of 3-hour Fire Barrier (4OA5)
05000255/2008004-05	NCV	Inadequate AFW Low Suction Pressure Trip Setpoints (4OA5)

### Closed

05000255/2008004-02	NCV	Failure to incorporate results from the annual land use census (2PS3)
05000255/2008-003-00	LER	Reactor Protection System and Auxiliary Feedwater Actuation (AOA3)
05000255/2008004-04	NCV	Degradation of 3-hour Fire Barrier (4OA5)
05000255/2008004-05	NCV	Inadequate AFW Low Suction Pressure Trip Setpoints (4OA5)
05000255/2006002-04	URI	Inadequate AFW Low Suction Pressure Trip Setpoints (4OA5)

### Discussed

05000255/2008-004-00	LER	Noncompliance with Technical Specification 4.3.1.1.b (4OA3)
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## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector 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.

### 1R04 Equipment Alignment

- SOP-3, Safety Injection and Shutdown Cooling, Revision 75
- SOP-4, Containment Spray, Revision 24
- M-204, System Diagram Safety Injection, Containment Spray and Shutdown Cooling, Sheet A Revision 7
- CR-PLP-2008-03596, Radiological Status Sheet For West Safeguard not Updated, August 21, 2008
- SOP-22, Emergency Diesel generators, Revision 45
- WO 51631376, RV-0783, RT-116 Setpoint Test, Valve Leaks By
- CR-PLP-2008-02153, ST-0512 and ST-0513 are not passing steam or condensate as expected, May 12, 2008
- SOP-12, Feedwater System, Revision 53
- M-205, Piping & Instrument Diagram Main Steam and Auxiliary Turbine Systems, Revision 66 Sheet 2
- M-207, Piping & Instrument Diagram Auxiliary Feedwater System, Revision 35 Sheet 2

### 1R05 Fire Protection

- Fire Hazard Analysis, Palisades Plant, Revision 7
- CR-PLP-2008-03508,
- CR-PLP-2008-3633, Door -15 to Mechanical Equipment Room Will Not Open, August 25, 2008
- CR-PLP-2008-3635, Fire Tour Inside HVAC/MER Can Not be Completed, August 25, 2008

### 1R06 Flood Protection Measures

- Design Basis Documents 7.08, Plant Protection Against flooding, Revision 5
- OE013823, Eternal Operating Experience Internal Flooding, May 27, 2005
- M89, Plumbing and Drainage Drawing, Areas 2-4-9, Revision 13
- M93, Plumbing and Drainage Drawing, Areas 6-7-8, Revision 12
- M84, Plumbing and Drainage Drawing, Areas 2, Revision 9
- M94, Plumbing and Drainage Drawing, Areas 3-4-5-6-9, Revision 12
- Palisades Plant SEP Topic IX-3, Station Service and Cooling Water System, Consumers Power Company letter August 25, 1992
- Planned Maintenance ID 50083994-02, Proof flow through Emergency Diesel Generator and 1D switchgear room, Revision 0
- WO51638335, D/G and D Bus Floor Drain Flow verification, performed August 14, 2008
- WO51619582, test operation of LS-5211, 5217,5218, September 26, 2006
- EA-C-PAL-95-1526-01, Internal flooding, Revision 3A
- CR-PLP-2008-03946, NRC Resident Issue with Turbine Building HELB and Cable Spreading Room, September 22, 2008
- CR-PLP-2008-03991, NRC Issues With Flow rate from 1D Switchgear Room Drain,

September 24, 2008

1R07 Heat Sink Performance

- SWSO-4, Special Operating procedure Molluscicide Treatment of Service Water and Fire Protection systems, Revision 12
- DBD-1.02, Service Water System, Revision 7
- WO00295941, SW Flow verification, August 22, 2007

1R11 Licensed Operator Regualification Program

- DEP form for Drill on July 10, 2008
- PL-OPS-SPE-064E, Training Material SGTR with LOCA, Revision 1
- EOP-1, Standard Post-Trip Actions, Revision 12

1R12 Maintenance Effectiveness

- EM-25, Maintenance Rule Program, Revision 6
- EN-DC-143, System Health Reports, Revision 8
- EN-DC-206, Maintenance Rule (a)(1) Process, Revision 1
- DBD-1.05, Compressed Air Systems, Revision 4
- System health Report, Instrument air System, 2<sup>nd</sup> Qtr 2008, Revision 0
- CR-PLP-2007-03423, Following the completion of CR-PLP-2007-3053, perform an (a)(1) evaluation of the Instrument air Compressors C-2A, C-2B, and C-2C, August 23, 2007
- CR-PLP-2007-03165, Entered ONP-7.1 Loss of Instrument Air, March 03, 2008
- CR-PLP-2007-05474, Negative trend in Instrument air Compressor (IAC) Performance, October 26, 2007
- CR-PLP-2008-01253, Recent problems with instrument air lines, August 23, 2007
- CR-PLP-2008-03499, incorrectly transferred information to the Maintenance Rule data base, August 13, 2008
- DBD-2.02, High-Pressure Safety Injection System, Revision 8
- System Health Report, High Pressure Safety Injection , 1st and 2nd Qtr 2008, Revision 0
- Maintenance Rule Evaluation for CR-PLP-2008-01392 & CR-PLP-2008-01376, 152-207 (P-66A supply breaker) rear MOC switch bayonet operator with broken welds
- QO-19, Inservice Test Procedure – HPSI Pumps and ESS Check Valve Operability Test, performed November 07, 2007
- EN-DC-310, Predictive Maintenance Program, Revision 3
- EM-20, Performance Monitor, Revision 13
- EGAD-EP-10, Maintenance Rule Scoping Document, Revision 5
- CR-PLP-2006-04476, High Pressure Injection System Placed in Maintenance Rule (a)(1), September 15, 2006
- CR-PLP-2006-03508, Adverse trend in HPSI System Equipment Performance since August 2003, July 10, 2006
- CR-PLP-2007-00265, CK-ES3131 HPSI Check Valve (loop 2A) unseated during QO-1PIC-0347, January 19, 2007
- CR-PLP-2007-01419, Inadequate PMT performed on HPSI pump P-66A, March 28, 2007
- SOP-35, Neutron Monitoring System, Revision 15
- System Health Report, Neutron Monitoring System, 3<sup>rd</sup> Qtr 2007 to 2<sup>nd</sup> Qtr 2008, Revision 0
- CR-PLP-2007-05866, Wide Range Plasma display for NI-2/4A on EC-06 panel is out, November, 16, 2007

- CR-PLP-2007-06076, NI2/4A Plasma indications for Source Range Log and Rate, Wide Range Rate have extinguished, November 16, 2007
- CR-PLP-2008-01939, Maintenance Rule Performance Criteria for the Neutron Monitoring System NMS-NMS has been exceeded, May 10, 2007
- CR-PLP-2007-06128, Late identification of TS LCO entry, December 4, 2007
- CR-PLP-2008-02789, The plasma display indication for Source Log on NI-2/4A was periodically flashing bright, July 6, 2007
- RI-62B, Power Range Safety Channel Alignment – Channel B, performed August 20, 2008

### 1R13 Maintenance Risk Assessments and Emergent Work Control

- GOP-14, Shutdown Cooling Operations, Revision 34
- Work Week Schedule 0834
- RT-202, Control Room HVAC Heat Removal Capability, Revision 9
- Work Week Schedule 0839
- CR-PLP-2008-04056, Work week scheduling issues with HPSI and protected train, September 30, 2008

### 1R15 Operability Determinations

- CR-PLP-2008-03200, D-27 Vane Missing Hardware, July 28, 2008
- CR-PLP-2008-03154, Non-conservative use of CASMO-4, July, 21, 2008
- CR-PLP-2008-03067, Preliminary Results of Badger Testing, July 15, 2008
- CR-PLP-2008-03287, Additional Potential Flow paths to Containment Sump Found, July 31, 2008
- Reasonable Expectation of Operability form (REO) for CR-PLP-2008-03287, July 31, 2008
- CR-PLP-2008-03500, packing leak from P-8B AFW Pump Is Less Than Required, August 18, 2008

### 1R18 Plant Modifications

- EC-334, Equivalency Evaluation, Service Water Pump P-7B, Revision 0
- DBD-1.02, Service Water System, Revision 7
- WO00295941, SW Flow verification, August 22, 2007
- CR-PLP-2007-04949, RO-216 SW Flow balance Issue, October 6, 2007
- CR-PLP-2007-4944, Acceptance Criteria Not Met, October 6, 2007
- RO-216, Service Water Flow Verification, Revision 9
- EC-10915, Evaluation of Technical Specification Surveillance Test O-133 test results for Service Water Pump P-7A, Revision 0
- EA-C-PAL-99-1209B, generation of Flow rate Acceptance Criteria for Technical Specification Test RO-216, Revision 1

### 1R19 Post Maintenance Testing

- Welding Inspection Checklist for T-91(WO 51634010), July 15, 2008
- Welding Inspection Checklist for RO-5204 (WO 5164010), July 2, 2008
- Welding Inspection Checklist for MV-DMW0706 (WO 153775), July 18, 2008
- 08-MAO-14, Liquid Penetrant Test MV-DMW706, July 1, 2008
- 08-MAO-09, Liquid Penetrant Test T-91, June 13, 2008
- 08-MAO-15, Liquid Penetrant Test Report RO 5204, July 1, 2008
- 08-MAO-16, Liquid Penetrant Test Report July 2, 2008



- 08-MAO-17, Liquid Penetrant Test Report, July 2, 2008
- 08-MAO-18, Liquid Penetrant Test Report, July 11, 2008
- 08-MAO-19, Liquid Penetrant Test Report, July 11, 2008
- 08-MAO-21, Liquid Penetrant Test Report, July 18, 2008
- 08-MAO-22, Liquid Penetrant Test Report, July 18, 2008
- 08-MAO-23, Liquid Penetrant Test Report, July 18, 2008
- WO0150915, CV-3037 Lubricator Rebuild, July 30, 2008
- QO-5, Performed on July 30, 2008 for CV 3037
- WO51624500, P-54A Spray Pump Motor Replacement, August 26, 2008
- ESS-E-36, Component Cooling and Containment Spray Motor Replacement, Revision 6
- Administrative Procedure No. 5.19, Post Maintenance testing, Revision 13
- ESS-M-6, containment Spray Pump P-54A, P54B and P54C Maintenance, Revision 15
- Engineering change EC7714, Spare Containment Spray Motor Rewind Equivalency and EQ File, July 1, 2008
- WO0150915, CV-3037 Lubricator Rebuild, July 30, 2008
- WO 51634848, PRV-1071 leakage, August 7, 2008
- RO-112, Reactor Head vent Flow, Revision 7
- WO-51625203, VC-11 Overhaul, September 5, 2008
- MO-7A-2, Emergency Diesel Generator 1-2, Revision 67, August 8, 2008
- Work Order EN-WM-105, G1-2/AVM Potentiometer, July 29, 2008
- CR-PLP-2008-03148, High Oil Filter D/P, July 21, 2008
- CR-PLP-2008-03905, High Oil Filter D/P, September 18<sup>th</sup>, 2008
- CR-PLP-2008-03876, Work Instruction for WO # 51624309-01 Incorrect and needed revision, September 15, 2008
- ARP-20B Diesel Generator 1-2 Scheme EK-30, Revision 2, November 27, 2007
- WO 00160291-01, F-92, K-6B, Change Out Filter, September 17, 2008
- CR-PLP-2008-03770, PMT issues on VC-11, September 5, 2008
- WO51625069, VC-10 Overhaul, September 9, 2008
- WO-51625203, VC-11 Overhaul, September 9, 2008
- WO-51644471, P-7C Repack Service Water Pump, September 17, 2008
- QO-14, In-service Test Procedure - Service Water Pumps, Revision 29, February 8, 2008
- CR-PLP-2007-04448, Flaw in Critical Service Water Line HB-23, September 25, 2007
- CR-PLP-2008-03928, P-7C shaft wear, September 29, 2008

#### 1R20 Outage Activities

- GOP-3, Mode 3 greater than 525F to Mode 2, Revision 26
- WO 00153247, RV-2006 Leaking Past Seat to Quench Tank (Forced Outage)
- MSM-M-65, Pipe Flange Joint Disassembly, Inspection, and Assembly Using Spiral Wound Gaskets, Revision 2
- CR-PLP-2008-03328, During the plant shutdown on 8/5/08, the plant exceeded PCS Unidentified Leakage, August 5, 2008
- CR-PLP-2008-03422, During forced outage 1F2003CS As-Left engineering walkdown a Severity Level 3 leak was discovered at RV-2006, August 9, 2008

#### 1R22 Surveillance Testing

- RI-62B, Technical Specification Surveillance Test for Power Range Safety Channel Alignment Channel B, performed August 20, 2008
- C-PAL-98-0205, Shield Wires for NI recorder and CFMS Outputs Not Grounded, May 9, 1998
- RT202, Control Room HVAC Heat Removal Capability, Revision 9

- DBD-1.03, Auxiliary Feedwater System, Revision 7
- QO-21, Inservice Test Procedure – Auxiliary Feedwater Pumps, Revision 35, performed September 8, 2008
- CR-PLP-2008-01166, RV-0783, P-8A/B Aux Pumps Discharge, leaks by at 1 gallon per 5 minutes,
- CR-PLP-2008-00463, Control Room received alarm EK-0160, Feedwater Pumps Low Suction, during performance of QO-21 testing for MDAFW pump P-8C, January 30, 2008
- CR-PLP-2008-03993, RT-202 Control Room HVAC Heat Removal test Do Not Account For Hot gas Bypass Flow, September 24, 2008

2PS3 Radiological Environmental Monitoring Program And Radioactive Material Control Program (71122.03)

- Offsite Dose Calculation Manual, Revision 20
- Offsite Dose Calculation Manual, Appendix A, Relocated Technical Specifications per NRC Generic Letter 89-01 (TAC NNO 75060), Revision 12
- Procedure No HP 10.10, Palisades Radiological Environmental Program Sample Collection and Shipment, Revision 10
- Procedure No HP 10.10, Palisades Radiological Environmental Program Sample Collection and Shipment, Revision 11
- Procedure No HP 10.1, Radiological Environmental Monitoring Program Surveillance, Revision 11
- Procedure No 1.14, Meteorological Monitoring Program, Revision 3
- Procedure No 10.11, Land Use Census, Revision 3
- Procedure No EM-33, Meteorological Monitoring System, Revision 0
- EN-RP-121, Radioactive Material Control, Revision 3
- O2C-PAL-2007-0141, Quality Assurance (QA) Observation of Temporary Radioactive Material Area (RMA) Boundaries in Support of Refueling Outage (RO19)
- QA-6-2007-PLP-01, Offsite Dose Calculation Manual Observations during Effluents and Environmental Monitoring Audit
- Palisades Plant – Radiological Effluent Technical Specifications (RETS) – Errata to Amendment No. 154 to Facility Operating License No. DPR-20 (TAC No. M75060), July 1, 1993

40A1 Performance Indicator Verification

- Palisades Nuclear Plant, MSPI Basis Document, June 26, 2008
- MSPI notebooks, palisades Plant for RHR 3<sup>rd</sup> quarter 2007 through 2<sup>nd</sup> quarter 2008
- MSPI notebooks, palisades Plant for Emergency AC sources 3<sup>rd</sup> quarter 2007 through 2<sup>nd</sup> quarter 2008
- Narrative log searches for RHR and EMERGENCY DIESEL GENERATOR systems 3<sup>rd</sup> quarter 2007 through 2<sup>nd</sup> quarter 2008
- CR-PLP-2008-00822, Broken Spring Lock On Inboard Exhaust Valve on 2L cylinder of 1-2 Emergency Diesel Generator, Revision 0
- EN-LI-14, Performance Indicator Process, Revision 3
- NRC Indicator Occupational Exposure Control Effectiveness (OR-01), July 2007 through June 2008
- NRC Indicator RETS/ODCM Radiological Effluent Occurrence (PR-01), July 2007 through June 2008
- NRC Occupational Exposure Control Effectiveness (OR-01), July 2007 through March 2008

#### 4OA2 Problem Identification and Resolution

- 2008-00055, Nuclear Oversight Fleet Quarterly Report, May 20, 2008
- Site Human performance Action Plan, Revision 6
- EN-HU-101, Human Performance Program, Revision 5
- Report Search, All Human Performance coded errors in first 2 quarters, June 30, 2008
- Site and Department Clock Resets 4th quarter 2007, 1<sup>st</sup> and 2<sup>nd</sup> quarter 2008.
- Human performance health Reports for Operations, Chemistry, Electrical, Mechanical and Radiation Protection, 1<sup>st</sup> quarter 2008
- CR-PLP-2008-3202, Declining Trend in Procedure use and Adherence, July 25, 2008
- CR-PLP-2008-3319, Power Supply Change Not Evaluated as Modifications, August 4, 2008
- CR-PLP-2008-3571, Demineralizer Transfer Pump Breaker Indicated Intermediate, August 20, 2008
- Root Cause report CR-PLP-2008-03305, Control Rod Drive Seals Continue top fail, August 28, 2008

#### 4OA3 Follow-up of Events and Notices of Enforcement Discretion

- LER 05000255/2008-003-00, Reactor Protection system and Auxiliary feedwater Actuation
- LER 05000255/2008-004-00, Noncompliance with Technical Specification 4.3.1.1.b
- CAL RIII-08-003, September 19, 2008, ADAMS 082630145
- ENO letter, Commitments Made to Address Degraded Spent Fuel Pool Storage Rack Neutron Absorber, dated August 27, 2008, ADAMS ML082410132
- CR-PLP-2007-03479, SFP Cell Blocked during SFP Moves, August 27, 2007
- Apparent Cause Evaluation CR-PLP-2008-03067, Neutron Absorber Material in Region 1 SFP Racks Contains Less boron-10 Than Assumed, August 19, 2008
- CR-PLP-2007-03105, During Fuel Shuffle in SFP on 7/30/07, The SFP Machine Was Unable to Lift Assembly S35 From NUS rack R-12, Revision 0

#### 4OA5 Other Activities

- CR-PLP-2008-02696, Vertical Crack in Fire Wall, June 17, 2008
- 08-4025-02, Palisades Nuclear Plant Diesel Generator Room Fire barrier Crack Analysis, Revision 0

## LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
AFW	Auxiliary Feed Water
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
CST	Condensate Storage Tank
HPSI	High Pressure Safety Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
LCO	Limiting Condition for Operations
LER	Licensee Event Report
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODCM	Off-site Dose Calculation Manual
PARS	Public Available Records
PI	Performance Indicator
QA	Quality Assurance
REMP	Radioactive Environmental Monitoring Program
RETS	Radiological Effluent Technical Specification
SDP	Significance Determination Process
SFP	Spent Fuel Pool
SRA	Senior Reactor Analyst
SW	Service Water
TLD	Thermoluminescence Dosimeter
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order