

January 24, 2007

Mr. Paul A. Harden  
Site Vice President  
Nuclear Management Company, LLC  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR PLANT NRC INTEGRATED INSPECTION  
REPORT 05000255/2006013

Dear Mr. Harden:

On December 31, 2006, 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 January 10, 2007, with you and other members of your staff.

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

Based on the results of this inspection, one NRC-identified finding and two self-revealed findings of very low safety significance (Green) were identified. Two of these findings were determined to involve violations of NRC requirements. Additionally, two licensee-identified violations which were determined to be of very low safety significance are described in this report. However, because the violations were of very low safety significance and because the issues have been entered into your corrective action program, the NRC is treating these findings as a non-cited violations (NCVs) consistent with Section VI.A.1 of the Enforcement Policy.

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

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Christine A. Lipa, Chief  
Branch 4  
Division of Reactor Projects

Docket Nos. 50-255 and 07200007  
License No. DPR-20

Enclosure: Inspection Report 05000255/2006013  
w/Attachment: Supplemental Information

cc w/encl: M. Sellman, President and Chief Executive Officer  
R. Fenech, Senior Vice President, Nuclear  
Fossil and Hydro Operations  
D. Cooper, Senior Vice President - Group Operations  
L. Lahti, Manager, Regulatory Affairs  
J. Rogoff, Vice President, Counsel and Secretary  
A. Udrys, Esquire, Consumers Energy Company  
S. Wawro, Director of Nuclear Assets, Consumers Energy Company  
Supervisor, Covert Township  
Office of the Governor  
State Liaison Office, State of Michigan  
L. Brandon, Michigan Department of Environmental Quality -  
Waste and Hazardous Materials Division

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-255 and 07200007  
License No: DPR-20

Report No: 05000255/2006013

Licensee: Nuclear Management Company, LLC

Facility: Palisades Nuclear Plant

Location: Covert, MI

Dates: October 1, 2006 through December 31, 2006

Inspectors: J. Ellegood, Senior Resident Inspector  
J. Giessner, Resident Inspector  
B. Kemker, Senior Resident Inspector, D. C. Cook  
A. Barker, Project Engineer  
J. Cassidy, Radiation Specialist  
M. Gryglak, Reactor Inspector, Decommissioning  
Branch, DNMS  
T. Ploski, Senior Emergency Preparedness Analyst  
C. Zoia, Reactor Inspector

Approved by: C. Lipa, Chief  
Branch 4  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000255/2006013; 10/01/2006 - 12/31/2006; Palisades Nuclear Plant; Surveillance Testing, As Low As Is Reasonably Achievable (ALARA) Planning and Controls, and Other Activities.

This report covers a 3-month period of baseline inspections. The inspections were conducted by Region III inspectors and resident inspectors. This report includes three Green findings, two of which were non-cited violations (NCVs). 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 Nuclear Regulatory Commission (NRC) management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

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

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

- Green. A Green self-revealing NCV of 10 CFR 50, Appendix B, Criterion VIII, "Identification and Control of Materials, Parts and Components" was identified for failing to have adequate control measures needed to prevent the use of defective parts. Specifically, a fuel leak developed due to the incorrect part on the 1-2 Emergency Diesel Generator (EDG) on November 20, 2005, that resulted in aborting a surveillance test. The cause was related to a defective part which had been installed 28 days earlier. The part has been replaced, and there are no other susceptible parts in the diesel engines on site.

The finding is more than minor since the defective part impacted the cornerstone for availability, reliability and capability of the class 1E, on site EDG system and is an associated attribute of equipment performance. The finding screened as very low safety significance, Green, since there was no loss of safety function for the 1-2 EDG. (Section 4OA5)

#### **Cornerstone: Barrier Integrity**

- Green. The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control" for the failure to have an accurate Technical Specification (TS) surveillance procedure for primary coolant leakage measurement. Specifically, the licensee did not provide an accurate calculation or accurate acceptance criteria over all the temperature ranges and other plant conditions under which the surveillance procedure could be used. This issue was entered into the licensee's corrective action system and the licensee developed interim guidance on leak rate calculations pending a procedure revision.

The finding is more than minor because it can reasonably be viewed as a precursor to a more significant event because the errors can prevent recognition of leakage in excess of the TS and licensing basis. The finding screened as very low safety significance,

Green, using the Phase 1 worksheet of IMC 0609, Appendix A, since no actual cases were found where unidentified leakage exceeded the TS. (Section 1R22)

**Cornerstone: Occupational Radiation Safety**

- Green. A Green finding was self-revealed for failure to adequately implement radiological dose controls during Refueling Outage 18 (RO18). Specifically, work control and planning issues (worker fatigue, worker proficiency, and material condition) contributed to additional worker doses. The total sum of the occupational radiation doses (collective dose) received by individuals for one work activity was found in excess of that collective dose planned or intended (i.e., that dose the licensee determined was ALARA for those work activities).

The finding was more than minor because the issue was associated with the Program/Process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective to ensure adequate protection of the worker's health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The inspectors concluded that the finding did not result in an occupational overexposure, a substantial potential for an overexposure, or a compromised ability to assess dose. The inspectors determined that the finding involved ALARA planning and work controls. Considering the licensee's current 3-year rolling collective dose average exceeds 135 person-rem per unit, the actual dose was less than 25 person-rem and there are no other occurrences, the inspectors concluded that the SDP assessment for this finding was of very low safety significance, Green. The inspectors also determined that this finding had a cross-cutting aspect in the area of human performance because the licensee failed to appropriately coordinate work activities. (Section 2OS2)

**B. Licensee-Identified Violations**

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

## REPORT DETAILS

### Summary of Plant Status

The plant began the inspection period at or near full rated thermal power and operated at full power until November 1, 2006. On November 1, 2006, a through-wall leak was discovered on a containment air cooler and the licensee shutdown to mode 3 as required by Technical Specifications (TS). The licensee repaired the air cooler with a temporary modification and restarted on November 3, 2006. On November 5, 2006, the plant returned to near full rated thermal power and remained at or near full rated thermal power for the rest of the inspection period.

#### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather Protection (711111.01)

##### .1 Adverse Weather Preparation

###### a. Inspection Scope

The inspectors verified that licensee personnel implemented the appropriate actions for very high winds at the site on October 13, 2006. This included review of the plant's response and entry into Off-Normal Procedure 12, "Acts of Nature." The inspectors interviewed personnel, walked-down affected areas and reviewed the licensing and design basis for structures and equipment. This is considered one site sample.

###### b. Findings

No findings of significance were identified.

##### .2 Preparation for Cold Weather

###### a. Inspection Scope

The inspectors reviewed the plant's preparation for cold weather. The inspectors used the Updated Final Safety Analysis Report (UFSAR), TS, plant procedures, and past adverse conditions and corrective actions to assess systems that could be adversely affected by cold weather. The inspectors performed a walkdown of susceptible systems. The inspectors also reviewed the licensee's cold weather procedures. The safety system focus was on the safety injection system from the Safety Injection and Refueling Water Tank (SIRWT); risk significant systems, structures, and components (SSCs) including the EDG 1-3; and the Auxiliary Feedwater (AFW) system. The documents reviewed during this inspection are listed in the attachment. This constitutes one system sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

Partial Walkdowns (71111.04Q)

a. Inspection Scope

The inspectors completed three equipment alignment inspection samples by performing partial walkdowns on the following risk-significant plant equipment:

- Right train High Pressure Safety Injection (HPSI) equipment during a planned outage on HPSI pump P 66B (October 11, 2006)
- EDG 1-2 with EDG 1-1 out of service for planned maintenance (October 31, 2006)
- Motor driven AFW pumps during a turbine driven AFW pump planned outage (November 15, 2006)

During the walkdowns, the inspectors verified that power was available, accessible equipment and components were appropriately aligned, and no open work orders for known equipment deficiencies existed which would impact system availability.

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Area Walkdowns (71111.05Q)

a. Inspection Scope

The inspectors completed seven fire protection inspection samples by touring the following areas in which a fire could affect safety-related equipment:

- Turbine Building 590 foot elevation (Fire Area 23D)
- Battery Room for ED01 battery (Fire Area 12)
- Battery Room for ED02 battery (Fire Area 11)
- Turbine Building 611 foot elevation (Fire Are 23 D)

- Component Cooling Water (CCW) Roof and SIRWT (Fire Area 32)
- EDG 1-1 Room (Zone 5)
- EDG 1-2 Room (Zone 6)

The inspectors verified that transient combustibles and ignition sources were appropriately controlled, and that the installed fire protection equipment in the fire areas corresponded with the equipment that was referenced in the UFSAR, Section 9.6, "Fire Protection." The inspectors also assessed the material condition of fire suppression systems, manual fire fighting equipment, smoke detection systems, fire barriers and emergency lighting units. For selected areas, the inspectors reviewed documentation for completed surveillances to verify that fire protection equipment and fire barriers were tested as required to ensure availability.

The inspectors reviewed selected condition reports associated with fire protection to verify that identified problems were entered into the corrective action program with the appropriate significance characterization. The inspectors also verified that planned and completed corrective actions were appropriate. The documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

.2 Fire Protection - Drill Observation and Annual Inspection (71111.05A)

a. Inspection Scope

The inspectors observed an unannounced fire drill on October 24, 2006, to evaluate the fire brigade's performance. The inspectors observed the brigade's response to the fire to verify timeliness, proper donning of equipment, and command and control by the brigade leader. In addition, the inspectors reviewed procedures, fire fighting equipment, breathing air requirements, and corrective action for adverse conditions. Finally the inspectors, on a sampling basis, verified that members assigned to the fire brigade met the qualification requirements. The inspectors evaluated the licensee's critique of the drill and actions taken as a result of the critique. Specific attributes evaluated are listed in Fire Protection, IP 71111.05AQ, paragraph 02.02. This constituted one sample.

b. Findings

No findings of significance were identified.

1R06 Flood Protection (71111.06)

a. Inspection Scope

The inspectors completed one inspection sample pertaining to flood protection measures for internal flooding events. The inspectors performed a walkdown of the intake structure and the EDG rooms and associated flood barriers to verify the flood barriers were in acceptable condition. The intake structure contains all three safety-

related service water (SW) pumps for response to various events. The inspectors reviewed the licensee's flood analysis and licensing basis for the areas to determine if the analysis was consistent with configuration of the room. Further, the inspectors reviewed condition reports to verify that corrective actions for previously identified flood protection problems were appropriate and had been properly implemented.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

The inspectors completed one inspection sample of licensed operator requalification training by observing a crew of licensed operators during simulator training on October 25, 2006. The inspectors assessed the operators' response to the simulated events which included a loss of primary coolant.

The inspectors verified that the operators were able to effectively mitigate the events through accurate and timely implementation of applicable alarm response procedures; Off-Normal Procedures and Emergency Operating Procedures. The inspectors also observed the post-training critique to assess the licensee evaluators' and the crew's ability to self-identify performance deficiencies.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors completed four inspection samples pertaining to maintenance effectiveness by reviewing maintenance rule implementation activities for the following systems and components:

- Control Air and Safety-Related Instrument Air
- Critical SW
- Containment Air Cooling
- Shutdown Cooling and Low Pressure Safety Injection

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

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors completed five inspection samples. The inspectors reviewed the following activities to verify that the appropriate risk assessments were performed prior to removing equipment for work. 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 verified the appropriate use of the licensee's risk assessment tool and risk categories in accordance with Administrative Procedure 4.02, Control of Equipment, Revision 36, and Fleet Procedure FP-OP-RSK-01, Risk Monitoring and Risk Management, Revision 0. Documents reviewed are listed in the attachment.

- Elevated risk during a planned HPSI outage during the week of October 8, 2006
- Elevated risk due to planned work on a condensate fill valve
- Elevated risk due to a 4 day planned outage on 1-1 EDG
- Elevated risk due to SW pump P-7B repack
- Risk due to severe weather and scheduled EDG testing on December 1, 2006

The inspectors also verified that condition reports related to emergent equipment problems were entered into the corrective action program with the appropriate significance characterization. Select condition reports related to risk management during maintenance activities were reviewed to verify that planned corrective actions were appropriate and had been implemented as scheduled.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors completed six inspection samples. For the six Operability Recommendations (OPRs) listed below, 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 reviewed the UFSAR to verify that the system or component remained available to perform its intended function. In addition, the inspectors reviewed compensatory measures implemented to verify that the compensatory measures worked as stated and the measures were adequately controlled. In addition, the inspectors verified that the condition reports generated for equipment operability issues were entered into the licensee's corrective action program

with the appropriate significance characterization. Documents reviewed are listed in the attachment.

- Operability recommendation on the EDGs due to autostart of fans
- Corrosion and loss of terminal plating material on Cell 25 of Battery ED02
- HPSI OPR on nonconformance with casing alignment blocks
- Control Circuit Voltage Drop Discrepancy for 480V Motor Control Centers
- VHX-4 Containment Air Cooler Had Three Through-wall Leaks in the Last 13 Months
- CV0823, High Capacity SW Water Flow to CCHX, Valve Position Indication Not Functioning

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17A)

a. Inspection Scope

The inspectors completed one inspection sample of a permanent plant modification package that involved isolating instrument air to two SW supply valves. The inspectors reviewed the design change information, related design basis documents and the 10 CFR 50.59 screening evaluation to verify that the design bases, licensing bases and performance capability of the involved diesel generator system were not degraded by this modification. In addition, the inspectors reviewed applicable plant documents to verify that any appropriate changes were made. Documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

The inspectors completed four inspection samples pertaining to post maintenance testing by assessing testing activities that were conducted for the following maintenance activities:

- Testing of CCW pump P-52A following maintenance
- Testing of EDG 1-2 after troubleshooting for low fuel oil pressure
- Testing of VHX-4 following leak repair
- Testing of the P-7C SW pump following inspection for debris intrusion

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

test criteria and acceptance criteria were appropriate for the scope of work performed; reviewed test procedures to verify that the tests adequately verified system operability; and reviewed documented test data to verify that the data was complete, and that the equipment met the prescribed acceptance criteria. Further, the inspectors reviewed condition reports to verify that post maintenance testing problems were entered into the corrective action program with the appropriate significance characterization. For select condition reports, the inspectors verified that the corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

Unplanned Forced Outage

a. Inspection Scope

The inspectors observed and assessed the licensee's performance in completing activities during an unplanned outage that occurred due to a through-wall leak on VHX-4 SW piping. The outage lasted from November 1 to November 3, 2006. This inspection constitutes one sample. The inspectors performed the following activities periodically throughout the outage:

- Verified that plant equipment, including inventory control systems, required to minimize plant risk were aligned in accordance with plant procedures
- Reviewed selected condition reports to verify that identified problems were accurately characterized; entered into the corrective action program with the appropriate significance; and that corrective actions were appropriate
- Verified decay heat removal systems were aligned per TS
- Randomly verified that station electrical power, emergency diesel generators, decay heat removal and primary coolant system inventory control systems were aligned as required
- Observed operator performance during portions of reactor shutdown, startup, and power ascension

b. Findings

During reactor startup, the inspectors noted that all AFW pumps were in the manual mode of operation and would not have started automatically on a steam generator low level as required by TS. The licensee corrected this issue and initiated an event response and root cause investigation. The NRC determined a Special Inspection Team (SIT) was required to investigate the issue and NRC Inspection Report 05000255/2006014 documents the findings of that team.

## 1R22 Surveillance Testing (71111.22)

### a. Inspection Scope

The inspectors witnessed four surveillance tests and/or reviewed test data of selected risk-significant SSCs, listed below, to assess, as appropriate, whether the SSCs met the requirements of the TS; the UFSAR; Palisades Administrative Procedure 9.20; TS Surveillance and Special Testing Program; Engineering Manual EM-09-02 and EM-09-04, Inservice Testing of Plant Valves and Inservice Testing of Selected Safety-Related Pumps. One of the samples was an inservice test and one sample was the Primary Coolant System (PCS) leakrate procedure. The inspectors also determined whether the testing effectively demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions. Further, the inspectors reviewed selected condition reports regarding surveillance testing activities. The inspectors verified that the identified problems were entered into the licensee's corrective action program with the appropriate significance characterization and that the planned and completed corrective actions were appropriate. Additional documents reviewed are listed in the attachment.

- Inservice testing of SW pump P-7B
- PCS Leakrate Surveillance DWO-1, October 11, 2006
- Diesel Fuel Oil Testing for Ultra Low Sulfur Diesel Fuel
- Terminal resistance surveillance for safety-related batteries, October 18, 2006

### b. Findings

Introduction: The inspectors identified a finding of very low safety significance associated with a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control" for failing to have an accurate TS surveillance procedure to determine PCS water inventory balance. Specifically, the licensee did not provide an accurate calculation or accurate acceptance criteria over all the temperature ranges and other plant conditions under which the surveillance procedure was applicable.

Description: The inspectors reviewed the PCS leakage calculation contained in DWO-1, Technical Surveillance Procedure Operator Daily/Weekly Items Modes 1, 2, 3, and 4. As part of the review, the inspectors evaluated corrective actions related to a previously NRC identified deficiency captured in CAP 047198 on March 22, 2005. The Corrective Action Program (CAP) documented the lack of an engineering analysis for the calculation in the procedure. Although over a year old, corrective actions remained open.

During the inspector's review of the calculation, the inspector noted that the calculation used a single constant to correct for PCS temperature of 74.43 gallons per degree Fahrenheit (F). Since water density varies with temperature, and pressure to a lesser degree, the inspectors calculated potential errors associated with this oversight. Over the temperature and pressure ranges the calculation applies, from Modes 1 through 4, the inspectors calculated leakrate errors as high as .7 gallons per minute (gpm). In Mode 1, the error would be limited to .02 gpm and a .15 gpm error could exist in Mode 3. The surveillance verifies compliance with TS leakage limits of 1 gpm as well as a

determinant for entry into off-normal procedures for a primary coolant leak. In addition, the inspectors noted that the calculation had not been adjusted to account for plugging of steam generator (SG) u-tubes. This issue was entered into the licensee's corrective action system and the licensee developed interim guidance on leak rate calculations pending a procedure revision.

Analysis: The inspectors concluded that not having an accurate calculation to determine compliance with TS surveillance criteria was a performance deficiency which required a significance evaluation. The issue is more than minor because the finding can reasonably be viewed as a precursor to a more significant event. The leak rate determination satisfies TS surveillance for monitoring of PCS leakage. In addition, leak rate monitoring provides both the licensee and the NRC with warning of incipient challenges to PCS integrity. The magnitude of errors associated with the calculation can reasonably mask incipient failures as well as leaks in excess of TS requirements. The issue screens as very low safety significance since there were no cases of leakrates approaching the TS limit in the last year based on documents reviewed; and no cases where the inaccurate calculation impacted the plant's response to unidentified leakage. Therefore, this finding screened as Green using the Phase 1 worksheet of IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations."

Enforcement: 10 CFR Part 50, Appendix B, Criterion XI, "Test Control" requires, in part, that tests on structures, systems and components are performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The PCS is a safety-related system which has acceptance limits contained in TS 3.4.13b and is tested in accordance with SR 3.4.13.1. DWO-1 is the licensee procedure which accomplishes this test. Contrary to the above, DWO-1, Technical Surveillance Procedure Operator Daily/Weekly Items Modes 1, 2, 3, and 4, Revision 73 did not have adequate acceptance limits which addressed the accuracy of the calculation for possible conditions for which this test could be used. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (AR01055966) this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000255/2006013-01). The licensee implemented operational guidance to bound use of the existing calculation until a procedure revision could be completed.

## 1R23 Temporary Plant Modifications (71111.23)

### a. Inspection Scope

The inspectors completed one inspection sample by reviewing the following temporary modification:

- EC 8866, "Temporary Modification to T-2 Condensate Storage Tank Lid"

The condensate storage tank was accidentally subjected to an over pressure event during a plant transient many years ago that resulted in a local failure of the wall-to-roof seal weld. The failed welded joint occurred between the wall's angled member and roof

sheet metal causing a local distortion and rupture about 3 inches wide and 57 inches long at the 3/16 inch wall-to-roof fillet weld. This temporary modification was installed to partially improve the structural capability in the failed weld region of the tank from sustained 100 miles per hour winds as described in Section 5.3 of the UFSAR for Class 1 structures. The inspectors interviewed engineering department personnel and reviewed the design documents and applicable 10 CFR 50.59 evaluation to verify that TS and the UFSAR requirements were satisfied. The inspectors also conducted a walkdown of the installation to verify that the modification was implemented as designed and that the modification did not adversely impact auxiliary feedwater system operability or availability.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors completed screening reviews of Revisions 14 and 15 of the Palisades Nuclear Plant's Emergency Plan to determine whether changes identified in these revisions may have reduced the effectiveness of the licensee's emergency planning. The screening reviews of these revisions do not constitute approval of the changes and, as such, the changes are subject to future NRC inspection to ensure that the Emergency Plan continues to meet NRC regulations.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP6 Emergency Preparedness Drill Evaluation (71114.06)

a. Inspection Scope

Resident inspectors evaluated the conduct of two routine licensee simulator scenarios on November 1, 2006 and November 15, 2006, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. This scenario was part of the licensee's planned Drill/Exercise Performance evaluation. The inspectors observed emergency response operations in the simulated control room to verify that event classification and notifications were properly completed in accordance with E1-1 Emergency Plan Classification Matrix, and Site Emergency Plan (SEP), Revision 15. The inspectors also attended the licensee critique of the drill to compare any inspector-observed weakness with those identified by the licensee in order to verify whether the licensee was properly identifying failures.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety**

2OS2 ALARA Planning and Controls (71121.02)

.1 Radiological Work Planning

a. Inspection Scope

The inspectors compared the results achieved (dose rate reductions, person-rem used) with the intended dose established in the licensee's ALARA planning for Refueling Outage 18 (RO18) work activities. The inspectors reviewed the reasons for any inconsistencies between intended and actual work activity doses. This review represents one sample.

The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements and evaluated the accuracy of these time estimates. This review represents one sample.

The inspectors assessed whether post-job (work activity) reviews were conducted and if identified problems were entered into the licensee's corrective action program. This review represents one sample.

b. Findings

No findings of significance were identified.

.2 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the assumptions and basis for the current annual collective exposure estimate. The inspectors reviewed applicable procedures to determine the methodology for estimating work activity-specific exposures and the intended dose outcome. The inspectors evaluated both dose rate and man-hour estimates for reasonable accuracy. This review represents one sample.

The inspectors reviewed the licensee's method for adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work are encountered. This review represents one sample.

The inspectors reviewed the licensee's exposure tracking system. The inspectors assessed whether the level of exposure tracking detail, exposure report timeliness and exposure report distribution is sufficient to support control of collective exposures. This review represents one sample.

b. Findings

One finding of very low safety significance was identified as described below:

Introduction: One self-revealing Green finding was identified associated with the failure to adequately implement radiological dose controls during RO18. Specifically, work control and planning issues (worker fatigue, worker proficiency, and material condition) contributed to additional worker doses. The collective dose for one work activity (26400; Reactor Head Insulation) resulted in actual dose in excess of 5 person-rem and also exceeding the initial planned dose estimates by more than 50 percent.

Description: The initial dose estimates for Work Order 26400 was primarily based on historical dose rates for the same or similar work activity and person-hour estimates provided by the maintenance groups responsible for the evolution. Additional requirements were established to conduct mock-up training to develop worker proficiency to meet historic performance times. However, the mock-up training did not include the removal of installed lead shielding, an activity that was performed by another work group during previous outages. This work activity fatigued the insulation crew and impacted the ability to perform insulation activities similar to historic values. The initial Work Order dose estimate of 4.107 rem was reviewed by station management. The activity was completed for 6.451 rem. The ALARA in-progress, post-job reviews, condition reports, and personal interviews conducted at the station identified three work control and/or planning issues to explain the differences between the initially projected and actual doses received. The causes were:

- Worker fatigue
- Materiel condition of the insulation
- Worker proficiency

Neither the inspectors nor the licensee identified any significant changes to dose rates in the area or to the originally planned work scope to this Work Order.

Analysis: The failure to adequately implement radiological dose controls represents a performance deficiency as defined in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening." The inspectors determined that the issue was associated with the Program & Process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Therefore, the issue was more than minor and represented a finding which was evaluated using the SDP.

Since this finding involved radiological controls and ALARA planning, the inspectors utilized IMC 0609, Appendix C, "Occupational Radiation Safety SDP," to assess its significance. The inspectors concluded that the finding did not result in an occupational overexposure, a substantial potential for an overexposure, or a compromised ability to

assess dose. The inspectors determined that the finding involved ALARA Planning and work controls. Considering that the licensee's current 3-year rolling collective dose average exceeds 135 person-rem per unit, the actual dose was less than 25 person-rem and there were no other occurrences, the inspectors concluded that the SDP assessment for this finding was of very low safety significance (Green). The inspectors also determined that the finding had a cross-cutting aspect in the area of human performance because the licensee failed to appropriately coordinate work activities.

Enforcement: The failure to adequately implement radiological dose control was a performance deficiency under the reactor oversight process (ROP); however, no violation of regulatory requirements occurred. This issue (FIN 05000255/2006013-02) was considered a finding of very low safety significance and is documented in the licensee's corrective action program (AR 01023058, AR 01042960, and AR 01045001). Corrective actions include adding outage planners that could actively follow fewer activities.

### .3 Job Site Inspections and ALARA Control

#### a. Inspection Scope

The inspectors reviewed exposures of individuals from selected work groups. The inspectors evaluated any significant exposure variations which may exist among workers and assessed whether these significant exposure variations are the result of worker job skill differences or whether certain workers received higher doses because of poor ALARA work practices. This review represents one sample.

#### 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, and Special Reports related to the ALARA program since the last inspection. The inspectors assessed whether the licensee's overall audit program's scope and frequency (for all applicable areas under the Occupational Cornerstone) met the requirements of 10 CFR 20.1101(c).

The inspectors assessed whether identified problems were entered into the corrective action program for resolution. The inspectors reviewed dose significant post-job (work activity) reviews and post-outage ALARA report critiques of exposure performance. The inspectors assessed whether identified problems were properly characterized, prioritized, and resolved in an expeditious manner.

The inspectors reviewed corrective action reports related to the ALARA program. The inspectors interviewed staff and reviewed documents to assess whether the follow-up

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 corrective action system
- Implementation/consideration of risk significant operational experience feedback

The inspectors' review placed emphasis on ensuring problems were identified, characterized, prioritized, entered into a corrective action, and resolved. For repetitive deficiencies or significant individual deficiencies in problem identification and resolution identified above, the inspectors evaluated if the licensee's self-assessment activities were also identifying and addressing these deficiencies. These reviews represented one sample.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation (71122.02)

.1 Radioactive Waste System Inspection Planning

a. Inspection Scope

The inspectors reviewed the liquid and solid radioactive waste system description in the UFSAR for information on the types and amounts of radioactive waste (radwaste) generated and disposed. The inspectors reviewed the scope of the licensee's audit program with regard to radioactive material processing and transportation programs to verify that it met the requirements of 10 CFR 20.1101(c). This review represented one sample.

b. Findings

No findings of significance were identified.

.2 Walkdown of Radioactive Waste Systems

a. Inspection Scope

The inspectors reviewed the liquid and solid radioactive waste system description in the UFSAR and the most recent information regarding the types and amounts of radioactive waste generated and disposed. The inspectors performed walkdowns of the liquid and solid radwaste processing systems to verify that the systems agreed with the descriptions in the UFSAR and the Process Control Program and to assess the material

condition and operability of the systems. The inspectors reviewed changes to the waste processing system to verify the changes were reviewed and documented in accordance with 10 CFR 50.59 and to assess the impact of the changes on radiation dose to members of the public.

The inspectors reviewed the current processes for transferring waste resins into transportation containers to determine if appropriate waste stream mixing and/or sampling procedures were utilized. The inspectors also reviewed the methodologies for waste concentration averaging to determine if representative samples of the waste product were provided for the purposes of waste classification in accordance with 10 CFR 61.55. During this inspection, the licensee was not conducting waste processing. This review represented one sample.

b. Findings

No findings of significance were identified.

.3 Waste Characterization and Classification

a. Inspection Scope

The inspectors reviewed the licensee's radiochemical sample analysis results for each of the licensee's waste streams, including dry active waste, resins, and filters. The inspectors also reviewed the licensee's use of scaling factors to quantify difficult-to-measure radionuclides (e.g., pure alpha or beta emitting radionuclides). The reviews were conducted to verify that the licensee's program assured compliance with 10 CFR 61.55 and 10 CFR 61.56, as required by Appendix G of 10 CFR Part 20. The inspectors also reviewed the licensee's waste characterization and classification program to ensure that the waste stream composition data accounted for changing operational parameters and thus remained valid between the annual sample analysis updates. This review represented one sample.

b. Findings

No findings of significance were identified.

.4 Shipment Preparation

a. Inspection Scope

The inspectors reviewed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness for a dry active waste shipment. The inspectors verified that the receiving licensee was authorized to receive the shipment packages. The inspectors reviewed the licensee's procedures for loading and closure. The inspectors observed radiation worker practices to verify that the workers had adequate skills to accomplish each task and to determine if the shippers were knowledgeable of the shipping regulations and whether shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for

public transport with respect to NRC Bulletin 79-19 and 49 CFR Part 172 Subpart H. The inspectors reviewed the training provided to personnel responsible for the conduct of radioactive waste processing and radioactive shipment preparation activities. The review was conducted to verify that the licensee's training program provided training consistent with NRC and Department of Transportation requirements. This review represented one sample.

b. Findings

No findings of significance were identified.

.5 Shipping Records

a. Inspection Scope

The inspectors reviewed ten non-excepted package shipment manifests completed in years 2005 and 2006 to verify compliance with the NRC and Department of Transportation requirements (i.e., 10 CFR Parts 20 and 71 and 49 CFR Parts 172 and 173). Since no ongoing shipping activities were occurring, the inspector was not able to review current package preparations or shipping during the inspection. This review represented one sample.

b. Findings

No findings of significance were identified.

.6 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed audits and self-assessments that addressed radioactive waste and radioactive materials shipping program deficiencies since the last inspection, to verify that the licensee had effectively implemented the corrective action program and that problems were identified, characterized, prioritized and corrected. 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 also reviewed corrective action reports from the radioactive material and shipping programs 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 corrective action system
- Implementation/consideration of risk significant operational experience feedback

This review represented one sample.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES (OA)**

4OA1 Performance Indicator (PI) Verification (71151)

a. Inspection Scope

The inspectors sampled licensee submittals for the PIs listed below for the periods indicated. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Revision 4 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," were used. The following PIs were reviewed:

Cornerstone: Initiating Events

The inspectors verified the Unplanned Transients per 7000 Critical Hours PI. The inspectors reviewed power history data from October 1, 2004, through September 30, 2006, determined the number of power changes greater than 20 percent full power that occurred, evaluated each of those power changes against the PI definition, and verified the licensee's calculation of critical hours. This constituted one inspection sample.

Cornerstone: Mitigating Systems

The inspectors verified the Safety System Functional Failures (SSFF) PI. The inspectors reviewed each Licensee Event Report (LER) from January 1, 2004, through September 30, 2006, determined the number of SSFF that occurred, evaluated each LER against the PI definitions, and verified the number of SSFF reported. This constituted one inspection sample.

Cornerstone: Barrier Integrity

Reactor Coolant System Leakage

The inspectors reviewed leak rate data from operating logs and verified data submitted by the licensee and confirmed the licensee submitted accurate data. The inspectors looked at the submittals from 2005 through 2006 to verify the accuracy of the PI data. The inspectors also reviewed the surveillance used to determine leak rate as documented in Section 1R22 of this report.

## Reactor Coolant System Specific Activity

The inspectors reviewed Chemistry Department records including isotopic analyses for 2005 through September 2006 to determine if the greatest dose equivalent iodine (DEI) values determined during steady state operations corresponded to the values reported to the NRC. The inspectors also reviewed selected DEI calculations including the application of dose conversion factors as specified in plant TS. Additionally, the inspectors accompanied a chemistry technician and observed the collection and preparation of reactor coolant system samples to evaluate compliance with the licensee's sampling procedure protocols. Further, sample analyses and calculation methods were discussed with chemistry staff to determine their adequacy relative to TS, licensee procedures and industry guidelines.

### b. Findings

No findings of significance were identified.

## 4OA2 Identification and Resolution of Problems (71152)

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

#### a. Inspection Scope

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

### b. Findings

No findings of significance were identified.

### .2 Semi-Annual Trend Review to Identify Trends

#### a. Inspection Scope

As required by IP 71152, "Identification and Resolution of Problems," the inspectors performed a review of the licensee's CAP action requests to identify trends that could indicate the existence of a more significant safety issue. The inspectors also reviewed the Operations Department Monthly Performance Report dated October 2006, the Site DRUM Report for the third Quarter of 2006 and the Corrective Action Program Performance Indicator Summary, dated November 2006. The inspectors' review for potential trends included the results from the daily inspector CAP item screening discussed in Section 4OA2.1. The plant CAP action request screening meetings were observed to review the licensee's level of effort in identifying potential trends, and any

associated corrective actions that were planned or implemented. In addition, the inspectors reviewed issues documented outside the normal CAP that included, maintenance work orders, component status reports, performance indicators and Operations control room logs. The inspectors' review nominally considered the 6 month period of July through December 2006. The inspectors compared and contrasted their results with the results obtained by the licensee during previous internal reviews. This constitutes one sample of trend reviews.

b. Findings

No findings of significance were identified.

.3 Annual Sample: Review of Barrier Controls for High Energy Line Breaks (HELB)

a. Inspection Scope

The inspectors reviewed the site's barrier control processes as they related to a postulated HELB. During baseline inspection activities, the inspectors questioned licensee HELB controls. In particular the inspectors noted the site did not have any HELB barriers designed to isolate turbine building HELBs from safety-related equipment. The inspectors reviewed the site's processes for control of HELBs and the licensing basis for HELB barrier control. In addition the inspectors reviewed Action Requests (ARs) related to HELB control including review of external operating experience. This constitutes one sample.

b. Unresolved Item (URI)

The inspectors identified an issue associated with two AFW pumps (8A and 8B) which are located in the turbine building. Specifically, the AFW pumps 8A and 8B are located in a room which is not protected from a harsh environment and the components are not rated for a harsh environment. Since the turbine building contains numerous high energy lines, an analysis of environmental conditions in the AFW room is required to determine the impact of a HELB in the turbine building on the AFW pumps in terms of temperature and humidity. The item has been placed into the corrective action process as CAP01068459. The third pump, 8C, is protected from a harsh environment and therefore there is no current safety issue. This is an URI pending completion of an assessment by the licensee and review by the NRC.

Description

During a review of work activities associated with an AFW pump, the inspectors noted the watertight door to the AFW room was allowed to remain open during maintenance while the equipment in the room remained operable. The AFW room houses two of the three AFW pumps and resides in the turbine building. The third pump, 8C, is housed in the Auxiliary Building. The inspectors also noted that the exhaust duct for the room ventilation system is open to the turbine building interior with no HELB barrier. Finally, the non-safety ventilation system has damper alignments which can take a suction on the turbine building interior and discharge to the AFW room. The licensee noted the AFW room was not considered susceptible to a harsh environment. The original

licensing basis document from Bechtel noted there was a large volume turbine building and therefore it is not likely to impact the AFW pump room. The report also noted at .5 psi some building portions would give way to limit pressure. The inspectors, using some basic calculations of heat transfer, demonstrated that, assuming an entire SG emptied into the turbine building, temperatures could exceed 200F. The inspectors' calculations were rudimentary and did not consider Main Steam Line isolation or single failures; however, there are no other quantitative assessments of room temperature or humidity. The inspectors reviewed NRC Information Notice (IN) 2000-20, "Potential Loss of Redundant Safety-related Equipment Because of a Lack of High Energy Line Break Barriers." This IN is related to the impact on safety-related equipment due to failures of non safety-related high energy line piping. Although there are no barriers for the ventilation system for the 8A and 8B pumps, the potential impact is limited to those two pumps since the third pump is protected in the auxiliary building. Therefore, there is no current safety concern. Although there is no existing common failure mode, there is a reasonable basis to determine that a performance deficiency may exist; namely, that two AFW pumps are not protected from a harsh environment. This item will remain open as URI 05000255/2006013-03 until an assessment by the licensee is completed and reviewed by the NRC.

.4 Annual Sample: Review of Crane Issues

a. Inspection Scope

The inspectors reviewed the licensee's causal analysis and corrective actions related to crane activities to evaluate how the licensee addressed NCVs 05000255/2005012-01 and 05000255/2006004-04. The inspectors also reviewed other licensee CAPs related to cranes. Based on this review, the inspectors concluded that the licensee performed an adequate root cause and identified appropriate corrective actions for NCV 05000255/2005012-01 concerning improper manipulation of the fuel handling crane with a suspended load. However, the common cause for NCV 05000255/2006004-04 concerning the polar crane contacting and damaging a boom crane narrowly focused on prevention of the L-6 crane from contacting the L-1 crane. Despite an earlier event where the crane operator contacted a SG with a load, the licensee did not consider broad causal factors, operating experience, or corrective actions such that corrective actions would broadly address human errors in crane operation. However, the licensee has site wide performance improvement initiatives in progress that in part address crane operations.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Closed) LER 05000255/2006004-00: Reactor Protection System (RPS) Actuation

On May 4, 2006, with the plant in Mode 5, an RPS actuation occurred from the 'A' steam generator low level trip circuitry. Just prior to the occurrence, the secondary side was being maintained at 1.3 psi nitrogen pressure, which was normal chemistry control for

existing plant conditions. When the main steam isolation valves (MSIVs) were opened to support a planned test activity, the sudden release of the nitrogen pressure created a momentary steam generator level change in the downcomer region where level is measured. Steam generator indicated level oscillated approximately 15 percent above and below the 40 percent level that existed prior to opening the MSIVs, causing the 28 percent steam generator low level RPS trip setpoint to be exceeded. There was no actual loss of water inventory. Since the RPS was reset and a single control rod was fully withdrawn for testing, the RPS actuation tripped the rod, fully inserting it into the core as expected. No findings were identified. This LER is closed.

.2 (Closed) LER 005000255/2006005-00: Uncoupled Control Rod

On May 10, 2006, an unexpected quadrant power tilt was identified during startup physics testing. At the time of discovery, power was being maintained at approximately 22 percent, following the initial power ascension after a refueling outage. Subsequently, it was determined that Control Rod 33 was fully inserted, not fully withdrawn as indicated, and had been uncoupled from its drive assembly since the refueling outage. Therefore, the upward mode changes into Mode 2 and Mode 1 made previously were performed in violation of TS. Specifically, TS 3.0.4 was violated because TS 3.1.4.D.1 required all rods to be movable prior to entering Mode 2 and TS 5.4, "Procedures" was violated because the workers had failed to recognize that the rod was not coupled during the refueling outage, as required by procedure RFL-R-11, Coupling Control Rods. The manual RPS actuation made in response to this discovery was also reported in this LER. The self-revealed issue associated with this LER was a violation of NRC requirements, and in Inspection Report 2006004 was determined to be a finding of very low safety significance (NCV 05000255/2006004-03). No additional findings were identified. This LER is closed.

.3 (Open) LER 05000255/2006001-00: Potential Loss of Primary Coolant Makeup Function for Postulated Fire Scenario

On February 14, 2006, during review of 10 CFR 50, Appendix R analysis, the licensee identified a condition that could challenge the ability to maintain the primary coolant makeup function as required by Appendix R, paragraph III G, "Fire Protection of Safe Shutdown Capability." The licensee determined that for a fire in Area 13 that affects all the charging pumps, a spurious short in the affected area could affect the suction isolation for the "B" High Pressure Safety Injection Pump (the remaining credited pump for a fire in that area). The licensee reported the issue as an unanalyzed condition in accordance with 10 CFR 50.72(b)(3)(ii)(B) and took immediate corrective action commensurate with the potential significance of the issue to increase the rounds for a roving fire watch. In addition the licensee created compensatory actions to ensure HPSI pump capability. The actions, which would be used during a fire, include stopping the pump for a spurious start and disabling the control circuitry for the suction valve to ensure the valve would be in an open position. Once the suction valve was put in its safety position, the pump could be operated as needed.

The inspectors reviewed these actions on February 15, 2006, and they were determined to be feasible and reliable. The licensee wrote AR01014772 to evaluate the discrepant condition and to determine the extent of condition. This evaluation is ongoing. The

issue is more than minor since it impacted the capability and availability of the needed HPSI pump needed to inject water into the core. This issue is not of high significance since there is reasonable assurance that the core would have remained covered for several hours allowing time to restore functionality to a makeup water source. Final resolution will occur after transition to National Fire Protection Association (NFPA) 805. Enforcement discretion is being considered based on the September 7, 2006, letter from the NRC authorizing the licensee's transition to the code and the applicable section of the enforcement policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)."

.4 (Closed) LER 05000255/2006003-00: Completion of Plant Shutdown required by Technical Specifications

On March 29, 2006, the licensee declared the left train of the emergency core cooling system (ECCS) system inoperable after a valve, CV-3070, failed to stroke during preventive maintenance testing. The valve provides a cooled water supply to the HPSI suction after the ECCS system enter recirculation mode during a loss of coolant accident (LOCA). Since attempts to correct the problem were not successful, the licensee performed a reactor shutdown as required by TS LCO 3.5.2.B.1. The licensee completed the required shutdown within the specified completion times. Subsequent to the shutdown, the licensee determined an improper modification to valves supports caused internal parts to wear to the point that the valve actuator could no longer reposition the valve. The improper modification was a violation of 10 CFR 50, Appendix B, Criterion III and was documented as in Inspection Report 2006006 as NCV 05000255/2006006-02. No additional findings were identified. This LER is closed.

.5 (Open) LER 05000255/2006006-00: Inoperable Containment Due to Containment Air Cooler through-Wall Flaw

On November 1, 2006, the licensee discovered a unisolable SW leak on Containment Air Cooler, VHX-4. The leak was a through-wall leak in American Society of Mechanical Engineers (ASME) Code Class III piping. Due to the location of the failure, the flaw could not be identified and characterized to allow continued use. Therefore, the licensee concluded the closed loop portion of the SW section which services the containment was no longer operable and commenced a shutdown in accordance with TS Action 3.6.1 B for an inoperable containment. The licensee has not categorized the flaw and will not be able to do so until the scheduled outage in 2007 when the cooler will be replaced. The licensee completed the repairs to the cooler, which included blanking off the affected tube bundle to restore containment integrity. No additional findings were identified. This LER will remain open until the licensee completes the assessment of the flaw such that the safety aspects of the condition can be fully evaluated and to determine if a violation of NRC requirements existed.

.6 (Closed) LER 05000255/2006002-00: Main Steam Safety Valves (MSSV) Exceeded Lift Setpoint Acceptance Criteria

On March 26, 2006, main steam safety valve RV-0710 failed in place testing. On March 25, 2006, RV-0707 had failed the same surveillance testing. In both cases, the valves lifted, but above the specified lift setpoint. Technical Specifications stipulate that

23 of 24 relief valves must be operable. The licensee determined that the failure mechanism occurred over time; therefore, the licensee concluded that a condition prohibited by TS existed during plant operation. Per procedure, the licensee adjusted the setpoint of the discrepant valves to restore the valves to TS compliance. The licensee determined that the valves suffered from an initial high lift phenomena. Therefore, subsequent valves were tested in an offsite facility following plant shutdown using an alternate, but also ASME sanctioned, test methodology. All valves tested offsite passed testing. This licensee-identified finding was a violation of TS 3.7.1. The finding is more than minor because it had a credible impact on safety. The licensee's evaluation of the as-found lift pressures demonstrated that no design limits would have been challenged; therefore, the finding screened as having very low safety significance, since there was no loss of safety function. No additional findings were identified. The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

#### 4OA5 Other Activities

##### .1 (Closed) URI 05000255/2006004-06: Failure of Component on 1-2 EDG Causes Surveillance Failure

The inspectors completed an assessment of the licensee's evaluation for URI 05000255/2006004-06 associated with the monthly diesel surveillance test conducted on November 20, 2005, during which a fuel line snubber valve failed and caused a fuel leak. The fuel leak on the 1-2 EDG resulted in aborting the surveillance test. The cause was related to a part which had been installed 28 days earlier. The licensee wrote LER 2005-007-00 on this issue and then retracted it based on their assessment the 1-2 EDG was operable, but degraded. The inspectors reviewed the licensee's basis for retraction, and after clarification of numerous items, concluded the licensee had developed an adequate basis for the retraction.

Introduction: A finding of very low safety significance was self-revealed that was associated with an NCV of 10 CFR Part 50, Appendix B, Criterion VIII, "Identification and Control of Materials, Parts and Components" for failing to have adequate control measures needed to prevent the use of defective parts. Specifically, a fuel leak developed on the 1-2 EDG due to installation of a substandard part that resulted in aborting a surveillance test. The failed part has been replaced and there are no other susceptible parts in the diesel engines onsite. This finding resolves and closes URI 05000255/2006004-06.

Description: On November 20, 2005, while conducting a monthly surveillance test of the 1-2 EDG, a fuel leak developed on the fuel injector for the 5R cylinder. Licensee personnel determined the fuel leak was significant as well as a potential fire hazard and secured the EDG. Troubleshooting identified that the snubber valve for 5R fuel pump, which had been replaced 28 days earlier, had cracked and caused the fuel oil spray. The licensee replaced the failed snubber valve and verified operability of the EDG. Subsequent testing of the snubber indicated that an improper heat treatment had been applied to the snubber valve.

The licensee contacted the EDG vendor that had supplied the snubber valve. The vendor reviewed the data related to the valve and performed additional testing. Based on the result, the vendor confirmed an improper heat treatment had caused the valve's failure. However, the vendor could not correlate the obtained data to any snubber they had produced since 1995. The vendor hypothesized that the licensee's stock may have been contaminated with stock from a batch produced in the 1990's. Previous operating experience (OE) in 1993 from Diablo Canyon had identified snubbers of improper material. The licensee's root cause of the event identified weaknesses in the procurement process that could lead to a loss of part traceability. Therefore, consistent with the licensee's root cause, the inspectors concluded that the snubber installed in October of 2005 was substandard due to poor control of procured parts. The vendor stated that incorrectly heat-treated snubbers would fail within 24 hours of machine run. After running the 1-2 EDG for over 24 hours, no other failures were discovered. No failures were observed on the other safety-related EDG after running the machine for over 24 hours.

Analysis: The inspectors concluded that the failure to ensure the proper material from site stock for the safety-related application was a performance deficiency which was within the licensee's ability to foresee and correct. The finding is more than minor since the defective part impacted the Mitigating Systems Cornerstone for availability, reliability and capability of the class 1E, onsite EDG system and its associated attribute of equipment performance. The licensee completed an assessment of EDG operability in June of 2006 which concluded the snubber failure did not render the EDG inoperable. The licensee evaluated the EDG performance due to reduced load capability for one fuel cylinder producing no load. In addition, the licensee evaluated the EDG performance and functional capability from a potential fire hazard due to fuel spray. The inspectors reviewed the licensee's assumptions, assessments and follow-on evaluations in detail. Although the licensee determined in late June the diesel could perform its safety function with the failed snubber, the inspectors could not arrive at the same conclusion after reviewing the technical analysis performed by the licensee. Subsequent interactions between the inspectors and the licensee caused the licensee to more thoroughly evaluate the condition and develop an adequate technical basis to support EDG operability. After numerous interactions with the licensee, the inspectors concluded the expanded basis documents provided adequate support to conclude the EDG was operable but degraded. The licensee wrote CAPs to address the issues raised by the inspectors. Even though the failed snubber did not render the EDG inoperable, the failure resulted in dispersion of flammable material on and near safety-related equipment, reduced the capability of the EDG and required additional unavailability time to correct the failure. Based on this conclusion, the inspectors determined that the issue screened as Green on question 1 (IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Attachment 1) since there was no loss of safety function.

Enforcement: 10 CFR Part 50, Appendix B, Criterion VIII, "Identification and Control of Materials, Parts and Components" requires, in part, measures to be established for the identification and control of materials, parts and components. The identification and control measures shall be designed to prevent the use of incorrect parts. Contrary to this, on or about October 24, 2005, the sub-standard part for the 5R fuel line snubber was installed into the 1-2 EDG, a safety-related component, with the wrong heat

treatment. As identified in the licensee's root cause, historic methods of part control were inadequate to prevent introduction of a defective part. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (AR01004766) this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000255/2006013-04).

.2 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of Palisades Nuclear Plant conducted in June 2006. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

.3 (Closed) URI 07200007/2004002-02: Subsurface Bearing Stability Beneath the Independent Spent Fuel Storage Installation (ISFSI) Pad

During an inspection of pre-operational activities associated with dry fuel storage, the inspectors reviewed the licensee's slope stability analyses of the slope where the new ISFSI pad was located. The licensee used acceptance criteria listed in the Department of the Navy NAVFAC DM-7 document, dated March 1971, entitled "Soil Mechanics, Foundations and Earthern Structures." The document recommended a minimum safety factor of 1.15 for transient loads such as earthquakes. The inspectors determined that the licensee's initial analyses of dynamic loads under the new pad did not result in a safety factor of 1.15 for all cases (NRC Inspection Report No. 07200007/2004002).

The NRC staff reviewed the licensee's slope stability analysis, Calculation No. EA-EAR-2000-0309-2, Revision 4, dated July 8, 2004, as well as other recognized publications related to the topic. The Department of the Navy document mentioned above, Chapter 7, Section 3.g (4) - Required Safety Factor, stated that, "for transient loads, such as earthquake, safety factors as low as 1.2 or 1.15 may be tolerated." The Naval Facilities Engineering Command re-validated this requirement by Change 1 in September 1986. The commercial standards such as American National Standards Institute, American Society of Civil Engineers, and others also indicate that a minimum acceptable factor of safety should be 1.15 when loadings include transient loadings such as a design basis seismic event. Therefore, upon further review of the issue, the staff found that the licensee's rationale for accepting a factor of safety below that established for the design of the ISFSI pad (as low as 1.02 vs. 1.15 minimum) was not consistent with accepted commercial standards and practices; the analysis of record presented in the subject calculation was insufficient; and the licensee needed to revise its analysis accordingly.

Subsequently, the licensee submitted a new calculation for the slope stability analysis, NMC Calculation (Doc) No: EA-EC7408-02, Revision 0, "Re-evaluation of Slope Stability under ISFSI Pad for Revised Load Due to 24PTH System," dated October 19, 2006. The NRC staff verified that the number of soil samples taken in the vicinity of the proposed pad was adequate to determine the soil properties to be used in the design of the pad. The licensee's revised evaluation appropriately considered the weight of the as-built pad, the weight of the casks due to the NUHOMS-24PTH system, and the in-situ soil properties in response to a seismic event. The evaluation demonstrated that the design criterion was met for all areas and soils beneath and immediately around the pad.

Based on the review of the assumptions, methods, and conclusions contained in the licensee's revised slope stability analysis, the NRC staff concluded that the licensee satisfactorily demonstrated that the as-built pad has a minimum safety factor of 1.15 against the postulated sliding soil mass loads. This URI closed.

#### 40A6 Meetings

##### .1 Exit Meeting

The inspectors presented the inspection results to Mr. P. Harden and other members of licensee management on January 10, 2007. Licensee personnel acknowledged the findings presented. The inspectors asked licensee personnel whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

##### .2 Interim Exit Meetings

Interim exit meetings were conducted for:

- Radioactive Material Processing and Transportation and Reactor Coolant System Specific Activity Performance Indicator with Mr. P. Harden on December 1, 2006.
- ALARA Planning and Controls Program with Mr. P. Harden on December 15, 2006.
- Emergency Preparedness Inspection with Ms. J. Ford on December 21, 2006.
- Independent Spent Fuel Storage Installation with Mr. D. Malone on December 27, 2006.

#### 40A7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

- The licensee identified a violation of 10 CFR 50.72 on November 4, 2006 when a member of the regulatory affairs staff noted that the site had failed to make a required 8 hour report regarding the loss of the AFW safety function. Upon recognition that 10 CFR 50.72 required a report, the licensee made the appropriate notifications (EN #42963, November 4, 2006). 10 CFR 50.72 requires notification within 8 hours of discovery of a condition that could have prevented fulfillment of a safety function; however, the actual notification occurred 26 hours after discovery. Since the inspectors were on site and discovered the switch mis-positioning that caused all three AFW pumps to be inoperable, the inspectors were aware of the condition. The licensee promptly restored AFW to operability upon discovery. Since failure to report events in accordance with 10 CFR 50.72 affects the NRC's ability to perform its regulatory function, the inspectors processed the violation as traditional enforcement consistent with NRC Enforcement Policy IV.A.3 and the Enforcement Manual. The licensee wrote CAP01060168, Late Determination of 8-hour Emergency Report, November 8, 2006, to address the issue. Since the licensee continued to review reportability until they ultimately determined the inoperability of the AFW pumps was reportable, the inspectors concluded the violation was licensee identified and not more than very low safety significance.
- Technical Specification 3.7.1 requires a minimum of 23 of the 24 MSSVs to be operable in modes 1, 2 and 3. Contrary to this on March 26, 2006, with the plant in mode 1, the licensee determined during surveillance testing that two MSSVs were inoperable during power operations with lift setpoints outside of TS table 3.7.1-1. The licensee wrote CAP 01020547, Main Steam Safety Valves, on March 26, 2006. The licensee-identified violation is of very low safety significance since there was no actual loss of safety function for the steam relief system with the setpoints slightly out of tolerance.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

P. Harden, Site Vice President  
S. Bell, Senior Health Physicist  
B. Berles, System Engineering Manager  
T. Blake, Nuclear Safety Assurance Manager  
A. Blind, Design Engineering Manager  
L. Blocker, Operations Manager  
J. Broschak, Engineering Director  
B. Dotson, Regulatory Compliance  
G. Baustian, Training Manager  
W. Edwards, Chemistry Technician  
J. Ford, Emergency Preparedness Manager  
G. Hettel, Plant Manager  
G. Higgs, Maintenance Manager  
P. Johnson, Safety Manager  
C. Jones, Chemist  
L. Lahti, Licensing Manager  
A. Lyon, Design Engineer  
D. Malone, Regulatory Affairs  
C. Moeller, Radiation Protection General Supervisor  
D. Nestle, Radiation Protection General Supervisor - Technical  
B. Nixon, Work Control Manager  
B. Patrick, Radiation Protection Manager  
G. Sleeper, Assistant Operations Manager  
G. Sturm, ALARA Specialist  
D. Watkins, Radwaste Shipping Analyst  
P. Williams, Sr. RP Technician - Outage ALARA Planner  
K. Yeager, Assistant Operations Manager

#### Nuclear Regulatory Commission

M. Chawla, Project Manager, NRR

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

#### Opened

05000255/2006013-01	NCV	Inaccurate Surveillance Procedure for RCS Leakrate Calculation (Section 1R22)
05000255/2006013-02	FIN	Failure to Adequately Implement Radiological Dose Controls (Section 2OS2)

05000255/2006013-03 URI Potential Impact on AFW Pumps to High Energy Line Breaks in the Turbine Building (Section 4OA2)

05000255/2006013-04 NCV Failure of Component on 1-2 EDG Causes Surveillance Failure (Section 4OA5)

Closed

05000255/2006013-01 NCV Inaccurate Surveillance Procedure for RCS Leakrate Calculation (Section 1R22)

05000255/2006013-02 FIN Failure to Adequately Implement Radiological Dose Controls (Section 2OS2)

05000255/2006004-00 LER Reactor Protection System Actuation (Section 4OA3)

05000255/2006005-00 LER Uncoupled Control Rod (Section 4OA3)

05000255/2006003-00 LER Completion of Plant Shutdown Required By Technical Specifications (4OA3)

05000255/2006002-00 LER Main Steam Safety Valves Exceeded Lift Setpoint Acceptance Criteria (Section 4OA3)

05000255/2006004-06 URI Failure of Component on 1-2 EDG Causes Surveillance Failure (Section 4OA5)

05000255/2006013-04 NCV Failure of Component on 1-2 EDG Causes Surveillance Failure (Section 4OA5)

07200007/2004002-02 URI Subsurface Bearing Stability Beneath the ISFSI pad (Section 4OA5)

Discussed

05000255/2006001-00 LER Potential Loss of Primary Coolant Makeup Function for Postulated Fire Scenario (Section 4OA3)

05000255/2006006-00 LER Inoperable Containment Due to Containment Air Cooler through-Wall Flaw (Section 4OA3)

## LIST OF DOCUMENTS REVIEWED

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

### 1R01 Adverse Weather Protection

Off-Normal Procedure (ONP)-12, Acts of Nature, Revision 23  
System Operating Procedure-23 Attachment 8, Cold Weather Checklist -1, Revision 24  
CAP 01062256, M-1005, Supplemental Diesel Generator CWCL Verification  
CAP01063593, Inadequate Insulation Found by NRC, November 24, 2006  
WO PM OPS348, OP Check P-5 and Recirc, October 22, 2006  
CAP01064043, Supplemental Diesel Generator Temperature Limits

### 1R04 Equipment Alignment

TO-0022, Tagout Audit Report Palisades Nuclear Plant, October 11, 2006  
SOP 3, Safety Injection and Shutdown Cooling System, Revision 68  
SOP-12, Feedwater System, Revision 47

### 1R05 Fire Protection

Palisades Nuclear Plant Fire Hazards Analysis, Revision 5  
EA-FPP-03-01, Analysis of Combustible Loading at Palisades Nuclear Plant, Revision 1  
Fire Drill Critique, Turbine Deck Fire, October 24, 2006  
Training Records: Fire Brigade (Operations and Security Personnel), Calendar Year 2005 and 2006  
Fire Drill Critique, North End Maintenance Shop Fire, September 18, 2006  
CAP 01061089 Fire Brigade Initial/Quarterly Training records are Incomplete

### 1R06 Flood Protection

EA-C-PAL-95-1526-01, Internal flooding Evaluation for Plant Areas Outside of Containment, Revision 3  
Drawing - 89, Plumbing and Drainage Plans Areas 2-4-9, Revision 13  
Individual Plant Evaluation (IPE), Appx A, Internal Flooding Evaluation, Jan. 29, 1993  
NRC Response SEP VI-7.D, Long Term Cooling Passive Failures, April 30, 1981  
CAP OE13823, NRC Information Notice 05-11 - Internal Flooding, May 25, 2005  
CAP 01058209, Floor Drains Lack Preventative Maintenance Verification  
CAP 01060880, Oil Wipes in Diesel Room Below Flood Height, November 9, 2006  
DBD-7.08, Plant Protection Against Flooding, Revision 5  
Consumers Power Letter dated November 19, 1982, Susceptibility of Safety-Related Systems to Flooding Caused by Failure of Non-category I Systems  
Consumers Power Letter, SEP Topic IX-3 Station Service and Cooling Water Systems, August 25, 1982  
WO 28150 task 2, 1-1 EDG Floor Drain Backwater Valve, March 30, 2006  
WO 28717, 1-2 EDG Floor Drain Backwater Valve, March 30, 2006  
CAP01060846, Analysis Input For Mitigating Action Time [for flooding] May be Invalid

CAP 01060540, Reduced Margin For Flooding in Diesel Generator Rooms  
CAP 01060538, Potential Degradation of Insul. Sys. In EDG 1-2 Exciter Cabinet

1R11 Licensed Operator Requalification

PL-OPS-SPE-016E, Simulator Performance Evaluation, Palisades Licensed Operator Requalification, Revision 10  
PL-OPS-SPE-031E, Simulator Performance Evaluation, Palisades Licensed Operator Requalification, Revision 7

1R12 Maintenance Effectiveness

Safety-Related High Pressure and Instrument Air: Open and Closed Work Orders (1 year look) List, October 17, 2006  
System Health Reports: Safety-Related High Pressure and Instrument Air, October 16, 2006  
Engineering Change (EC) 87-108, Ingersoll Rand Air Dryer Replacement, December 19, 1989  
Design Basis Document (DBD)-1.05, Compressed Air Systems, Revision 4  
C-2A/C Air Compressor Availability Database and Functional Failure Database, October 19, 2006  
EGAD-EP-10, Maintenance Rule Scoping Document, Revision 4  
CAP 01052569, C-6B High Pressure Air Compressor Thermal Trip, September 28, 2006  
CAP 01051642, High Pressure Air Compressor C-6B Breaker Cycling, September 26, 2006  
Engineering Manual Procedure (EM)-25, Maintenance Rule Program, Revision 5  
Engineering Aid Engineering Programs (EGAD)-EP-10, Maintenance Rule Scoping Document, Revision 4  
CAP 01055983, Low Flow Portions of The SW System Plugging, October 16, 2006  
Critical Service Water System Health Report, September 16 and November 15, 2006  
OPR 01041995, Pinhole Leak Downstream of CV-0824, Revision 0  
RCE000295, SW filter Plugged With Sand, August 13, 2003  
CPAL-02-1832, Root Cause SW System Issues, Revision 0  
MRE01021767-01, CV-0821 Would Not Close When HS-0828 was Placed Close, July 13, 2006  
ACE003540, Maintenance Rule Goal Setting for CCW HX Outlet Valves CV-0823 and CV-0826, April 12, 2005  
CAP 01054665, South Inlet Bay Flow less Than North Inlet bay, October 9, 2006  
CAP 01054393, Intake bay Zebra Mussel Accumulation, October 6, 2006  
WO 00279634, 00298031, 00304344, 00288193, 00283976, WO to Repack SW pumps from September 1 to November 13, 2006  
T-Track Search "Cavitation", 1995-2005  
AR 01064334, VHX-4 CTMT Air Flow CLR SW Leak Requires Shutdown TS Entry  
AR01064352, Evaluate VHX-4 CTMT Air CLR SW Leak Trend, November 29, 2006  
CV0826 and CV0823 AOV Analysis, November 28, 2006  
Open and Closed Work Orders for CAC VHX Coolers and Isolation Valves, November 1, 2005 to November 30, 2006  
CAP and T-Track Search VHX and CAC, Performed November 30, 2006  
SOP-5, Containment Air Cooling and Hydrogen Recombiner System, Revision 23  
AR01068412, Containment Air Cooler VHX-4 Placed in Maintenance Rule (a)(1)  
Open Work Orders for LPSI and SDC, December 13, 2006

AR 01021685, CV-3006 SDC HT EX E-60A/B Failed QO-43 Acceptance Criteria  
Maintenance Rule Scoping Document, LPSI  
Maintenance Rule Scoping Document, SDC  
Maintenance Rule Performance Indicators, LPI, December 4, 2006  
Maintenance Rule Performance Document, SDC, December 4, 2006

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

Work Week 0641 Schedule, October 10, 2006  
Work Week 0646 Schedule, October 24, 2006  
Work Week 0646 Schedule, November 11, 2006  
Work Week 0648 Schedule, December 1, 2006

1R15 Operability Evaluations

OPR 01052755-01, Emergency Diesel Generators 1-1 and 1-2 (K-6A and K-6B)  
CAP 01011531, ED-02 Cell #25 Positive Post Lug Degraded, January 26, 2006  
OPR 1056230-01, Station Battery ED02, Revision 0  
OPR 01062531, Discrepancy in Calculation EA-RTD-91-01, Revision 0  
OPR 01064352, Containment Air Cooler VHX-4 Structural Integrity, Revision 0

1R17 Permanent Plant Modifications

Screening No. 06-0135, EC935 10 CFR 50.59 Screening, Isolate Instrument Air to  
CV-0877 & CV-0876 to Fail Them Open and Eliminate Very Short Time Manual Action  
Requirements, Revision 0  
CAP 01053746, Difference Between Text and Data Table in EA-C-PAL-95-1526-01  
CAP 01053746, Additional Detail Needed in 50.59 Screen for EC935, October 5, 2006  
EA-C-PAL-95-1526-01, Internal Flooding Evaluation for Plant Areas Outside of  
Containment, Revision 2  
Design Basis Document DBD-7.08, Plant Protection Against Flooding, Revision 5

1R19 Post Maintenance Testing

QO-15, Inservice Test Procedure - Component Cooling Water Pumps, Revision 22  
QO-15 Basis Document, Inservice Test Procedure - Component Cooling Water Pumps  
EM-31, Electric Motor Reliability Program, Revision 0  
WO 300886, K6B Verify Suction Standpipe Full of Fuel Oil, October 19, 2006  
WO 300890, K6B Troubleshoot Air Intrusion to FO Pump Suction Problem  
MO-7A-2, Emergency Diesel Generator 1-2 Monthly Surveillance Test  
WO 00303785, VHX-4, Contingency Tube Leak Repair, November 28, 2006  
EC 000000236, Justification, November 17, 2005  
ESOGR 06-03, Emergent SWS Leak Classification and Repair of VHX-4 Plan

1R20 Refueling and other Outage Activities

SOP-12, Feedwater System, Revision 47

1R22 Surveillance Testing

QO-14, Inservice Test Procedure - Service Water Pumps, Revision 25  
DWO-1, Technical Surveillance Procedure Operator Daily/Weekly Items Modes 1, 2, 3,  
and 4, Revision 73  
DWO-1, Technical Surveillance Procedure Operator Daily/Weekly Items Modes 1, 2, 3,  
and 4, Performed October 11, 2006

Areva Calc 32-5058138-00, Palisades Cycle 18 S-RELAP5 Base Deck Input Development For RLBLOCA, May 20, 2005  
CAP 01055966, PCS Leak Rate Calc Basis Not Developed in Timely Manner  
CAP 01055925, Fuel Oil Program Regarding Sulfur Content is Inconsistent  
COP-22A, Diesel Fuel Oil Testing Program, Revision 6  
CAP 01056342, Evaluation for Use of Low Sulfur Fuel Not Comprehensive  
CAP 01056203, NRC Identified Station Battery Deficiencies  
CAP 01056319, Corrosion Not Removed from ED02 Cells 34 and 35  
QE-35, ED-01 and ED-02 battery Checks Quarterly, October 18, 2006

1R23 Temporary Modifications

EC 8866, "Temporary Modification to T-2 Condensate Storage Tank Lid," Revision 0  
10 CFR 50.59 Screening No. 06-0159, "Temporary Modification to T-2 Condensate Storage Tank Lid" Revision 0

1EP6 Emergency Plan Drills

EI-3, Communications and Notification, Revision 24  
AR 01059217, Drill/Exercise Performance Question by NRC Resident  
AR 01059207, Latest Revision Stamp Not Marked on EAL Charts  
Emergency Preparedness PIs, Evaluation and Notification Form, November 1, 2006  
AR 01059292, NRC Resident Questioned Operators Pre-Staging Activities  
AR 01059191, Old Revisions to Emergency Planning Procedures Found In Simulator  
AR 01059277, Possible Gap in Emergency Planning Training and Qualification

2OS2 ALARA Planning And Controls

RWP, Associated ALARA Plans, TEDE ALARA Evaluations, Recognized Risk Personnel Contamination Dose Assessment, Work In-Progress Reviews, and Post-Job Review for Work Order 25697, MSM Scaffolding Activities  
RWP, Associated ALARA Plans, TEDE ALARA Evaluations, Recognized Risk Personnel Contamination Dose Assessment, Work In-Progress Reviews, and Post-Job Review for Work Order 26400, Reactor Head Insulation  
RWP, Associated ALARA Plans, TEDE ALARA Evaluations, Recognized Risk Personnel Contamination Dose Assessment, Work In-Progress Reviews, and Post-Job Review for Work Order 25619, Control Rod Drive Mechanism Seal Package Activities  
RWP, Associated ALARA Plans, TEDE ALARA Evaluations, Recognized Risk Personnel Contamination Dose Assessment, Work In-Progress Reviews, and Post-Job Review for Work Order 25693 and 25694, Steam Generator Eddy Current and Plugging  
RWP, Associated ALARA Plans, TEDE ALARA Evaluations, Recognized Risk Personnel Contamination Dose Assessment, Work In-Progress Reviews, and Post-Job Review for Work Order 25697, MSM Weld Preparations  
Palisades RO18 Refueling Outage ALARA Report; approved September 12, 2006  
AR 834071, Inadequate Work Planning/ALARA Planning for Safeguards Room Cooler (V-27) Work, April 15, 2005  
AR 1023058, Dose Estimate for Reactor Head Insulation was Exceeded; April 9, 2006  
AR 1042960, Multiple RP Lessons Learned to Evaluate, Improve, and Implement in 2007 Reactor Head Inspection Project, August 4, 2006  
AR 1045001, Lessons Learned - Construction Activities for Insulation and Scaffolding Activities, August 17, 2006

## 2PS2 Radioactive Material Processing and Transportation

QF-0406 R01, SnapShot Report; Radioactive Material Processing and Transportation, SARA 00891859-01, October 16, 2006, through October 26, 2006  
Condition Evaluation 1000694, Wrong Revision to Cask Handling Procedure used For Cask Preparations, October 11, 2005  
Apparent Cause Evaluation ACE003609, Shipping Cask Exceeding Allowable Limits, July 22, 2005  
AR 01063803, Security Gun scopes Containing Tritium not Transported per Department of Transportation Regulations, November 27, 2006  
AR 01037602, Training Needs Analysis for Hazardous Material Training for Supplemental Workers, June 28, 2006  
AR 01054110, Transposition Data Entry Error in ISIP Shipping Program, October 5, 2006  
Condition Evaluation CE01045282, Shipping Manifest did not Contain Correct Dose Rate Information for Shipping Container, August 17, 2006  
HP 6.20, Radioactive Material Shipments, Revision 26  
HP 6.35, Low Level Radioactive Waste Scaling Factor Methodology and Associated Data Sheets, Revision 5  
HP 10.14, Classifications of Low-Level Radioactive Wastes, Revision 3  
Process Control Program, Revision 10  
Shipping Package 06-008, Yellow III Type B Package, February 17, 2006  
Shipping Package 06-016, Empty, March 13, 2006  
Shipping Package 06-028, SCO-II, April 13, 2006  
Shipping Package 06-043, Limited Quantity Shipment, April 30, 2006  
Shipping Package 06-063, LSA-II, August 17, 2006  
Shipping Package 05-038, LSA-II, October 24, 2005  
Shipping Package 04-022, LSA-II, June 10, 2004

## 4OA1 Performance Indicator Verification

LERs, January 1, 2004, through September 30, 2006  
Control Room Logs, October 1, 2004, through September 30, 2006  
CH 1.15, Radiochemistry Program, Revision 0  
NRC Indicator Reactor Coolant System (RCS) Specific Activity (BI-01), January 2005 through September 2006

## 4OA2 Problem Identification and Resolution

AR 01042993, August 4, 2006  
AR 01021660, Negative Trend in Ops Fundamentals Related Errors, April 1, 2006  
Operations Department Monthly Performance Report, August 2006  
Operations Department Monthly Performance Report, October 2006  
Department/Site Roll-up Meeting Results, November 3, 2006  
Engineering Department Roll-up Meeting Results, October 2006  
AR 01068459, Insufficient Information in Turbine Building HELB Basis Document Bechtel Special Report No. 6, Analysis of Postulated High Energy Line breaks Outside Containment, Revision 3  
DBD-7.03, Plant Protection Against High Energy Line Breaks, Revision 1  
SEP Topic IX-5, Ventilation Systems, October 1982  
CAP 029158, Less Than Adequate High Energy Line Break Barrier Control  
CAP 01000659, Crane Operator Heard Loud Noise during lift with L-3 Crane

CAP 01024526, Crane Load Impacted "B" Steam Generator, April 8, 2006  
CAP 01021715, L-1 Crane Relay Failure, April 2, 2006  
CAP 01021742, L-1 Polar Crane Inoperative, April 2, 2006  
CAP 01023778, Improper Rigging During P-50A Motor Upper Platform Removal  
CAP 01025665, L-1 Polar Crane Contacts L-6 Jib Crane, April 22, 2006

4OA3 Event Follow-up

LER 05000255/2006004-00: Reactor Protection System Actuation  
LER 05000255/2006005-00: Uncoupled Control Rod  
Event Notification System No. 42337, Palisades Appendix R - Unanalyzed Condition, February 14, 2006  
ENS No. 42954, Palisades Unit Shutdown Required Due to Service Water leak Involving a Containment Air Cooler, November 1, 2006  
AR 01059164, VHX-4 CTMT Air CLR Potential Service Water Leak, November 1, 2006  
AR 01064334, VHX-4 CTMT Air CLR SW Leak Requires Shutdown Tech Spec Entry

4OA5 Other

AR 01004766, EDG 1-2 Fuel Leak, November 20, 2006  
AR 01012578, 2006 EDG Root Cause Investigation, March 17, 2006  
Engineering Evaluation (EE)-EC9088-01, Diesel Generator Snubber Valve Failure - Fire Protection Impact on the Ability of The Diesel to Perform Its Design Function, Rev. 0  
CAP 01057946, Error in Load Calculation for EC-9049 Assumptions, October 24, 2006  
EE-EC9049-01, EDG 1-2 Loading Scenarios, Revision 1  
EE-EC9049-02, Evaluation of Diesel Generator Loading for Degraded EDG 1-2 Performance, Revision 2  
CAP 01018134-05, Re-Evaluation of the Nov. 2005 EDG 1-2 Snubber Valve Event  
EC8337 Engineering Evaluation, Evaluation of T-394 Load test And Ability to Meet DB Load requirement, June 6, 2006  
EMF 2889, Palisades Small Break LOCA Analysis, January 2003  
Emergency Operating Procedure - 4, Loss of Coolant Accident Recovery, Revision 17

## LIST OF ACRONYMS USED

ADAMS	Agency-Wide Document and Management System
AFW	Auxiliary Feedwater
ALARA	As Low As Is Reasonably Achievable
AR	Action Request
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
DEI	Dose Equivalent Iodine
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
F	Fahrenheit
gpm	gallons per minute
HELB	High Energy Line Break
HPSI	High Pressure Safety Injection
INPO	Institute of Nuclear Power Operations
ISFSI	Independent Spent Fuel Storage Installation
IMC	Inspection Manual Chapter
IN	Information Notice
IP	Inspection Procedure
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NMC	Nuclear Management Company
OE	Operating Experience
OPR	Operability Recommendations
OWA	Operator Work Around
PARS	Publicly Available Records
PCS	Primary Coolant System
PI	Performance Indicators
R018	Refueling Outage 18
ROP	Reactor Oversight Process
RPS	Reactor Protection System
RPW	Radiation Work Permit
SIT	Special Inspection Team
SSC	System, Structure or Component
SDP	Significance Determination Process
SEP	Site Emergency Plan
SG	Steam Generator
SIRWT	Safety Injection and Refueling Water Tank
SSFF	Safety System Functional Failures
SW	Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item

