May 8, 2007

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

SUBJECT: PALISADES NUCLEAR PLANT
NRC INTEGRATED INSPECTION REPORT 05000255/2007002

Dear Mr. Schwarz:

On March 31, 2007, 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 April 11, 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, six NRC-identified findings of very low safety significance (Green) were identified. All of these findings were determined to involve violations of NRC requirements. Additionally, licensee-identified violations which were determined to be of very low safety significance are listed 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 No. 50-255
License No. DPR-20

Enclosure: Inspection Report 05000255/2007002 and
w/Attachment: Supplemental Information

cc w/encl: M. Kansler, President and Chief Executive Officer/
Chief Nuclear Officer
J. Herron, Senior Vice President
Senior Vice President, Engineering and
Technical Services
B. Williams, Vice President, Oversight
M. Balduzzi, Senior Vice President, Regional
Operations, NE
O. Limpias, Vice President, Engineering
J. DeRoy, Vice President, Operations Support
J. McCann, Director, Nuclear Safety & Licensing
E. Harkness, Director of Oversight
General Manager, Plant Operations
C. Faison, Manager, Licensing
L. Lahti, Manager, Licensing
W. Dennis, Assistant General Counsel
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
T. Lodge, Counsel for Petitioners

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Letter to Christopher J. Schwarz from Christine A. Lipa dated May 8, 2007.

SUBJECT: PALISADES NUCLEAR PLANT
NRC INTEGRATED INSPECTION REPORT 05000255/2007002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-255
License No:	DPR-20
Report No:	05000255/2007002
Licensee:	Entergy Nuclear Operations Inc.
Facility:	Palisades Nuclear Plant
Location:	Covert, MI
Dates:	January 1, 2007 through March 31, 2007
Inspectors:	J. Ellegood, Senior Resident Inspector J. Giessner, Resident Inspector J. Cassidy, Health Physicist A. Garmoe, Reactor Engineer P. Lougheed, Senior Engineering Inspector M. Munir, Engineering Inspector N. Valos, Senior Operations Engineer
Approved by:	C. Lipa, Chief Reactor Projects Branch 4 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000255/2007002; 01/01/2007 - 03/31/2007; Palisades Nuclear Plant; Equipment Alignment, Refueling and Other Outage activities, 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 four Green findings and two Severity Level IV findings, all of which were non-cited violations (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)." Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

Green. The inspectors identified a finding of very low safety significance and an associated NCV of Technical Specification (TS) 3.9.5 for removing a train of safety equipment without complying with the required action and completion time when the Limiting Condition for Operability (LCO) was not met. Specifically, the licensee removed one train of shutdown cooling (by removing one shutdown cooling heat exchanger - (SDCHX)) for planned maintenance while the reactor was in Mode 6 with cavity level below 647 feet. The Action required was to "immediately" initiate action to restore the train to Operable. The train was inoperable for over four days. This issue was entered into the licensee's corrective action system as Action Request (AR) 01082854.

The finding is more than minor since it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. The finding is associated with the cornerstone attribute of equipment performance (unavailability of the SDCHX). The inspectors evaluated this finding in accordance with Appendix G, "Shutdown Operations Significance Determination Process" to IMC 0609. Although only one Decay Heat Removal (DHR) train was operable, other items for defense in depth including backup injection flowpaths, pump sources, vent paths and water sources were available for use. The inspectors completed a Phase 2 assessment and determined that a loss of DHR had a low frequency. The finding is of very low safety significance. (Section 4OA5.2)

Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion XVI for failing to take adequate corrective action to prevent recurrence of a significant condition adverse to quality. Specifically, valve CV-0821, a safety-related valve which positions automatically on a safety actuation signal, would not position on demand. The licensee discovered sand and silt had caused the valve to stick in a non-safety position. The same condition occurred less than a year ago. This latest issue was entered into the licensee's corrective action system as AR 01080435 and an Operability Evaluation was completed with compensatory actions to maintain component operability.

The finding is more than minor because it is related to the equipment performance attribute of the mitigating system cornerstone and the cornerstone objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Both trains are potentially impacted since the valve arrangement is similar and susceptible to sand and silt. The finding screened as very low safety significance, using the Phase 1 worksheet of IMC 0609, Appendix A, since the actual loss of function was less than the allowed outage time. The inspectors also determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, because the licensee failed to take the appropriate corrective actions to address safety issues. (IMC 0305, P.1.(d)) (Section 1R20)

Green. The inspectors identified a finding of very low safety significance and an associated NCV of TSs for the failure to take actions for the appropriate LCO not being met when surveillance testing exceeded the allowed interval. Specifically, the failure to verify control rod freedom of movement every 92 days (plus a 25 percent grace period) required entry into the Actions of LCO 3.1.4 Condition E, which stipulated the shutdown of the plant within six hours. This was not done on several occasions in the last three years. This issue was entered into the licensee's corrective action system as AR 01072543 and the inspectors verified that the rods subsequently had freedom of movement.

The finding is more than minor because, if left uncorrected, the finding could become a more significant safety concern; namely, the inability to detect rod binding could impact reactor shutdown margin in certain events. 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 the rods were bound after subsequent cycling. (Section 4OA5.1)

Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to use a conservative value for auxiliary pump air entrainment in vortex limit calculations. Specifically, the licensee misinterpreted a graph used to determine the percent air ingestion as a function of the Froude number, which resulted in a pump air entrainment value above a value supported by the vendor. This issue was entered into the licensee's corrective action system and the licensee made procedure changes and provided operator training to ensure that the auxiliary pumps were tripped prior to entraining excessive air.

This issue was more than minor because the calculational error was significant enough to require reanalysis of the pumps' ability to perform their design function and because changes to plant procedures were necessary in order to ensure pump operability. The error also appeared to be programmatic as a similar error was made in calculating the air entrainment to the high pressure safety injection pumps. The issue was of very low safety significance because although it was a design issue, there was not a loss of function of the auxiliary feedwater pumps. (Section 4OA5.3)

Severity Level IV. The inspectors identified a finding having very low safety significance and an associated NCV of 10 CFR 50.59, "Changes, Tests, and Experiments," for a failure to seek a license amendment. Specifically, when Setpoint Change 96-012 involving the low suction pressure trip of the auxiliary feedwater pumps was implemented, no safety evaluation was performed. When the evaluation was performed in December 2006 the licensee failed to evaluate known deficiencies.

Because violations of 10 CFR 50.59 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process instead of the significance determination process. The performance deficiency met Supplement I.D.5, "Violations of 10 CFR 50.59 that result in conditions evaluated as having very low safety significance by the SDP," for a Severity Level IV Violation. (Section 4OA5.4)

Severity Level IV. The inspectors identified a Severity Level IV NCV of TS 5.5.12 for the failure to comply with the TS Basis Control Program. Specifically, the licensee made a change to the TS bases for TS 3.9.5 which altered the TS definition of "two SDC trains" described in TS 3.9.5. The licensee changed the bases to allow a single SDC to be a member of two trains with cavity level less than 647 feet. A distinct SDCHX is required for each train. This change required prior NRC approval as a change to the TS. This issue was entered into the licensee's corrective action system.

The inspectors concluded this finding is more than minor since it impacted the NRC's ability to perform its regulatory function and resulted in a condition having a very low safety significance (i.e., green). Specifically, the licensee changed the TS bases in a manner that required prior NRC approval. The finding is a Severity Level IV violation consistent with the NRC Enforcement Policy. The inspectors also determined that this finding has a cross-cutting aspect in the area of human performance, because the licensee failed to use conservative assumptions in changing the TS bases. (IMC 0305 H.1(b)) (Section 4OA5.2)

B. <u>Licensee-Identified Violations</u>

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 the licensee's corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period operating at or near full Rated Thermal Power. On January 5, 2007, the licensee reduced power to approximately 90 percent due to a failed valve in the heater drain system. On January 6, 2007, the licensee repaired the valve and returned to near full rated thermal Power. On February 26, 2007, the licensee shutdown the plant in order to repair heat damaged safety-related cabling and Control Rod Drive Mechanisms (CRDM). On March 6, 2007, the licensee restarted the plant. The plant reached 100 percent power on March 7, 2007. On March 25, 2007, the licensee reduced power to 96 percent due to a failure of Moisture Separator Reheater control valves. The licensee completed repairs and returned to 100 percent power on March 28, 2007. The plant operated at or near full Rated Thermal Power for remainder of the inspection period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

The inspectors reviewed the site's procedure and readiness for high winds and tornados during a month with historically high winds. The inspectors reviewed the licensee's procedure to determine if actions specified could be completed with expected plant staffing and to determine if areas identified would be assessable. In addition, the inspectors compared proceduralized actions with the Updated Final Safety Analysis Report (UFSAR) to determine if vulnerabilities existed. This is considered one site sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdowns (71111.04Q)

a. Inspection Scope

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

- Emergency Diesel Generator (EDG) 1-1 alignment with EDG 1-2 out-of-service (January 23, 2007);

- Auxiliary Feedwater (AFW) alignment with one pump out of service (OOS) for testing (February 14, 2007);
- EDG 1-2 alignment with EDG 1-1 out-of-service (March 7, 2007); and Left train of High Pressure Safety Injection (HPSI) with right train components out of service for maintenance (March 28, 2007).

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 (CRs) 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.

.2 Complete Walkdown (71111.04S)

a. Inspection Scope

The inspectors completed one semi-annual equipment alignment inspection sample by performing a complete walkdown of the emergency core cooling system (ECCS). Utilizing piping and instrumentation diagrams and system checklists, the inspectors verified that accessible system components were correctly aligned. The inspectors also reviewed open activities to verify that the equipment's safety function was not adversely impacted by pending work. The inspectors reviewed operator work arounds (OWA) associated with the ECCS system to verify the OWA did not adversely affect system operation.

The inspectors reviewed select CRs associated with the ECCS system 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.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Fire Area Walkdowns (71111.05Q)

a. Inspection Scope

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

- Southwest Cable Penetration Room (Fire Area 26);
- Control Room (Fire Area 1);
- 1-1 EDG Fuel Oil Day Tank Room (Fire Area 7);
- C Switchgear Room (Fire Area 4);
- Charging Pump Room (Fire Area 13B);
- 590 foot hallway (Fire Area 13A);
- Service Water (SW) Screen house (Fire Area 9); and
- Control Room HVAC Mechanical Room (Fire Area 29, 30 and 31).

The inspectors verified that transient combustibles and ignition sources were appropriately controlled, and that the installed fire protection equipment in the fire areas corresponded with the equipment which was referenced in the Updated Final Safety Analysis Report, Section 9.6, "Fire Protection." The inspectors also assessed the material condition of fire suppression systems, manual fire fighting equipment, smoke detection systems, 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 CRs 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.

1R06 Flood Protection (71111.06)

Internal Flooding

a. Inspection Scope

The inspectors completed one inspection sample pertaining to flood protection measures for internal flooding events. The inspectors evaluated the licensee’s actions to protect the east and west safeguards rooms from sources of internal flooding. The inspectors reviewed alarm response procedures and other procedures. In addition, the inspectors performed a walkdown of the flood control barriers to verify the barriers were intact and not degraded.

Further, the inspectors reviewed CRs 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)

.1 Resident Inspector Quarterly Review

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 February 1, 2007. 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.

.2 Licensed Operator Requalification (71111.11B)

Annual Operating Test Results and Biennial Written Examination Results

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of Job Performance Measure operating tests, simulator operating tests, and the biennial written examination (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from January 15 through February 16, 2007. The overall results were compared with the significance determination process in accordance with NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)." This review represented one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors completed two inspection samples by reviewing maintenance rule implementation activities for the following system and components:

- Emergency Lighting Units (ELUs); and
- Check Valve Performance.

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 seven 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.

- Risk associated with a trip of a heater drain pump;
- Yellow risk due to scheduled testing of SW pumps and HPSI;
- Yellow risk during planned outage of EDG 1-2;
- Unplanned Limiting Condition for Operation (LCO) for Control Room Chiller VC-10;
- Yellow risk during planned outage of EDG 1-2;
- Yellow risk during a forced outage for Component Cooling Water (CCW) cable repair; and
- Yellow risk during planned HPSI maintenance.

The inspectors also verified that CRs related to emergent equipment problems were entered into the corrective action program with the appropriate significance characterization. Select CRs 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

For the eight operability evaluations and Operability Recommendations (OPRs) listed below, the inspectors evaluated the technical adequacy of the evaluations to ensure that Technical Specification (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 CRs 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.

- OPR related to fuel storage tank tornado vulnerabilities;
- OPR AFW pumps;
- Containment Air Cooler VHX-4 with repeated through-wall leaks;
- Safety Injection Tank A level indication;
- AFW system, manual Operation in lieu of automatic function;
- CV-0821 and CV-0822 susceptible to sand intrusion;
- Ongoing operability regarding heat degraded cables; and
- 1-2 EDG exhaust valve leaks.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

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

- EDG 1-2 maintenance;
- Emergent work on VC-10 Control room Chiller;
- EDG 1-2 maintenance;
- Service Water control valve cables following repair;
- CV-0821 following repair; and
- CV-3037 following maintenance.

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 CRs to verify that post maintenance testing problems were entered into the corrective action program with the appropriate significance characterization. For select CRs, 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 licensee's performance during an unplanned outage to replace damaged cables in the CCW room. The outage lasted from February 26 through March 6, 2007. This inspection constitutes one sample. The inspectors performed the following activities during the forced outage:

- Observed plant shutdown and cooldown to verify the licensee performed plant operations in accordance with TS and plant procedures;
- Verified decay heat removal systems were aligned per TS;
- Accompanied plant personnel during containment boric acid walkdowns to ensure evidence of leakage was properly identified;
- Accompanied licensee personnel during containment closeout tours to verify that debris was removed that could contribute to sump clogging; and
- Observed plant startup to verify the licensee aligned plant systems properly for plant started and conducted plant startup in accordance with TS and plant procedures.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion XVI for failing to take adequate corrective action to prevent recurrence of a significant condition adverse to quality (SCAQ). Specifically, valve CV-0821, a safety-related valve which positions automatically on a safety actuation signal, would not position on demand. The licensee discovered sand and silt had caused the valve to stick in a non-safety position. The same condition occurred less than a year ago. The licensee entered this condition into the corrective action system as Action Request (AR) 01080435 and completed an Operability Evaluation that included compensatory actions to maintain component operability.

Description: On March 4, 2007, with the plant shutdown in Mode 4 in a forced outage for unrelated repairs, CV-0821, ‘A’ CCW Heat Exchanger SW outlet control valve, failed to close when the valve was signaled to close. The valve has an automatic safety function to close on a recirculation actuation signal (RAS) since the high capacity SW outlet valves open on the RAS signal. The valve is required to close to ensure adequate cooling of all components during containment sump recirculation. Upon disassembly, maintenance discovered sand/silt wedged between the disk and the cage causing the valve to stick in the open position. The inspectors reviewed the history of this valve since there have been several failures of components in the SW system in the last few years due to sand and silt from the ultimate sink.

On July 31, 2000, CV-0821 would not close (CAP 0002362). The stuck-open valve was apparently caused by wear of internals caused by sand and silt. The valve internals were replaced. In July of 2002, the licensee wrote a detailed root cause (RCE 000295) to address the fact that two root cause analyses have been completed on the effects of sand and corrosion in the SW system and that corrective action have not been effective. The root cause was a comprehensive causal analysis which looked at SW components impacted by sand and corrosion. The licensee intended the root cause to identify and take corrective action "need(ed) to resolve the SW sand intrusion/corrosion issues" and considered it to be a SCAQ. Actions to prevent recurrence included review of all SW components and evaluation of flushing components on line or modifications to components to improve reliability. In addition, the licensee identified one high priority items for CV-0821 and sister valve CV-0822 (for the ‘B’ CCW Heat Exchanger) to modify and to open and inspect periodically the piping and valves. Prior to the modifications for CV-0821(WO 00025184), the valve failed to close during the 2006 outage. The licensee completed an Apparent Cause Evaluation (01021767) and determined the valve failed due to wear of valve internals from sand/silt. The licensee concluded that with the modification installed and a three-year inspection frequency, "the inspections will identify any indications of wear and repair significant wear prior to returning the valves to service. The actions are sufficient to prevent failures before they occur." The modifications were completed for CV-0821 and CV-0822 in 2006. However, the licensee’s root causes failed to identify that certain flow conditions within the SW system could result in sand/silt fouling the components, thus rendering the valve inoperable.

In evaluating the failure in March of 2007 (less than a year from the modification), the licensee determined that on low flow conditions sand/silt can accumulate on the components with tight clearances and certain geometry; and could cause the valve to fail in a short period of time. Because both valves are susceptible to this condition, the licensee wrote an OPR (1080435-01) which determined that the valves were operable, but degraded. Certain compensatory actions were needed to ensure that the valves remain operable.

The inspectors concluded that the failure of the safety-related SW valve CV-0821 did recur and that the original actions to prevent recurrence were not effective. Finally the issue of sand/silt impacting safety-related components was a SCAQ as characterized by the licensee.

Analysis: The repeat failure of valve CV-0821 to close on demand was considered to be a performance deficiency which warranted a significance evaluation. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening." The finding was related to the equipment performance attribute of the mitigating system cornerstone and the cornerstone objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences was adversely impacted. Specifically, the reliability and capability of CV-0821 to automatically close on a RAS was not ensured since CV-0821 failed to close. The inspectors screened the issue using IMC 0609 Phase 1 worksheet. Using the Mitigating Systems column on the Phase 1 SDP worksheet, the inspectors determined that the valve failure occurred in Mode 4 when SW was required to be operable and a loss of function occurred. Because the valve was inoperable for less than the allowed outage time, the item screened out as very low safety significance (Green). The current condition of both valves is operable, but degraded with compensatory actions in place; therefore, there is no loss of function. The inspectors also determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, because the licensee failed to take the appropriate corrective actions to address safety issues (P.1(d)).

Enforcement: 10 CFR 50, Appendix B, Criterion XVI requires, in part, that for SCAQs, measures shall assure that corrective actions are taken to preclude repetition. The licensee determined in 2002 that sand and silt intrusion into the SW system could impact both trains of equipment and the condition was a SCAQ. Contrary to this, on March 4, 2007, CV-0821, 'A' CCW Heat Exchanger SW outlet control valve, failed to close when the valve was signaled to close. This failure occurred after the licensee implemented the corrective actions to prevent sand and silt from impacting the valve from a previous failure in 2006. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (AR 01080435) this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000255/2007002-01, CV-0821 Corrective Actions Not Effective to Prevent Repeat Failure).

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors witnessed five surveillance tests and/or reviewed test data of selected risk-significant System, Structure or Component (SSCs), listed below, to assess, as appropriate, whether the SSCs met the requirements of the TS; the UFSAR; Palisades Administrative Procedure 9.20; Technical Specification 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. 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 CRs 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.

- Test of Low Pressure Safety Injection Pump recirculation line check valves, CK-ES3233 and CK-ES3330;
- Test of the Safety Injection System, QO-1;
- Test of Safety Injection Tank level indicators in SHO-1;
- Test of Turbine Driven AFW Pump 8B (IST); and
- Excore Power Range Nuclear Instrument Adjustments.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

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

- EC-9389, Isolate Leaking Cooling Coil Within Containment Air Cooler VHX-4.

The inspectors reviewed the design documents and 10 CFR 50.59 safety screening to verify that the temporary modification did not affect the operability of the related systems and other interfacing systems. The inspectors reviewed documentation to verify that the modification was implemented as designed. Post modification testing results were reviewed to verify that the system functioned as intended after the modification was implemented.

b. Findings

No findings of significance were identified.

1EP6 Emergency Preparedness Drill Evaluation (71114.06)

a. Inspection Scope

The inspector observed one integrated plant-wide drill on March 14, 2007. The inspectors observed emergency response personnel in the Technical Support Center, Simulator Control Room and Emergency Operation Facility. The drill included pre-designated opportunities to classify the event that would be evaluated and included in the performance indicator data regarding drill and exercise performance.

The inspectors determined whether the emergency classifications and notifications to offsite agencies were completed in an accurate and timely manner as required by the emergency plan implementing procedures. The inspectors also determined whether the drill was conducted in accordance with the prescribed sequence of events and whether the drill objectives were met.

The inspectors observed the post-drill critique in the Technical Support Center and Emergency Operations Facility to determine whether emergency response personnel and drill evaluators adequately self-identified performance problems. The inspectors reviewed the post-drill critique report to determine whether the data regarding the indicator for drill and exercise performance was accurate. Condition reports generated for identified drill performance problems were reviewed to determined whether the problems were entered into the corrective action program with the appropriate significance characterization. This represents one sample.

b. Unresolved Item (URI)

The inspectors identified one URI related to the declaration of a Site Area Emergency during the drill. The inspectors identified that the licensee classified a condition involving hostage taking in the protected area as a Site Area Emergency. The licensee considered the presence of armed hostage takers to be a Hostile Action. Because the hostage takers demanded money and transport out of the country and were not threatening equipment, the inspectors concluded that the drill scenario did not meet the definition of Hostile Action, which does not include "felonious acts that are not part of a concerted attack on the nuclear power plant." In addition, the inspectors noted that the event notification form for the drill identified an incident classification number that matched neither the number written in the drill guide nor the classification determined by the inspectors. This was not detected by the licensee during their critique process. Pending determination of the proper classification of the scenario and subsequent determination of significance, this is considered to be an Unresolved Item (URI 05000255/2007002-02), EAL (Emergency Action Level) Classification During Drill.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

.1 Onsite Inspection

a. Inspection Scope

The inspectors performed walkdowns of major components of the gaseous and liquid release systems (e.g., radiation and flow monitors, demineralizers and filters, tanks, and vessels) to observe current system configuration with respect to the description in the UFSAR, ongoing activities, and equipment material condition. The inspectors also reviewed changes made by the licensee to the Offsite Dose Calculation Manual (ODCM) that might affect the liquid or gaseous radioactive waste system design, procedures, or operation since the last inspection.

The inspectors observed the routine processing (including sample collection and analysis) and release of radioactive liquid waste and gaseous effluent to verify that appropriate treatment equipment was used and that radioactive effluent was processed and released in accordance with procedure requirements. The inspectors observed the sampling and compositing of liquid effluent samples.

The inspectors reviewed the records of any abnormal releases or releases made with inoperable effluent radiation monitors. The inspectors reviewed the licensee's actions for these releases to ensure an adequate defense-in-depth was maintained against an unmonitored, unanticipated release of radioactive material to the environment. Additionally, for any areas where spills, leaks, or other unusual occurrences (i.e., involving the spread of licensed radioactive material in and around the facility, equipment, or onsite) have occurred, the inspectors assessed whether these areas had been properly documented in the site's decommissioning file, per 10 CFR 50.75 (g).

The inspectors reviewed a selection of monthly, quarterly, and annual dose calculations to ensure that the licensee properly calculated the offsite dose from radiological effluent releases and to determine if any annual TS or ODCM (i.e., Appendix I to 10 CFR Part 50 values) levels were exceeded. The inspectors evaluated the source term used by the licensee to ensure all applicable radionuclides discharged, within detectability standards, were included.

The inspectors reviewed air cleaning system surveillance test results and licensee specific methodology to ensure that the system was operating within the licensee's acceptance criteria. The inspectors reviewed surveillance test results and methodology the licensee used to determine the stack and vent flow rates. The inspectors assessed whether the flow rates were consistent with Radiological Effluent Technical Specifications (RETS), ODCM, and UFSAR values.

The inspectors reviewed records of instrument calibrations performed since the last inspection for each point of discharge effluent radiation monitor and flow measurement device. The inspectors reviewed any completed system modifications and the current effluent radiation monitor alarm set-point values for agreement with RETS/ODCM requirements. The inspectors also reviewed calibration and quality control records for radiation measurement (i.e., counting room) instrumentation associated with effluent monitoring and release activities. The inspectors reviewed the records to identify any potential degraded instrument performance and to ensure adequate corrective actions were taken.

The inspectors reviewed the results of the inter-laboratory comparison program to assess the quality of radioactive effluent sample analyses performed by the licensee. The inspectors reviewed the licensee's quality control evaluation of the inter-laboratory comparison test and associated corrective actions for any deficiencies identified. The inspectors reviewed the results from the licensee's Quality Assurance audits to assess whether the licensee met the requirements of the RETS/ODCM.

These reviews represent eight samples.

b. Findings

No findings of significance were identified.

.2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, Licensee Event Reports (LERs), and Special Reports related to the radioactive effluent treatment and monitoring program since the last inspection. The inspectors assessed whether identified problems were entered into the corrective action program for resolution.

The inspectors reviewed corrective action reports related to the radioactive effluent treatment and monitoring program. The inspectors interviewed staff and reviewed documents to assess whether 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 the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

These reviews represents one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator (PI) Verification (71151)

a. Inspection Scope

Cornerstone: Initiating Events

The inspectors sampled licensee submittals for the two PIs listed below. The inspectors reviewed the last four quarters of data that were submitted. The inspectors used the guidance contained in NEI 99-02 "Regulatory Assessment Indicator Guidance," Revision 4, to verify the licensee accurately reported each data element.

- Unplanned scrams per 7000 critical hours; and
- Unplanned scrams with loss of normal heat removal.

The inspectors reviewed operator logs, events reports, and CAPs to verify the licensee accurately reported the subject data. This constituted two inspection samples.

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 CRs were being generated and entered into the corrective action program with the appropriate significance characterization. For select CRs, the inspectors also determined whether 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 In-Depth Review - Annual Sample

a. Inspection Scope

The inspectors reviewed root cause analyses associated with Human Performance errors related to AFW. In particular, the inspectors reviewed the root cause analysis associated with improper positioning of AFW pump control switches during a plant shutdown and the root cause analysis associated with failure to remove jumpers installed in AFW circuitry. The inspectors concluded that the root cause analysis for the switch misposition adequately identified causal factors and established reasonable corrective actions. However, the root cause analysis for the jumper issue failed to explore the event in sufficient detail. The licensee concluded that the event occurred due to human error; however, the report failed to explain why the error occurred. Potential causes such as fatigue or human factors were not discussed in the root cause report. Since no additional events have occurred where jumpers were left installed in circuitry, the inspectors concluded the issue was of minor safety significance. This constitutes one sample.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Open) LER 05000255/2006008-00: Inoperable Containment Due to Containment Air Cooler Through-Wall Flaw

On November 29, 2006, the licensee discovered an 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 of the heat exchanger. 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 is evaluating methods to do so. 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.

.2 (Open) LER 05000255/2007002-00: Inoperable Containment Due to Containment Air Cooler Through-Wall Flaw

On January 19, 2007, the licensee discovered an unisolable SW leak on Containment Air Cooler, VHX-4. The leak was a through-wall leak in ASME Code Class III piping. Due to the location of the failure, the flaw could not 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 is evaluating methods to do so. 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.

.3 (Closed) LER 05000255/2006007-00: Auxiliary Feedwater Control Switches Not Positioned For Automatic Actuation

On November 3, 2006, with the plant in Mode 2 and a reactor start-up in progress, the inspectors discovered that all AFW control switches were placed in manual and would not have started on an automatic actuation signal. This resulted in all AFW trains being inoperable. The NRC conducted a Special Inspection and reported the results and associated findings in NRC Inspection Report 05000255/2006014. No additional findings were identified during review of this LER. This LER is closed.

.4 (Closed) LER 05000255/2007001-00: Failure to Perform Offsite Power Source Check

On January 4, 2007, an evaluation was performed for the past operability status of start-up transformer 1-2. The licensee determined that the transformer had been inoperable on several occasions and the required action to perform off-site power checks had not been accomplished in accordance with TS LCO 3.8.1.A.1. The NRC had noted the transformer inoperability during the Component Design Basis Inspection; and the failure to make a timely report was reported as a Severity Level IV NCV in NRC Inspection Report 05000255/2006009-01. No additional findings were identified. This LER is closed.

.5 Heater Drain Pump Trip

a. Inspection Scope

On January 5, 2007, the licensee reduced power to 90 percent due to a valve failure and subsequent trip of a heater drain pump. Since the failure had the potential to result in a plant trip, the inspectors observed actions to troubleshoot the valve while maintaining plant reliability and TS compliance.

b. Findings

No findings of significance were identified.

.6 Damaged Electrical Cables

a. On February 17, 2007, the licensee identified heat damaged electrical cables in the CCW room. During the following week, the licensee determined that the cables were inoperable and shutdown the plant to complete repairs. The inspectors reviewed the licensee's plan to complete repairs on the cables, actions to place affected equipment in a safe configuration, testing methods, and past vulnerabilities. The inspectors reviewed plant schematics and the basis document to verify the licensee identified affected components and safety functions.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Control Rod Drive Mechanism Testing Practices

a. Inspection Scope

As part of routine plant status activities, the inspectors noted increased CRDM seal leak rates. In discussions with licensee personnel, the inspectors learned that the licensee had a practice of declaring one of the leaking CRDM drives inoperable, entering LCO 3.1.4 Condition D, and forgoing testing of the rod per SR 3.1.4.3. After reviewing the applicable requirements, the inspectors concluded that once the surveillance was out of periodicity, TS required the control rod to be declared untrippable and required entry into Action E. Action E required plant shutdown within six hours. After the inspectors discussed this conclusion with the licensee, the licensee concurred with the inspectors analysis. The inspectors reviewed plant operating history over the last couple of operating cycles and identified four instances where the licensee inappropriately entered Condition D.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of TS 3.1.4 for the failure to take the appropriate action when surveillance testing exceeded the allowed interval. Specifically, the failure to verify control rod freedom of movement every 92 days (plus grace) required entry into LCO 3.1.4 Condition E, which required a shutdown of the plant within six hours. The licensee did not take action in accordance with Condition E on several occasions in the last three years.

Description: During a review of equipment issues surrounding the CRDMs, the inspectors noted that the licensee, on several occasions in the last three years, exceeded the periodicity of the surveillance. Technical Specifications require performance of the surveillance every 92 days with a permitted extension of 25 percent (SR 3.1.4.3 and SR 3.0.2). Plant experience demonstrated that movement of control rods can aggravate existing CRDM seal leakage and could result in the need for a plant shutdown to repair CRDM seals. Surveillance Requirement 3.1.4.3 required control rod freedom of movement checks by moving all rods not fully inserted in the core by at least six inches. The licensee believed that entry into Condition D, which allows continued operation with one full-length control rod immovable but trippable, would be appropriate and obviate the need for the movement checks. The inspectors reviewed the TS, TS bases and the licensing basis behind the actions and the surveillance requirements. The inspectors determined that the function of SR 3.1.4.3, as stated in the SR, was to "verify control rod freedom of movement." Thus, the surveillance provides assurance of control rod trippability as well as movability. Failure to meet the SR 3.0.2 interval required application of SR 3.0.1 which required entry into the appropriate action for the LCO not being met. Since the surveillance ensured the rod was free to move and not bound, application of Condition D for a rod which is immovable, but trippable was not appropriate. The inspectors determined the correct action was Action E which required a plant shutdown in six hours. Condition E was not applied in four cases in the last three years when the 125 percent of frequency was exceeded. The number of days the 125 percent frequency of 92 days was exceeded ranged from 13 to 237 days. The licensee wrote an AR to evaluate this issue.

Analysis: The inspectors concluded that not applying the correct action for the LCO not being met for Rod Control TS 3.1.4 was a performance deficiency which required a significance evaluation. The finding is more than minor because it directly affects the mitigating system cornerstone attribute of equipment reliability. Specifically, the surveillance is intended to verify control rods remain trippable and failure to perform required surveillances could lead to a condition where the inability to detect rod binding could impact reactor shutdown margin. Since the issue had occurred four times, the licensee had depended on this interpretation of TS to limit challenges to CRDM seal leakage and remain at power. 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 the rods were bound.

Enforcement: Technical Specifications require, in part, surveillances to be performed within their required frequency plus 25 percent allowance (SR 3.0.2). Failure to perform the surveillance within the interval shall be failure to meet the LCO (SR 3.0.1). Failure to meet the LCO for rod control in TS Section 3.1.4, requires entry into the appropriate condition of TSs with completion of required action in the specified completion time. Contrary to this, on four occasions (August 11, 2003; April 30, 2004; July 29, 2004; and May 10, 2005) the licensee exceeded 115 days (125 percent of 92 days) and the appropriate action was not taken. During these occasions, the licensee did not enter the appropriate condition and thus failed to take the appropriate action for TS 3.1.4 Condition E which was to conduct a plant shutdown. Entry into this condition was appropriate since the surveillance which periodically assesses rod trippability was past its allowed interval. Subsequent operation of the rods demonstrated that the rods remained free to move in all instances. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (AR 01072543) this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000255/2007002-03, CRDM Testing Practice Violates TS 3.1.4).

.2 Shutdown Cooling Heat Exchanger Operation

a. Inspection Scope

In NRC Inspection Report 2006004, as part of equipment alignment baseline inspection (7111104Q), the inspectors opened URI 05000255/2006004-01 pending determination from NRR as to what constitutes a train of shutdown cooling in TS 3.9.5. On February 22, 2007, NRR provided a response to Task Interface Agreement (TIA) 2006-004. The inspectors reviewed the licensee’s actions during April of 2006 in light of the TIA response. The inspectors concluded that the licensee had violated TS 3.9.5 by rendering one SDCHX inoperable, thus rendering one train of SDC inoperable. In addition, the inspectors concluded that the licensee had inappropriately modified a TS without NRC approval by altering the TS bases to define a train of SDC to allow sharing a single SDCHX with another train.

b. Findings

Failure to Comply with TS 3.9.5

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated NCV of TSs for removing a train of safety equipment without complying with the required action and completion time when the LCO was not met. Specifically, the licensee removed one train of shutdown cooling in April 2006 (by removing one shutdown cooling heat exchanger - SDCHX) for planned maintenance while the reactor was in mode six with cavity level below 647 feet. Per TS 3.9.5, with one SDC train inoperable the required action was to immediately initiate action to restore SDC train to Operable status or initiate action to establish the refueling cavity water level $\geq$647 ft elevation. The licensee should not have intentionally removed the piece of equipment from service, which put them in an action completion time of "immediately." This finding closes URI 05000255/2006004-01.

Description: On April 25, 2006, during a review of system lineups for replacement of CV-3070, Left Train High Pressure Safety Injection Subcooling valve, the inspectors noted that one SDCHX was removed from service and tagged out as part of the isolation for the work. The inspectors questioned the operating shift and Operations management as to why this was an acceptable lineup for shutdown cooling. Technical Specification 3.9.5 required two SDC trains to be Operable when in Mode 6 with cavity level less than 647 feet. The inspectors assessed two SDCHXs as needed for two SDC trains based on the TS LCO and the bases which defined an Operable train consisting "of an SDC pump, a heat exchanger, valves, piping, instruments and controls to ensure an Operable flowpath and to determine primary coolant system (PCS) temperature." The licensee contended that since Palisades had not been designed for a single passive failure and the heat exchangers are one unit, a single sub-unit can be isolated provided primary temperature can be maintained. The licensee and NRC management discussed the issue and the licensee stated the existing configuration complied with their license. The licensee completed a TS bases change to clarify their position. The licensee expedited the repairs to the valve and placed detailed contingency actions in place on April 27, 2006, to address the inspectors' concerns. The heat exchanger was restored to service on April 30, 2006.

This issue involved several complex parts and required a response from NRR in accordance with the TIA process. The TIA resolves URI 05000255/2006004-01. NRR issued Response to TIA 2006-004, "Request for Technical Assistance - Impact of Heat Exchangers Out-of-Service on Shutdown Cooling System Trains at Palisades" (ML070400193) to Region III on February 22, 2007. NRR concluded that TS 3.9.5 required a distinct pump and distinct heat exchanger for each train of SDC. The inspectors concluded the licensee should not have removed the heat exchanger from service for planned maintenance in that operating mode when the required action and completion time was to restore the train to operable "immediately."

Analysis: The inspectors concluded that not complying with the completion time requirements of "immediately" (the heat exchanger was unavailable for over four days) in Action A of TS 3.9.5 was a performance deficiency that warranted further evaluation. The finding is more than minor since it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. The finding was associated with the cornerstone attribute of equipment performance (unavailability of the SDCHX). Since the plant was shutdown, the inspectors evaluated this finding in accordance with Appendix G, "Shutdown Operations Significance Determination Process," of IMC 0609, dated February 28, 2005. The inspectors used Attachment 1, Checklist 3, dated May 24, 2004, since the RCS was vented and the level in the cavity was <23 feet. The RCS level was never in "reduced inventory" during this period of time (defined as more than 3 feet below the vessel flange or 623 feet) and the lowest level was 623 feet and 8 inches. The time to core boil was over four hours. The inspectors noted the checklist is conservatively based on Generic Letter 88-17 guidelines for reduced inventory. The inspectors reviewed the requirements for the defense in depth required in the licensee's commitments to Generic Letter 88-17 as well the checklist items. The inspectors noted only one Decay Heat Removal (DHR) train was operable (I C.(1) of Checklist 3). Other items for defense in depth including backup injection flowpaths, pump sources, vent paths and water sources were available as required in GOP-14, Shutdown Cooling Operations.

The inspectors concluded that although the single heat exchanger was not susceptible to a single active failure and would not be impacted by a loss of offsite power, there was some increased chance of loss of DHR with one SDCHX out of service; therefore, a Phase 2 evaluation was required. The Region III Senior Risk Analyst performed a modified SDP Phase 2 for this issue using Attachment 2 to Appendix G (dated February 28, 2005). The Senior Reactor Analyst (SRA) determined that this was a condition finding involving the shutdown initiating event of loss of DHR. The plant operational state (POS) was determined to be "POS 2" (PCS vented). The inspector performed the condition assessment using Worksheet 9 for a loss of DHR in POS 2. The SRA used initiating event frequency data from NUREG/CR-6928, "Industry-Average Performance for Components and Initiating Events at U.S. Commercial Nuclear Power Plants." Use of the frequency data listed in Appendix G was inappropriate for this Palisades specific case since the opposite shutdown cooling train was in operation at the time, and the finding only affected the risk increase due to losing the function of the heat exchanger. The initiating event likelihood for failure of the shutdown cooling heat exchanger due to plugging or fouling was on the order of 6 x 10-7 per the NUREG. The likelihood of failure due to leakage from either the heat exchanger tubes or shell was even less. The SRA assumed a bounding value of 1 x 10-6. Maximum credit was warranted for the functions of DHR recovery before Safety Injection Refueling Water Tank (SIRWT) depletion, makeup to the SIRWT, and feed and bleed. Some credit for the function for DHR recovery before PCS boiling was warranted; however, without any credit this issue would still result in a finding of very low safety significance. The resulting ΔCDF was less than 1 x 10-6, resulting in a very low level of significance (Green).

Enforcement: Technical Specifications require, in part, that Required Actions be taken within the specified Completion Time for the applicable condition. Contrary to this, on April 25, 2006, the licensee failed to comply with the Completion Time for Condition A (one SDC train inoperable) of TS 3.9.5 which was to "immediately" initiate action to restore operability. Since this was a planned activity, the licensee should not have removed the train from service. The train was inoperable for about four days. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (AR 01082854) this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000255/2007002-04, Failure to comply with TS 3.9.5).

Failure to Comply with TS 5.5.12 TS Bases Control Program

Introduction: The inspectors identified a Severity Level IV NCV of TS 5.5.12 for the failure to comply with the TS Basis Control Program. Specifically, the licensee made a change to the TS bases for TS 3.9.5 which altered the TS definition of "two SDC trains" described in TS 3.9.5, to not require two SDCHXs with cavity level less than 647 feet. This change required prior NRC approval since a change to TSs was needed. The TS bases change did not indicate a change to TS was required.

Description: On April 25, 2006, during a review of system lineups for replacement of CV-3070, Left Train High Pressure Safety Injection Subcooling valve, the inspectors noted that one SDCHX was removed from service and tagged out as part of the isolation for the work. The inspectors questioned the operating shift and Operations

Department management as to why this was an acceptable lineup for shutdown cooling. Technical Specification 3.9.5 requires two SDC trains to be Operable when in Mode 6 with cavity level less than 647 feet. The details of the discussion are included in the finding described in the section above (NCV 05000255/2007002-04). The licensee contended that since Palisades had not been designed for a single passive failure and the heat exchangers are one unit, a single sub-unit can be isolated provided primary temperature can be maintained. The licensee and NRC management discussed the issue and the licensee stated the existing configuration complied with their license. The licensee prepared a TS bases change, using the 10 CFR 50.59 process to evaluate the acceptability of the change. The licensee prepared a TS bases change which specifically indicated that both heat exchangers operate as a single heat exchanger with two partial capacity units.

On April 28, 2006, the license determined this TS bases change was an enhancement and the 10 CFR 50.59 screen concluded a 10 CFR 50.59 evaluation was not required. The inspectors reviewed the screen and supporting documents but did not agree with the licensee's conclusion that the change was only an enhancement not requiring a 10 CFR 50.59 evaluation or possible NRC approval. Because of the complexity of the issue, the region formally requested support from NRR. Response to TIA 2006-004, "Request for Technical Assistance - Impact of Heat Exchangers Out-of-Service on Shutdown Cooling System Trains at Palisades" (ML070400193), indicated NRC permission was required since the each train of shutdown cooling requires a distinct SDC Heat Exchanger as part of the TS train. The inspectors concluded that a bases change required a change to the TS incorporated in the license. This is a violation of TS 5.5.12 b. which establishes TS bases control.

<u>Analysis</u>: The inspectors concluded that the failure to perform an adequate review of the licensing basis to determine that the TS bases change required NRC approval was a performance deficiency that warranted a significance review. The inspectors, with NRR's assistance in the TIA, concluded that the TS bases change required prior NRC approval. Therefore, the inspectors concluded this issue impacted the NRC's ability to perform its regulatory function. This item has some potential to impact the mitigating system cornerstone, and this was assessed in this report as NCV 05000255/2007002-04 as very low safety significance (Green). Consistent with the Enforcement Policy, the inspectors concluded that this finding was Severity Level IV since the SDP screened as Green. The inspectors also determined that this finding had a cross-cutting aspect in the area of Human Performance, because the licensee failed to use conservative assumptions in changing the TS bases with a licensing bases which was very complex (H.1(b)). The licensee made the TS bases change as an enhancement.

<u>Enforcement</u>: Technical Specification 5.5.12 requires, in part, that the licensee may make changes to the TS bases under a TS Bases Control Program without NRC approval provided the change does not require a change to the TS or require NRC approval pursuant to 10 CFR 50.59. Contrary to this, on April 28, 2006, the licensee changed the TS bases for TS 3.9.5 which altered the TS definition of "two SDC trains" described in TS 3.9.5, and did not require two SDCHXs with cavity level less than 647 feet. This change should have required prior NRC approval because it required a change to TSs. However, because this violation was of very low safety significance and

because the issue was entered into the licensee's corrective action program (AR 01082854) this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000255/2007002-05, Failure to Comply with TS 5.5.12 TS Bases Control Program).

.3 (Closed) URI 0500255/2006009-13: Incorrect Auxiliary Feedwater Vortex Limit Calculation

Introduction: The inspectors identified a finding having very low significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, the licensee misinterpreted a graph used to determine the percent air ingestion as a function of the Froude number, which resulted in a non-conservative value for pump air entrainment being used in vortex limit calculations for the auxiliary feedwater pumps.

Description: During the component design basis inspection, the inspectors determined that, in calculation EA-FC-954-03, the licensee incorrectly derived the percentage of air entrainment that would be experienced by the auxiliary feedwater pumps when the low suction pressure trip actuated. This was due to the licensee misinterpreting application of a graph in Knauss, "Swirling Flow Problems at Intakes," and non-conservatively selecting an air entrainment value based upon a test data point rather than using the graph envelope line. Use of the non-conservative set point would have resulted in the auxiliary feedwater pumps having as much as six percent air entrainment when the low suction pressure trip actuated. Following the component design basis inspection, the licensee learned that this increase in air entrainment was not supportable. The inspectors also identified that the licensee had not included the auxiliary feedwater pipe which protruded into the condensate storage tank by 1.25 inches. This further increased the amount of air entrainment which would be experienced at established tank action levels.

The licensee performed a new calculation, based on ensuring that pump air entrainment did not exceed four percent and determined that: (1) the low suction pressure trips of the auxiliary feedwater pumps would be non-conservative even at design basis flows; (2) that operator action would be necessary to trip the AFWs; (3) that, in order to ensure sufficient time for operator action to occur, the minimum level for the low-low level alarm needed to be raised; and (4) that the design basis minimum tank level needed to be raised from 68 percent to 71 percent. The inspectors noted that none of these changes required a change to the plant alarm set points, although it did change the time the operator had to respond to those set points before the plant analytical basis was exceeded.

On March 6, 2007, the licensee performed Revision 4 of operability Recommendation 3 to AR 01062644 and determined, with the above changes in place, that the pumps were operable but non-conforming. The inspectors noted that licensee emergency operating procedures required operators to monitor condensate storage tank level and to reduce auxiliary feedwater flow in order to maintain steam generator levels. Because the flow was reduced, the inspectors determined that, prior to the compensatory actions being implemented, there was sufficient time for an operator to take action to trip the operating pump prior to four percent air entrainment in the pumps being exceeded. The inspectors also noted that the plant's design basis, which only required one AFW to meet design flows, ensured operability of the auxiliary feedwater function, even if the air entrainment in one pump exceeded four percent.

Analysis: The inspectors determined that failure to properly calculate the correct condensate storage tank level required to prevent excessive air entrainment into the AFWs was a performance deficiency, because the calculation accepted AFW air entrainment amounts that would have rendered the pumps unable to perform their safety function.

The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612 "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," Example 3i, because the calculational error was significant enough to require reanalysis of the pumps' ability to perform their design function and because changes to plant procedures were necessary in order to ensure pump operability. The inspectors noted that the error appeared to be programmatic as a similar error was made in calculating the air entrainment to the high pressure safety injection pumps. Therefore this performance deficiency impacted the Mitigating Systems Cornerstone objective of ensuring the capability of the AFWs to provide water to the steam generator following design basis accidents.

The inspectors performed a screening evaluation per IMC 0609, Appendix A, Phase 1. The finding screened as Green because, although it was a design issue, there was not a loss of function of the auxiliary feedwater pumps. The inspectors determined there was not a cross-cutting aspect to this finding.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, as of July 12, 1995, the licensee did not adequately translate design basis information into the vortex limit calculation for the AFWs. Specifically, calculation EA-FC-954-03 did not properly account for the amount of air entrainment that the pumps would experience when the condensate storage tank was being relied upon as the source of water for the AFWs.

The licensee entered the finding into their corrective action program as AR 01062644. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000255/2007002-06, Incorrect Auxiliary Feedwater Vortex Limit Calculation). The URI is closed.

.4 (Closed) URI 0500255/2006009-14: Addition of Manual Operator Action Not Evaluated in Accordance with 10 CFR 50.59

Introduction: The inspectors identified a finding having very low significance and an associated NCV of 10 CFR 50.59, "Changes, Tests, and Experiments." Specifically, the licensee introduced a manual operator action to trip the AFWs to prevent excessive air entrainment and pump damage and did not perform an evaluation under 10 CFR 50.59.

Description: During the component design basis inspection, the inspectors determined that the licensee had performed an inadequate 10 CFR 50.59 screening in 1996 as part of a setpoint change which incorporated a low-low level set point alarm on the condensate storage tank. The inspectors noted that the 50.59 screening only described making a change to ensure that the 100,000 gallons required by the TSs were available and did not address the addition of the low-low level setpoint, although that was one of the changes implemented by the setpoint change. The inspectors determined that the question as to whether the setpoint change involved a change to the facility as described in the Final Safety Analysis Report (FSAR) should have been answered “yes” as the low suction pressure AFW trip was described in FSAR Section 7.4.3.2. Furthermore, the licensee acknowledged, that the FSAR, at that time, stated that the purpose of the switches was to trip the pumps on low condensate storage tank water level. During the component design basis inspection, the inspectors questioned whether further evaluation under 10 CFR 50.59 was necessary if the licensee planned to credit the manual operator action in lieu of the automatic low suction pressure trip in order to prevent damage to the AFWs. In response, the licensee prepared Evaluation 06-0202. The inspectors identified a number of problems with the evaluation, as discussed in NRC Inspection Report 05000255/2006009. This issue was left unresolved, pending a complete operability evaluation. On January 23, 2007, the licensee stated that, based on review of the licensing basis at the time of the modification, they agreed that a license amendment was needed in order to credit the manual action. As described in Section 4OA5.1 of this report, the licensee took compensatory actions to ensure operability of the AFWs and was pursuing corrective actions to restore the functionality of the low suction pressure trip.

Analysis: The inspectors determined that the failure to perform a 10 CFR 50.59 to evaluate the addition of the low-low level condensate storage tank alarm set point and associated manual operator action was a performance deficiency as it led to the licensee failing to seek a license amendment from the NRC.

Because violations of 10 CFR 50.59 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process instead of the SDP. The inspectors reviewed the Enforcement Policy and determined that the performance deficiency met Supplement I.D.5, "Violations of 10 CFR 50.59 that result in conditions evaluated as having very low safety significance (i.e., Green) by the SDP," for a Severity Level IV violation, because the underlying technical issue was determined to have very low safety significance as indicated in section 4OA5.1.

The inspectors determined there was not a cross-cutting aspect to this finding.

Enforcement: Title 10 CFR 50.59(d)(1) states, in part, that the licensee shall maintain records of changes in the facility, of changes in procedures, and of tests and experiments as described in the FSAR, as updated. These records must include a written evaluation which provides a basis for the determination that the change, test, or experiment does not require a license amendment.

Palisades FSAR, Section 7.4.3.2, describes the low suction pressure AFW trip. In 1996, the FSAR stated that the purpose of the switches was to trip the pumps on low condensate storage tank level.

Contrary to the above, on August 22, 1996, and on December 20, 2006, the licensee failed to provide an adequate basis for the determination that the change to the facility per Setpoint Change 96-012 in August 1996 was acceptable without a licensee amendment. Specifically, on January 23, 2006, the licensee concluded that a license amendment would be required to permanently substitute manual operator actions in place of the automatic low suction pressure trip of the auxiliary feedwater pumps.

The licensee entered the finding into their corrective action program as AR 01067550. Because this violation was not willful, was of very low safety significance, and was entered into the licensee's corrective action program, this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000255/2007002-07, Addition of Manual Operator Action Not Evaluated in Accordance with 10 CFR 50.59). The URI is closed.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. C. Schwarz and other members of licensee management on April 11, 2007. Licensee personnel acknowledged the findings presented. The inspectors asked licensee personnel whether any materials examined during the inspection should be considered proprietary. All proprietary information was returned to the licensee.

.2 Interim Exit Meetings

Interim exit meetings were conducted for:

- Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems with Mr. P. Harden on January 18, 2007.
- Licensed Operator Requalification with Mr. J. Walker, Licensed Operator Requalification Training Supervisor, on February 21, 2007, via telephone.
- Closure of URIs 05000255/2006009-13 and 14 with Mr. G. Hettel on March 15, 2007.

4OA7 Licensee-Identified Violations

The following two 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 Title 10 CFR Part 50 Appendix B, Criterion III, for the failure to ensure that measures were established for the selection and review for suitability of application for materials essential to the safety-related functions of SSCs. Specifically, a non-licensed operator identified that a cable tray in the CCW room had degraded safety-related cables running through it. Further investigation by the licensee identified that the 35 cables in the tray had been subjected to elevated temperatures that embrittled the cable outer jackets and interior wiring insulation. The cables provided instrumentation and control functions for numerous safety-related systems including SW and CCW. The cable tray was located inches above an uninsulated blowdown line that routinely operated at several hundred degrees. All equipment served by the cables remained functional. The NRC concluded the licensee failed to ensure that either the cables were suited to the environment or that the pipe was insulated such that the selected cables would not be degraded. Subsequent to the discovery, the licensee replaced the degraded cable sections and insulated the pipe. The inspectors performed a phase two analysis using Palisades Risk-Informed Inspection Notebook and determined the condition was of very low risk. However, since external events needed to be assessed (seismic and fire), the inspectors forwarded the evaluation to the SRA for a Phase 3 assessment for external events.

Phase 3 Assessment - External Events In accordance with IMC 0609 Attachment 1 Step 2.5, the Phase 2 SDP result of greater than or equal to 1×10^{-7} necessitated performance of a Phase 3 analysis by a SRA to estimate the increase in risk due to external initiators. The discussion below is based on the SRA's review of the licensee's June 1995 Individual Plant Examination of External Events (IPEEE) report, and the NRC's Risk Assessment Standardization Project Handbook for External Events.

For fires, the ignition frequency of fires in the CCW pump room was listed as 2.36E-3/yr in the IPEEE report. To estimate a conditional core damage probability, the SRA used the Simplified Plant Analysis Risk Model (SPAR), version 3.31 for Palisades. The initiating event was assumed to be a transient. The base case conditional core damage probability was estimated assuming failure of both CCW heat exchangers, EDG 1-2, Low Pressure Safety Injection Pump P-67A, HPSI Pump P-66A, and Containment Spray Pump P-54A. The overall delta CDF_{fire} estimate given these assumptions was 1.2E-8/yr.

For seismic events, the NRC's Risk Assessment Standardization Project Handbook lists the seismic-induced Loss of offsite power frequency for Palisades as 3.05E-5/yr. To estimate a conditional core damage probability, the SRA again used the SPAR Model. The initiating event was assumed to be a loss of offsite power because of the potential inoperability of EDG 1-2. The SRA also assumed the most conservative offsite power probabilities for recovery (i.e., weather-related loss of offsite power) used in the SPAR Model. The base case conditional core damage probability was estimated assuming failure of both CCW heat exchangers, EDG 1-2, Low Pressure Safety Injection Pump P-67A, HPSI Pump P-66A, and Containment Spray Pump P-54A. The overall delta $CDF_{seismic}$ estimate given these assumptions was 6.4E-7/yr.

Other external event initiators such as flooding, high winds, transportation accidents, and accidents at nearby facilities that could potentially pose a threat to Palisades were screened as not credible.

The SRA concluded that the total delta risk for external events was bounded within the SDP Phase 2 result and therefore did not change the overall SDP Phase 2 conclusion.

Phase 3 Assessment - Large Early Release Frequency (LERF) - Using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," the SRA determined that this was a Type "A" finding (i.e., LERF contributor) for a large dry containment. For PWR plants with large dry containments, only findings related to accident categories Interfacing System Limiting Condition for Operations Action Requirement and Steam Generator Tube Rupture have the potential to impact LERF. Since this finding was not related to Interfacing System Limiting Condition for Operations Action Requirement or Steam Generator Tube Rupture, nor did any of the core damage sequences from the Phase 2 analysis have the potential to affect LERF, the SRA concluded that LERF was not a significant contributor to the risk associated with this finding.

Significance Determination Conclusion: The inspectors concluded that the total ΔCDF considering internal events, external events, and LERF was less than 1E-6/yr (Green).

The licensee entered this condition into the corrective action program as CAP 0107798.

- Technical Specification 5.5.1 requires that the ODCM be established, implemented, and maintained. It also prescribes that the ODCM shall contain the radioactive effluent controls and radiological monitoring activities. The ODCM (Revision 20) provides the requirements for sampling effluents, including compensatory actions when the primary methods for sampling effluent streams are not available. Contrary to these requirements, there were two occasions of missed samples:

  - On August 4, 2006, the service water grab sample was not taken within the time criteria; and
  - On September 26, 2006, the Stack Normal Range Noble Gas Monitor grab sample was not taken within the time criteria.

  These occurrences were documented in the licensee’s corrective action program as AR 01068901. These effluent release program issues represent a finding of very low safety significance because they did not impair the ability to assess dose to the public and because the assessed dose was less than the values in Appendix I to 10 CFR Part 50 and/or 10 CFR 20.1301(d).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee
C. Schwarz, Site Vice President
B. Baker, Shift Manager
G. Baustian, Training Manager
B. Berles, System Engineering Manager
T. Blake, Nuclear Safety Assurance Manager
A. Blind, Design Engineering Manager
L. Blocker, Operations Manager
J. Broschak, Engineering Director
J. Burnett, REMP/RETS Analyst
B. Dotson, Regulatory Compliance
G. Hettel, Plant Manager
L. Lahti, Licensing Manager
D. Malone, Regulatory Affairs
D. Nestle, Radiation Protection General Supervisor - Technical
H. Nixon, Assistant Operations Manager
B. Patrick, Radiation Protection Manager
P. Russell, Program Engineering Manager
G. Sleeper, Assistant Operations Manager
K. Smith, Nuclear Oversight Manager
J. Walker, Licensed Operator Requalification Training Supervisor

Nuclear Regulatory Commission
M. Chawla, Project Manager, NRR

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000255/2007002-01	NCV	CV-0821 Corrective Actions Not Effective to Prevent Repeat Failure (Section 1R20)
05000255/2007002-02	URI	EAL Classification During Drill (Section 1EP6)
05000255/2007002-03	NCV	CRDM Testing Practice Violates TS 3.1.4 (Section 4OA5.1)
05000255/2007002-04	NCV	Failure to comply with TS 3.9.5 (Section 4OA5.2)
05000255/2007002-05	NCV	Failure to Comply with TS 5.5.12 TS Basis Control Program (Section 4OA5.2)

05000255/2007002-06	NCV	Incorrect Auxiliary Feedwater Vortex Limit Calculation (Section 4OA5.3)
05000255/2007002-07	NCV	Addition of Manual Operator Action Not Evaluated in Accordance with 10 CFR 50.59 (Section 4OA5.4)

<u>Discussed</u>

05000255/2006008-00	LER	Inoperable Containment Due to Containment Air Cooler Through-Wall Flaw (4OA3)
05000255/2007002-00	LER	Inoperable Containment Due to Containment Air Cooler through-Wall Flaw (4OA3)

<u>Closed</u>

05000255/2006007-00	LER	Auxiliary Feedwater Control Switches Not Positioned For Automatic Actuation (4OA3)
05000255/2007001-00	LER	Failure to Perform Offsite Power Source Check (4OA3)
05000255/2007002-01	NCV	CV-0821 Corrective Actions Not Effective to Prevent Repeat Failure (Section 1R20)
05000255/2007002-03	NCV	CRDM Testing Practice Violates TS 3.1.4 (Section 4OA5.1)
05000255/2007002-04	NCV	Failure to Comply with TS 3.9.5 (Section 4OA5.2)
05000255/2007002-05	NCV	Failure to Comply with TS 5.5.12 TS Basis Control Program (Section 4OA5.2)
05000255/2007002-06	NCV	Incorrect Auxiliary Feedwater Vortex Limit Calculation (Section 4OA5.3)
05000255/2007002-07	NCV	Addition of Manual Operator Action Not Evaluated in Accordance with 10 CFR 50.59 (Section 4OA5.4)
05000255/2006004-01	URI	Isolation of One Shutdown Cooling Heat Exchanger (Section 4OA5)
05000255/2006009-13	URI	Incorrect Auxiliary Feedwater Vortex Limit Calculation (Section 4OA5)
05000255/2006009-14	URI	Addition of Manual Operator Action Not Evaluated in Accordance with 10 CFR 50.59 (Section 4OA5)

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.

<u>1R01</u> <u>Adverse Weather Protection</u>
Off-Normal Procedure (ONP)-12, Acts of Nature, Revision 23
System Operating Procedure-15, SW System, Revision 40

<u>1R04</u> <u>Equipment Alignment</u>
SOP-22, Attachment 8 Checklist 22.1, Diesel Generator System Checklist, Revision 41
Piping and Instrument Drawing M214, Emergency Diesel Generator, Revision 69
Piping and Instrument Drawing M207, Auxiliary Feedwater System, Revision 34
System Diagram M204, Safety Injection, Containment Spray and Shutdown Cooling System, Revision 6
System Diagram M203 Sheet A, Safety Injection, Containment Spray and Shutdown Cooling System, Revision 5
SOP-12 CL 12.5, Auxiliary Feedwater System Checklist, Revision 49
SOP-3, Safety Injection, Revision 68
CAP 01082854, Distinct SDCHX Required For Each Operable SDC Train, March 19, 2007

<u>1R05</u> <u>Fire Protection</u>
Palisades Nuclear Plant Fire Hazards Analysis, Revision 7
Pre-fire Plan 7, Control Room
EA-FPP-03-001, Combustible Loading Analysis by Fire Area, Revision 1
Pre-Fire Plan 34, Control Room HVAC Mechanical Equipment Rooms

<u>1R06</u> <u>Flood Protection</u>
ARP-8, Safeguards Safety Injection and Isolation Scheme, Revision 66
SOP-3, Safety Injection and Shutdown Cooling System, Revision 68

<u>1R11</u> <u>Licensed Operator Requalification</u>
Simulator Review Committee Meeting Minutes, October 11, 2006
Fleet Procedure FP-T-SAT-80, Simulator Configuration Management, Revision 1
Emergency Operating procedure (EOP) - 1, Standard Post-Trip Actions, Revision 12
Nuclear Training Procedure PNT 7.0, Simulator Training, Revision 8
Operations Licensed Training Requalification Training Guide PL-OPS-SPE-063E, Revision 0
Form QF-1073-02 R00, Crew Simulator Examination Summary for February 1, 2007
Form QF-1073-03 R00, Individual Operator(s) Examination Summary for February 1, 2007

1R12 Maintenance Effectiveness

EM–25, Maintenance Rule Program, Revision 5
EGAD-EP-10, Maintenance Rule Scoping Document, Revision 4
ELU System Health Report, January 8, 2007
CAP search "ELU" January 1 2005 to February 6, 2007
Maintenance Rule Functional Failure List ELUs January 1, 2005 to February 6, 2007
FPSP-AE-4, ELU, Performed January 12, 2007
Open Work Orders on ELU System on February 6, 2007
Maintenance Rule Evaluations for the following CAP: 01000990, 01001824, 01002605, 01006489, 01008151, 01033495, 01033495, 01064369
Vendor Specifications for Big Beam Lights, January 2007
CAP 01077090, Emergency Lighting System Maintenance Rule Performance Monitoring, February 13, 2007
Check Valve Program health Report, March 21007
WO 00294476, EEQ Required P-67A MTR/PMP Oil Change, March 21, 2007
WO 00028826, EEQ Required P-66B MTR/PMP Oil Change, January 11, 2006
T-278-1, Nitrogen Station No 1 Performance Test, Revision 3
T-278-2, Nitrogen Station No 2 Performance Test, Revision 2
PMRQ00004276 01, CK-FW704, Nonintrusive Check Valve Test, August 9, 2004
CAP 012898, Radiography Shows Check Valve CK-ES3332, Internals Separated, September 5, 2000
Palisades Action Plan EP-2000-01, Improve Check Valve Testing and Institute Condition Monitoring, November 8, 2000
CAP 01041130, CK-HED404, Check Valve Possible Leak, July 28, 2006
CAP 01070944, Missed Surveillance CK-ES3233/3330, January 10, 2007
ACE 003205, Removed Check Valve CK-DE-405 from EDG 1-1 Found with Broken Seat, November 14, 2003
CAP 013568, PPACs on CK-CA424 and CK-CA426 Not Performed as Scheduled, May 4, 2001
CAP 035000, CK-CA-486 Failed Acceptance Criteria, April 8, 2003
CAP 044802, CK-CA442 Failed Special Test Procedure T-278-5, October 22, 2004

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

Work Week 0702 Schedule and Risk Profile
Work Week 0705 Schedule and Risk Profile with VC-10 Unplanned LCO
Work Week 0706 Schedule and Risk Profile
Work Week 0712 Schedule and Risk Profile
Shutdown Risk Week of 26 February for Forced Outage
DBD-1.07, Auxiliary Building HVAC Systems, Revision 4
DBD-4.01, Station Batteries, Revision 6

1R15 Operability Evaluations

OPR 01062644, Auxiliary Feedwater Pumps P-8A, P-8B P-8C, Revision 3
OPR 01062199, Emergency Diesel Generator Fuel Oil Supply System, Revision 0
OPR 01073070, Safety Injection Tank T-82A Level Indicating System, Revision 0
SOP-3, Safety Injection System, Revision 68
CAP 01072930, VHX-4, Containment Air Cooler SW Leak, January 19, 2007
CAP 002871, Loss Of Offsite Power Due to Fault of S/U Transformer 1-2, July 14, 1987

CAP 034500, Root Cause Evaluation: Loss of Offsite Power That Resulted In a Loss Of Shutdown Cooling, March 25, 2003
CAP 01072543, QO-34 Missed for Rods, January 23, 2007
OPR 01080435, CV-0821 and CV-0822, March 13, 2007

1R19 Post Maintenance Testing
Administrative Procedure 5.19, Post Maintenance Testing, Revision 12
SOP-22, EDG, Revision 42
MO-7A-2, Technical Specification (TS) Surveillance EDG 1-2, Performed January 24, 2007
WO 00267514-01, Air Start Motor Replacement ASM-2B, January 23, 2007
WO 0030203802, K-6B Auxiliary Systems Maintenance, January 23, 2007
CAP 01074382, CV-0885 Metal filings seen on Actuator Stem, January 29, 2007
WO 00314399, VC-10 Failed to Start, February 5, 2007
M656, Heating and Ventilation Air Flow Diagram, Revision 21
Equivalency Evaluation EC 10081 (TC-1676A/B and TC-1675A/B): Seismic Adequacy Verification Checklist For Replacement Parts, February 7, 2007
CAP 01078361, Post Maintenance Testing Requirements Not Clear in WO, February 20, 2007
WO 00298655, MO-7A-2 Emergency Diesel Generator 1-2, February 23, 2007
WO 00317907-11,12,13,14, Evidence of Heating Damage to Cables in CCW Room, March 2, 2007
WO 00320576, CV-0821 Will Not Close, March 6, 2007
Permanent Maintenance Procedure (MSM) M-57, Universal Diagnostic System Operating Procedure for CV-0821, March 6, 2007
CAP 01080897, QO-5 Confusing Directions in Attachment 17, March 8, 2007
CAP 01080964, CV-0821 Stroke Outside QO-5 Criteria, March 8, 2007

1R20 Refueling and other Outage Activities
CAP 01080435, CV-0821 Failed to Operate, March 4, 2007
CAP 01021767, CV-0821 Would Not Close When Associated Control Switch Was Placed In Close, April 3, 2006
RCE000295 (CPAL-02-1832), Sand In The SW System, July 25, 2002
CPAL0002362, CV-0821 Would Not Close on Associated Close Signal From TIC-0821, July 31, 2000

1R22 Surveillance Testing
Administrative Procedure 9.20, TS Surveillances And Special Test Program, Revision 23
CAP 01070944, Missed Surveillance, CK-ES3233 and CK-ES3330, January 10, 2007
MSI-I-16, Nonintrusive Diagnostic Check Valve Test Procedure (Using Viper/UDS Platform), Revision 1
WO 29501, CK-ES3330, January 10, 2006
WO296151, CK-ES3233, January 10, 2007
QO-1, Safety Injection System, Revision 53
SHO-1, Shift Surveillance Data Sheet for January 23, 2007 (Revision 64)
QO-21B, Inservice Test Procedure - AFW System, performed February 14, 2007 for AFW Pump 8B
NMS-I-7, Dual Linear Power Channel Tilt Adjustment, Revision 19

NMS-I-10, Dual Linear Power Current Measurements, Revision 12
CAP 01077105, P-8B AFW Pump Work Activity Not Performed Per Schedule, February 13, 2007

1R23 Temporary Modifications
Temporary Modification, EC- 9389, Isolate leaking Cooling Coil Within Containment Air Cooler VHX-4, Revision 0

1EP6 Emergency Plan Drills
First Quarter Emergency Planning Drill Guide
EOF Log # 13, March 14, 2007

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems
Update Safety Analysis Report Section 11, Revision 26
Procedure No. MR-14, Process Monitor Function Checks - Monthly, Revision 26
Procedure No. HP 6.4, Radioactive Liquid Calculation and Release Authorization, Revision 27
Release Authorization, Batch 07-001-R, January 9, 2007
Procedure No DWR-10, Stack Effluent Sampling, Calculations, and Records, Revision 24
Nuclear Oversight Observation Report No. 2005-003-8-022, REMP/RETS Assessment, completed October 10, 2005
Snapshot Self-Assessment Report, SAR 891868, Effluent Monitoring and Offsite Dose Calculation Program (RETS/ODCM), completed December 20, 2006
2005 Annual Radioactive Effluent Release and Waste Disposal Report, March 29, 2006
Offsite Dose Calculation Manual, Revision 20, issued July 6, 2005
AR 01044243, Potential Trend - RIA0833 SW Monitor OOS, initiated August 14, 2006
AR 01057326, RIA-1113 Waste Gas Monitor Inoperable Due to Incomplete Gas Batch Release, initiated October 24, 2006
AR 01013659, RETS Sampling Time Requirements Not Met, initiated February 6, 2006
AR 01043260, SW Grab Sample Not Taken Within the Time Criteria, initiated August 7, 2006
AR 01051595, RIA-2326 Grab Sample not Taken within Required Time Criteria, initiated September 21, 2006
AR 01055627, Effluent Grab Sample not Evaluated after Activity was Identified on Multichannel Analyzer Printout on the SW Grab Sample, initiated October 13, 2006.

4OA1 Performance Indicator Verification
Control Room Logs for Reactor Start-up and Shutdown January 1, 2006 to January 1, 2007
NEI 99-02 Revision 4, Performance Indicators
Palisades 4Q/2006 Performance Indicators

4OA2 Problem Identification and Resolution
RCE01059768, Auxiliary Feedwater Pumps Not Aligned for "Auto" Operation- Final, November 21, 2006
RCE000377, Unexplained Jumper on Auxiliary Feedwater Pump Low Suction Trip Switch PS-0741A, May 11, 2005

4OA3 Event Follow-up

E247, Low Pressure Safety Injection Pump P67A, Revisions 17 and 18
VEN-E5, Sheet 63, 2400V SWGR. BUS ID. BKR. 152-206 L.P. Safety Injection Pump P67A, Revision 76
E-1207(Q) Sh. 2, AFAS-FOGG Indication Display, Revision 7
E-292, Sh. 4, Annunciators Auxiliary Water Systems, Revision 26
E-292, Sh. 5, Schematic Diagram Annunciators Auxiliary Water Systems, Revision 23
MSE-E-2, Electrical Wire and Cable Splicing Methods, Revision 10
MSEE-5, "Installation of Raychem Heat Shrinkable Insulation", Revision 15
WO 00317907 04, Perform PMT on Cables for SV/POS-0879 & EK-1155 & EK-1156, February 24, 2007
WI-SPS-02, Insulation Resistance Testing of Electrical Equipment, Revision 2
Palisades Plant Electrical Circuit Schedule E-33 for Raceway XP341, February 28, 2007
AR 01077798, Evidence of Heating Damage to Cables in CCW Room Raceway, February 17, 2007
AR 1079902, Post Splice Meggering of Repaired Cables Not Performed, March 1, 2007

4OA5 Other

CAP 01082854, Distinct SDCHX Required For Each Operable SDC Train, March 19, 2007
Special Operating Procedure ESSO-11, Shutdown Cooling Heat Exchanger Isolation, Revision 2
Engineering Change (EC) 7866, 50.59 Screening and TS Basis Change: Enhancement to TS Basis on Shutdown Cooling Train Definition, April 28, 2006
Control Room Logs, Palisades, April 25 - May 1, 2006
AR 01052544 OPR 3, Operability of the Auxiliary Feedwater Pumps at the Low-Low Condensate Storage Tank Level, Revision 4
EA-GOTHIC-CST-01, Determination of Initial Condensate Storage Tank (T-2) Indicated Level to Ensure 100,000 Gallons of Available Inventory, March 6, 2007
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LIST OF ACRONYMS USED

ADAMS	Agency-Wide Document and Management System
AFW	Auxiliary Feedwater Pump
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
CRDM	Control Rod Drive Mechanisms
DHR	Decay Heat Removal
EDG	Emergency Diesel Generator
ECCS	Emergency Core Cooling System
FSAR	Final Safety Analysis Report
HPSI	High Pressure Safety Injection
IMC	Inspection Manual Chapter
IPEEE	Individual Plant Examination of External Events
LER	Licensee Event Report
LERF	Large Early Release Frequency
LCO	Limiting Condition for Operation
NCV	Non-Cited Violation
ODCM	Offsite Dose Calculation Manual
OPR	Operability Recommendations
OWA	Operator Work Around
PARS	Publicly Available Records
PCS	Primary Coolant System
POS	Plant Operational State
RAS	Recirculation Actuation Signal
REMP	Radiological Environmental Monitoring Program
RETS	Radioactive Effluent Technical Specifications
SCAQ	Significant Condition Adverse to Quality
SDCHX	Shutdown Cooling Heat Exchanger
SDP	Significance Determination Process
SIRWT	Safety Injection Refueling Water Tank
SPAR	Simplified Plant Analysis Risk Model
SSC	System, Structure or Component
SRA	Senior Reactor Analyst
SW	Service Water
TIA	Task Interface Agreement
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item