

August 2, 2005

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

SUBJECT: PALISADES NUCLEAR PLANT  
NRC INTEGRATED INSPECTION REPORT 05000255/2005006

Dear Mr. Harden:

On June 30, 2005, 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 July 6, 2005, with you and other members of your staff.

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

Based on the results of this inspection, one NRC-identified and three self-revealed findings of very low safety significance, one of which involved a violation of NRC requirements were identified. However, because these violations were of very low safety significance and because the issues were entered into your corrective action program, the NRC is treating these violations as Non-Cited Violations in accordance with Section VI.A.1 of the Enforcement Policy.

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P. Harden

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Sincerely,

**/RA/**

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

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

Enclosure: Inspection Report 05000255/2005006  
w/Attachment: Supplemental Information

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and Chief Nuclear Officer  
R. Fenech, Senior Vice President, Nuclear  
Fossil and Hydro Operations  
D. Cooper, Senior Vice President - Group Operations  
L. Lahti, Manager, Regulatory Affairs  
J. Rogoff, Vice President, Counsel and Secretary  
A. Udrys, Esquire, Consumers Energy Company  
S. Wawro, Director of Nuclear Assets, Consumers Energy Company  
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000255/2005006

Licensee: Nuclear Management Company, LLC

Facility: Palisades Nuclear Plant

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

Dates: April 1 through June 30, 2005

Inspectors: J. Lennartz, Senior Resident Inspector  
J. Ellegood, Senior Resident Inspector  
M. Garza, Resident Inspector  
R. Alexander, Radiation Specialist  
M. Holmberg, Reactor Inspector  
R. Jickling, Emergency Preparedness Analyst  
M. Parker, NRC Contractor

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000255/2005006; 04/01/2005 - 06/30/2005; Palisades Nuclear Plant; Maintenance Risk Assessments and Emergent Work Control, Problem Identification and Resolution, As Low As Is Reasonably Achievable Planning and Controls, and Event Response.

This report covers a 3-month period of baseline resident inspections and announced baseline inspections in radiation protection and emergency preparedness. The inspections were conducted by Region III inspectors and resident inspectors. Four Green findings, one of which has an associated Non-Cited Violation (NCV), were identified during this inspection period. 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 3, dated July 2000.

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

#### Cornerstone: Initiating Events

- C Green. A finding of very low safety significance was self-revealed on May 9, 2005, when the licensee created an unexpected loss of primary coolant inventory while depressurizing a portion of a safety injection line.

The inspectors determined that the finding was more than minor because the finding was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operation. Specifically, the event resulted in an unexpected loss of coolant in excess of Technical Specifications allowable leakage; however, the finding was of very low safety significance since the leakage was within the capacity of the centrifugal charging pumps. This finding represented a Non-Cited Violation of Technical Specification 5.4, "Procedures", in that procedures were not adequate to perform the evolution. Corrective actions included isolating the leak. (Section 4OA7)

- Green. A finding of very low safety significance was self-revealed on January 9, 2005, when there was an unexpected lowering of condenser vacuum which resulted in a manual reactor trip. Licensee personnel found that a low pressure turbine bearing drain line had failed which caused the lowering of condenser vacuum. This drain line was to have been permanently plugged in 2003 along with three other drain lines as directed by a permanent modification, but was not included in the work package that was implemented.

The finding was more than minor because it was associated with the design control attribute of the Initiating Events cornerstone and adversely impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The finding was of very low safety

significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation functions would not be available. No violation of regulatory requirements occurred. This finding also affected the cross-cutting area of human performance. (Section 4OA2)

- Green. A finding of very low safety significance was self-revealed on April 25, 2005, when the 345 kilovolt rear bus in the switchyard was unexpectedly de-energized during planned breaker testing. Consequently, one qualified offsite power source to the onsite electrical distribution system was rendered inoperable for about 30 minutes. Plant administrative procedures did not establish an adequate level of oversight by licensee personnel for activities in the switchyard by personnel working for the switchyard owner.

This finding was more than minor because it was related to the procedure quality attribute of the Initiating Events cornerstone and adversely impacted the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The finding was of very low safety significance because all mitigating systems were available while the rear bus was de-energized, and the bus was de-energized for only about 30 minutes. No violation of regulatory requirements occurred. This finding also affected the cross-cutting area of human performance. (Section 1R13)

#### **Cornerstones: Occupational Radiation Safety**

- Green. An NRC-identified finding of very low safety significance was identified when the collective dose for RWP P046005, "Engineered Safeguards Room Cooler Maintenance," conducted during the RO17 refueling outage, exceeded 5 person-rem and exceeded the dose estimate by more than 50 percent.

This finding was more than minor because it was associated with the ALARA planning/dose projection attribute of the Occupational Radiation Safety cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. The licensee's current 3-year rolling collective dose average was greater than 135 person-rem per unit; however, the actual dose expended for the work activity was not greater than 25 person-rem, and there were no additional ALARA findings identified during the assessment period. Therefore, the finding was of very low safety significance. No violation of regulatory requirements occurred. (Section 2OS2.1)

#### **B. Licensee-Identified Violations**

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 action tracking numbers are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status

The plant operated at or near full power during the inspection period except on May 14, 2005, during routine turbine valve testing. In addition, in May 2005, licensee personnel completed implementation of a 1.4 percent power uprate based on measurement uncertainty recapture which had been approved by the NRC on June 23, 2004. The 1.4 percent power uprate raised licensed power level from 2530 Megawatts thermal to 2565.4 Megawatts thermal. In August of 2003, 0.6 percent of the power uprate was initially implemented. The remaining 0.8 percent of the approved power uprate was implemented on May 18-20, 2005.

### 1. REACTOR SAFETY

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

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

##### .1 Warm Weather Preparations

##### a. Inspection Scope

The inspectors verified that licensee personnel had completed their warm weather preparations as specified in Standard Operating Procedure 23, Attachment 10, "Warm Weather Checklist." The inspectors utilized this checklist to verify that the prescribed actions had been completed for safety-related equipment such as the emergency diesel generators and service water intake structure. The inspectors also reviewed selected condition reports related to warm weather preparation 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.

##### b. Findings

No findings of significance were identified.

#### 1R04 Equipment Alignment

##### .1 Partial Walkdowns (71111.04Q)

##### a. Inspection Scope

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

- C high pressure safety injection (HPSI) pump P-66A;
- C HPSI pump P-66B; and
- C containment spray pump P-54A.

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

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Area Walkdowns (71111.05Q)

a. Inspection Scope

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

- C emergency diesel generator 1-1 room (fire area 5);
- C engineered safeguards panel room (fire area 15);
- C 1C switchgear room (fire area 4);
- C southwest penetration room (fire area 26);
- C 590' level of the auxiliary building (fire area 13);
- C west safeguards room (fire area 28);
- C turbine building 590' and 607' (fire area 23D);
- C screen house (fire area 9); and
- C north cable penetration room (fire area 3B).

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 select condition reports associated with fire protection to verify that identified problems were entered into the corrective action program with the appropriate significance characterization. The inspectors also verified that planned and completed corrective actions were appropriate.

b. Findings

No findings of significance were identified.

1R06 Flood Protection (71111.06A)

.1 External Flooding

a. Inspection Scope

The inspectors completed one inspection sample pertaining to flood protection measures for external flooding events.

The inspectors toured plant areas with safety-related equipment which were below flood levels susceptible to groundwater ingress. Utilizing Standard Operating Procedure 3, Checklist 3.4, "Plant Flood Door System Checklist," the inspectors verified that flood doors and floor plugs designed to protect areas with safety-related equipment from external flooding were functional. Plant areas that were checked included the component cooling water pump room, auxiliary feedwater pump room, emergency diesel generator room, screen house, and 2400-volt bus 1C switchgear room. The inspectors reviewed permanent maintenance procedure MSM-M 16, "Inspection of Watertight Barriers," and associated work orders, and Off Normal Procedure 12, "Acts of Nature." The inspectors verified that preventive maintenance activities had been completed on the watertight barriers as required and that adequate guidance for coping with external flooding existed.

Further, the inspectors reviewed condition reports to verify that corrective actions for previously identified flood protection problems were appropriate and had been properly implemented.

b. Findings

No findings of significance were identified.

.2 Internal Flood Protection Features

a. Inspection Scope

The inspectors completed one inspection sample pertaining to flood protection for equipment designated in the Updated Final Safety Analysis Report to require protection from internal flooding due to failures of both safety and nonsafety-related systems. Specifically, the inspectors verified the adequacy of internal flood protection features for the screen house room.

The inspectors conducted walkdowns checking for applicability of the following attributes in the screen house room:

- holes or unsealed penetrations in floors, ceilings and walls;
- common drain system and sumps, including floor drain piping; and

- sources of potential internal flooding that were not analyzed or were not adequately maintained.

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

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07A)

a. Inspection Scope

The inspectors reviewed heat exchanger performance for the 1-1 and 1-2 diesel generators. The inspectors checked the licensee's data for heat exchanger flow to verify no evidence of fouling existed. The inspectors also reviewed the licensee's program for monitoring and ensuring the operability of the plant's heat exchangers.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

The inspectors completed one inspection sample of licensed operator requalification training by observing a crew of licensed operators during simulator training on May 5, 2005. The inspectors assessed the operators response to the simulated events which included a loss of safety-related 2400 volt electrical bus 1C; a small break loss of coolant accident; a failure of the main turbine to automatically trip on the reactor trip; a failure of HPSI pump P-66A to automatically start on a safety injection actuation signal; and a loss of component cooling water.

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 Procedure 6.2, "Loss of Component Cooling;" Off-Normal Procedure 2.1, "Loss of AC (Alternating Current) Power;" Emergency Operating Procedure 1, "Standard Post Trip Actions;" and Emergency Operating Procedure 4, "Loss of Coolant Accident Recovery." The inspectors also observed the post-training critique to assess the licensee evaluators' and the crew's ability to self-identify performance deficiencies.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

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

- C EDG 1-1 and 1-2;
- C component cooling water pump P-52A; and
- C control room heating, ventilation, and air conditioning.

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.

The inspectors reviewed the licensee's maintenance rule performance indicators to verify that the equipment status had been appropriately categorized in accordance with the maintenance rule program; reviewed a sample of related condition reports written over the last 24 months to verify that the corrective actions for identified problems were appropriate; reviewed completed work orders and work order histories to determine if there was an adverse trend in equipment performance that could be attributed to inappropriate work practices; and to determine if there were any common cause issues that had not been addressed. Additionally, the inspectors reviewed the licensee's performance criteria to verify that the criteria adequately monitored equipment performance.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors completed seven inspection samples regarding plant risk assessments for planned and emergent maintenance activities.

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

- C planned 24-hour surveillance testing for emergency diesel generator 1-1 on April 12-13, 2005;
- C planned maintenance outage for HPSI pump P-66A on April 18-20, 2005;
- C maintenance activities for the week of April 25, 2005, which included planned breaker testing in the switchyard, planned maintenance outage on component cooling water pump P-52A which was extended for emergent inboard motor bearing replacement and emergent maintenance on emergency diesel generator 1-1;
- C emergent maintenance to troubleshoot and repair safety-related 2400 volt electrical Bus 1-C load shed control circuit on April 29, 2005;
- C planned activities for the week of May 2, 2005, which included maintenance outages for HPSI pump P-66B and emergency diesel generator 1-1;
- C planned maintenance on containment spray pump P-54A on June 16, 2005; and
- C planned maintenance on component cooling water during the week of June 19, 2005.

The inspectors also verified that condition reports related to emergent equipment problems were entered into the corrective action program with the appropriate significance characterization. Select condition reports related to risk management during maintenance activities were reviewed to verify that identified problems were entered into the corrective action program with the appropriate significance characterization.

b. Findings

Introduction: One finding of very low safety significance (Green) was self-revealed on April 25, 2005, when contractor personnel inadvertently de-energized the 345 kilovolt rear electrical bus during planned breaker testing. No violation of regulatory requirements occurred.

Description: On April 25, 2005, Electric Network Services contractor personnel for the Palisades' switchyard owner, Michigan Electric Transmission Company, conducted planned testing on 345 kilovolt switchyard rear bus breaker 31R8. Other than being aware of the planned activity, Palisades personnel were not directly involved with the maintenance. Palisades Administrative Procedure 4.28, "Control of Switchyard Activities," did not require plant personnel to be involved in a pre-job briefing or to observe the equipment manipulations.

During the maintenance activity, substation operators removed the breaker from service and maintenance technicians conducted the testing. However, the substation operators did not cut out the breaker failure relay when the breaker was removed from service and the maintenance technicians failed to recognize or verify that the breaker failure relay had not been taken to cut out. Consequently, when the maintenance technicians initiated the test signal, a failure to trip signal for breaker 31R8 was generated. As designed, this signal caused all the other breakers connected to the rear bus to open, de-energizing the bus. As a result, power was lost to startup transformer 1-2, one of two qualified offsite power sources to the onsite electrical distribution system. The rear bus was re-energized in about 30 minutes which was well within the Technical Specifications (TSs) allowed outage time of 72 hours for loss of one offsite power

source. Also, plant risk remained low because the safety-related electrical busses remained energized from the normal power supply, the safeguards transformer remained energized from the switchyard front bus, and both emergency diesel generators were operable during the event.

Licensee personnel conducted an incident investigation which identified that there was a lack of supervisory oversight by Palisades personnel and Electrical Network Services personnel. Other contributing factors included: no formal pre-job briefing was conducted; Electrical Network Services work instructions were not detailed enough; and Electrical Network Services personnel failed to conduct self-checking or peer-checking during the activity.

Analysis: Failing to provide an adequate level of oversight for activities in the switchyard by personnel working for the switchyard owner was a performance deficiency which warranted a significance determination. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," since the finding was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operation. Specifically, the likelihood of a loss of offsite power (LOOP) was increased when the switchyard rear bus was de-energized which rendered one of the two qualified offsite power sources to the onsite electrical power distribution system inoperable. The inspectors also concluded that the finding affected the cross-cutting area of human performance because the personnel performing the activity failed to cut out the breaker failure relay as specified in the work instructions.

Using IMC 0609, Appendix A, "SDP Phase 1 Screening Worksheet for IE [Initiating Events], MS [Mitigating Systems], and B [Barrier Integrity] Cornerstones," the inspectors determined that only the Initiating Events cornerstone was affected and that the finding was only associated with the transient initiators in the Initiating Events column. Because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation functions would not be available, the finding screened as Green.

Enforcement: Because switchyard operations and maintenance personnel were performing activities on a nonsafety-related system and the administrative procedure was not one required by 10 CFR 50, Appendix B, no violation of regulatory requirements occurred. Therefore, this was considered a finding of very low safety significance (FIN 05000255/2005006-01). The licensee entered this issue into the corrective action program as condition report CAP 047630, "Loss of Rear Bus Due to Testing."

Interim corrective actions included establishing expectations that Palisades personnel attend pre-job briefs which would be led by Electrical Network Services personnel prior to work activities and equipment manipulations in the switchyard by the sub-station operators and maintenance technicians. Planned corrective actions included a review of and necessary revisions to Administrative Procedure 4.28.

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

The inspectors completed three inspection samples regarding operator performance during the non-routine events described below.

.1 Turbine Valve Testing

a. Inspection Scope

On May 14, 2005, the inspectors observed control room operator performance during turbine valve testing. The inspectors verified that testing was performed in accordance with System Operating Procedure - 8, Attachment 2, "Turbine Valve Testing."

b. Findings

No findings of significance were identified.

.2 Depressurization of Piping Between Safety Injection Tank and Primary Coolant System Check Valve

a. Inspection Scope

On May 9, 2005, after a routine performance of safety injection tank bottle sampling on tank T-28C, while securing from the evolution, the high pressure safety injection discharge valve failed to close. The licensee closed the associated pressure control valve, secured the high pressure safety injection pump and was then able to close the high pressure safety injection discharge valve. This created a pressurized, isolated section of piping. When the trapped water heated up, leakage occurred due to the unseating of the primary coolant system check valve. When the licensee attempted to depressurize this line, the check valve failed to reseat resulting in an unexpected loss of 45 gpm of primary coolant. The licensee declared an Unusual Event due to the 45 gpm leak of primary coolant to the primary system drain tank. Through engineering evaluation, the licensee determined that the check valve could be resealed and the line depressurized by rapidly opening the upstream pressure control valve to create a large differential pressure across the primary coolant system check valve. Details regarding this event and the finding associated with it can be found in Section 4OA3.

On May 11, 2005, the inspectors observed control room operator performance during the depressurization of the safety injection tank line and seating of the primary coolant system check valve. The inspectors verified that the test was performed in accordance with System Operating Procedure - 3, "Safety Injection and Shutdown Cooling System."

b. Findings

No findings of significance were identified.

.3 Implementation of 1.4 Percent Power Uprate

a. Inspection Scope

On June 23, 2004, the NRC issued an amendment to the operating license for Palisades which raised licensed power level 1.4 percent based on measurement uncertainty recapture. The power uprate raised licensed power level from 2530 Megawatts thermal to 2565.4 Megawatts thermal. On August 6, 2005, the plant personnel implemented 0.6 percent of the approved 1.4 percent power uprate. Only a portion of the approved uprate was initially implemented because of industry operating experience regarding feedwater ultrasonic flow measuring devices. To address the operating experience, licensee personnel conducted additional testing during the refueling outage that commenced in September 2004 to verify that the feedwater ultrasonic flow measuring devices were accurate. After licensee personnel validated the accuracy of the ultrasonic feedwater measuring devices, the licensee implemented the remaining 0.8 percent of the approved power uprate incrementally between May 18 and 20, 2005.

The inspectors observed the pre-evolution briefing that was provided to the control room operators prior to implementing the power uprate. The inspectors verified that indicated power level was as expected after the software changes for the power uprate were installed in the plant computer; that reactor power level was raised incrementally over 3 days as prescribed in work instruction WI-FC-977-02, "FC-977 Reactor Power Uprate," to allow time to monitor plant performance and response; and, that plant equipment was monitored in accordance with the described plan in the work instruction during the power increase to the amended power level.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors completed six inspection samples by reviewing documented operability assessments for the following risk-significant plant equipment:

- C control room envelope;
- C control rod drive mechanisms;
- C 480 Volts Alternating Current breakers;
- C expansion joint flood barrier;
- C safety injection tank drain line and pressure control valve; and
- C motor operated valves.

The inspectors interviewed the cognizant engineers and reviewed the supporting documents to assess the adequacy of the operability assessments for the current plant mode or past operability as applicable. The inspectors also reviewed the applicable sections of the TSs, Updated Final Safety Analysis Report, and design basis documents

to verify that the operability assessments were technically adequate and that the components remained available, such that no unrecognized increase in plant risk had occurred.

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

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

.1 Selected Operator Workarounds

a. Inspection Scope

The inspectors completed one inspection sample regarding selected operator workarounds by reviewing operator workaround 05-02OWA, pertaining to the capacity of startup transformer 1-2. The inspectors verified that the functional capability of mitigating systems and the operators ability to implement off-normal and emergency operating procedures were not adversely affected.

b. Findings

No findings of significance were identified.

.2 Cumulative Affects of Operator Workarounds

a. Inspection Scope

The inspectors completed one inspection sample regarding cumulative affects of operator workarounds.

The inspectors reviewed all operator burden items which were defined and tracked by licensee personnel as operator workarounds, operations concerns, operator challenges, control room deficiencies and temporary modifications; and reviewed Administrative Procedure 4.12, Attachment 3, "Operator Work-Around/Challenge Monthly Aggregate Impact Assessment," that was completed in April 2005 by operations personnel. The inspectors verified that the cumulative affects of the operator burdens did not create significant adverse consequences regarding the reliability, availability and operation of accident mitigating systems. The inspectors also assessed the cumulative affects on the operator's ability to implement abnormal and emergency response procedures to verify that the operators could respond to plant transients and accidents in a correct and timely manner.

Condition reports pertaining to operator workarounds were reviewed to verify that the problems were accurately described and entered into the corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17A)

a. Inspection Scope

The inspectors reviewed one permanent plant modification package that involved a square root extractor replacement associated with the radioactive gaseous effluent monitoring system. The inspectors reviewed the design change information and the 10 CFR 50.59 screening evaluation to verify that the design bases, licensing bases and performance capability of the involved radioactive gaseous effluent monitoring system was not degraded through this modification. The inspectors also reviewed the test documentation for the design change to verify that the modification was implemented as described in the modification package. In addition, the inspectors verified that appropriate changes were made to the affected plant documents.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

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

- C 2400 volt bus 1C undervoltage circuit control power;
- C planned maintenance outage for component cooling water pump P-52A;
- C planned maintenance outage for HPSI pump P-66A;
- C emergency diesel generator 1-1;
- C breaker repair for MO 3064; and
- C battery charger number 1.

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

The inspectors reviewed documentation to verify that the test criteria and acceptance criteria were appropriate for the scope of work performed; reviewed test procedures to

verify that the tests adequately verified system operability; and reviewed documented test data to verify that the data was complete, and that the equipment met the prescribed acceptance criteria.

Further, the inspectors reviewed condition reports to verify that post maintenance testing problems were entered into the corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors completed six inspection samples by assessing the following surveillance testing that was conducted on risk-significant plant equipment:

- C safety injection system initiation circuitry;
- C control room envelope tracer gas testing;
- C emergency diesel generator 1-2 24-hour load run;
- C control rod exercising;
- C emergency diesel generator 1-2 load reject; and
- C reactor protection system.

The inspectors observed portions of the testing to verify that appropriate test procedures were utilized and reviewed documented test data to verify that test acceptance criteria were satisfied.

The inspectors reviewed applicable portions of TSs, the Updated Final Safety Analysis Report, and design basis documents to verify that the surveillance tests adequately demonstrated that the plant equipment could perform required safety functions.

Further, the inspectors reviewed selected condition reports regarding surveillance testing activities. The inspectors verified that the identified problems were entered into the licensee's corrective action program with the appropriate significance characterization and that the planned and completed corrective actions were appropriate.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

.a. Inspection Scope

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

- C Temporary Modification 2004-010, "Temporary Installation of Ultrasonic Flow Monitoring Device to Measure Flow on 'B' Loop of the Feedwater System."

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.

1EP2 Alert and Notification System (ANS) Testing (71114.02)

a. Inspection Scope

The inspectors discussed with Emergency Preparedness (EP) staff the operation, maintenance, and periodic testing of the ANS in the Palisades Nuclear Plant's plume pathway Emergency Planning Zone to determine whether the ANS equipment was adequately maintained and tested in accordance with Emergency Plan commitments and procedures. The inspectors reviewed records of a 2005 condition report, as well as July 2004 through May 2005 operability test results and a December 19, 2002, technical review of the replacement public warning system.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation Testing (71114.03)

a. Inspection Scope

The inspectors reviewed and discussed with plant EP staff the procedures and operator aids that included the primary and alternate methods of initiating an ERO activation to augment the onshift ERO and the provisions for maintaining the plant's ERO call-out roster. The inspectors also reviewed reports and a sample of corrective action program records of unannounced off-hours augmentation tests, which were conducted semiannually between December 2003 and December 2004, to determine the adequacy

of the drills' critiques and associated corrective actions. The inspectors also reviewed the EP training records of a sample of 29 Palisades ERO personnel, who were assigned to key and support positions, to determine whether they were currently trained for their assigned ERO positions.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspectors reviewed a sample of Nuclear Quality Assurance staff's 2003, 2004, and 2005 audits of the Palisades Nuclear Plant emergency preparedness program to verify that these independent assessments met the requirements of 10 CFR 50.54(t). The inspectors also reviewed critique reports, self-assessments, and a sample of records associated with one actual emergency event that occurred in 2004. The inspectors also reviewed critique reports and samples of corrective action program records associated with the 2004 biennial exercise, as well as various EP drills conducted in 2004 and 2005, in order to verify that the licensee fulfilled its drill commitments and to evaluate the licensee's efforts to identify, track, and resolve concerns identified during these activities. Additionally, the inspectors reviewed a sample of EP items, corrective action program (CAP), and corrective actions related to the facility's EP program and activities to determine whether corrective actions were acceptably completed.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP6 Emergency Preparedness Drill Evaluation (71114.06)

The inspectors completed one baseline inspection sample by evaluating the emergency preparedness drills described below.

a. Inspection Scope

The inspectors observed a table top exercise on May 24, 2005, at the Emergency Operations Center in which the Site Emergency Director was required to implement the emergency plan in response to simulated plant conditions. Emergency Preparedness personnel had pre-designated that the opportunities for the Site Emergency Director to classify the event and make protective action recommendations would be evaluated and included in the performance indicator data regarding drill and exercise performance.

The inspectors verified that the Site Emergency Director classified the emergency condition and completed protective action recommendations in an accurate and timely manner as required by the emergency plan implementing procedures.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety**

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Review of Licensee Performance Indicators for the Occupational Exposure Cornerstone

a. Inspection Scope

The inspectors reviewed the licensee's occupational exposure control cornerstone performance indicators (PIs) to determine whether or not the conditions surrounding PI occurrences, if any, had been evaluated, and identified problems had been entered into the corrective action program for resolution. For the time period of the third quarter 2004 through the first quarter 2005, the licensee did not identify any occupational exposure control PI occurrences.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed licensee documentation packages for PI events, if any, occurring since the last inspection to determine if the PI events involved dose rates >25 R/hr at 30 centimeters or >500 R/hr at 1 meter. Barriers were evaluated for failure and to determine if there were any barriers left to prevent personnel access. Unplanned exposures >100 millirem total effective dose equivalent (or >5 rem shallow dose equivalent or >1.5 rem lens dose equivalent) were evaluated to determine if there were any regulatory overexposures or if there was a substantial potential for an overexposure.

As discussed in Section 2OS1.1, for the time period of the third quarter 2004 through the first quarter 2005, the licensee did not identify any occupational exposure control PI occurrences. As such, the inspectors were unable to review licensee documentation packages for PI events against the criteria listed above.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning and Controls (71121.02)

.1 ALARA/Radiological Work Planning

a. Inspection Scope

The inspectors compared the results achieved including dose rate reductions and person-rem used with the intended dose established in the licensee's radiation work permit (RWP)/ALARA planning for 14 work activities conducted during the Fall 2004 refueling outage RO17. These 14 RWPs were reviewed, in that, each exceeded 5 person-rem collective dose for the RWP. Additionally, each of the 14 RWPs exceeded their initial dose estimations by greater than 50 percent. Reasons for inconsistencies between intended and actual work activity doses were reviewed.

Additionally, for each of these RWPs, the inspectors compared the person-hour estimates, provided by maintenance planning and other groups to the RP group, with the actual work activity time requirements in order to evaluate the accuracy of these time estimates. Shielding requests from the radiation protection group were evaluated with respect to dose rate reduction along with engineering shielding response follow up. Finally, the licensee's post-job (work activity) reviews were evaluated to verify that identified problems were entered into the licensee's corrective action program.

These reviews represented four inspection samples.

b. Findings

Introduction: One NRC-identified Green finding was identified when the collective dose for RWP P046005, "Engineered Safeguards Room Cooler Maintenance," conducted during the RO17 refueling outage exceeded 5 person-rem and exceeded the dose estimate by more than 50 percent.

Description: During a review of RWP P046005, "Engineered Safeguards Room Cooler Maintenance," the inspectors identified that the licensee's initial estimates for the RWP was 0.966 person-rem and 262 person-hours. The licensee developed the initial dose estimate based on historical work planning person-hour estimates from maintenance last conducted in 1995 and on dose rate estimates based on conditions in the Engineered Safeguards Room several months prior to the outage. Since the planning information resulted in a collective dose estimate of less than 1.0 person-rem, in accordance with the licensee's ALARA/RWP processing procedure, the licensee did not conduct a formal pre-job ALARA review for the work activity.

The inspectors determined that less than 1 day after the work activity commenced, an In-Progress Review documented that 16 percent of the job was completed, but

109 percent of the dose estimate had been expended. Additionally, the In-Progress Review indicated that the original estimates were conducted by Palisades planners; however, when the contract work crew arrived onsite, they determined that additional person-hours would be required to complete the work. Subsequently, the licensee approved the addition of 210 person-hours and 1.794 person-rem to the RWP. A second In-Progress Review completed 6 days later indicated that with only 40 percent of the work complete, the crew had expended 111 percent of the revised dose estimate, primarily due to the fact that the work order did not include provisions to cut out and re-weld the supports for fan housings. Subsequently, the licensee added 300 person-hours and 3.206 person-rem to the previously revised RWP. As such, the final approved estimates for the RWP were 772 person-hours and 5.878 person-rem.

The licensee's Post-Job Review documented that the failures associated with the work activity included: (1) no welding activities were specified in the initial work order; (2) contractor personnel involved in motor removal were not brought onsite prior to the beginning of the outage to validate person-hour estimates; (3) the ALARA group was not informed when the decision was made to move the motor rebuild work to a higher dose rate work location; and (4) working area dose rates were about four times those assumed in the initial planning.

Through additional reviews of the 2004 and 1995 work orders and interviews with Project Management staff members, the inspectors determined that the work order summary notes from the 1995 evolution indicated that the fan housing supports were welded in place (versus the typical bolted connections). Although the 2004 work order did not make any direct references to welding requirements, a work instruction specific for room fan cooler replacement activities was referenced which provided specific guidance for cutting and re-welding the fan housing supports. However, the inspectors concluded that the work instruction was not thoroughly referenced in developing the person-hour estimates, nor was there an adequate walkdown of the equipment to verify the field conditions.

Additionally, the inspectors determined that surveys indicated that dose rates in the work area were about four times those planned, however, the information was not communicated to the RP/ALARA group. As such, the RP/ALARA group did not stop the job to formally create an ALARA plan with dose mitigation strategies. Rather, the work activity was allowed to proceed while dose and time were added as needed to complete the work.

Consequently, the total actual collective dose for RWP P046005 was 5.563 person-rem, and 964 person-hours were utilized. The inspectors determined that the licensee did not recognize: (1) during its work planning, the complete scope of the work activity (i.e., welding versus bolted connection), and (2) the notably higher dose rates in the field, which resulted in the failure to implement complete ALARA planning. The ALARA planning process was intended to develop additional dose mitigation strategies for implementation during the work activity. The inspectors determined that information was available to the licensee staff such that the ALARA planning process should have identified additional dose reduction strategies, resulting in the reduction of overall work activity dose. Notably, collective dose could have been reduced had the RP/ALARA group been involved in the decision to move the work location for the motor rebuild

activities. As such, the inspectors determined it was within the licensee's reasonable ability to have adequately planned the activity pre-outage, or re-planned the activity when the conditions were discovered to be significantly different than assumed. Additionally, the inspectors concluded that no emergent work/scope changes were documented to justify the dose estimate increases. Therefore, the actual collective dose for RWP P046005 exceeded 5 person-rem (5.563 person-rem) and exceeded the original dose estimate (0.966 person-rem) by more than 50 percent (i.e., 576 percent of the original estimate).

Analysis: The failure to maintain collective doses ALARA was a performance deficiency which warranted a significance determination. This issue was determined to be more than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of ALARA planning/dose projection and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation.

The inspectors determined, utilizing Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety SDP," that the finding involved ALARA planning/work controls, and the licensee's current 3-year rolling collective dose average was greater than 135 person-rem per unit. However, the actual dose expended for the work activity was not greater than 25 person-rem, and there were no additional ALARA findings identified during the assessment period. Therefore, the inspectors concluded that this finding was of very low safety significance (Green).

Enforcement: Though the failure to maintain collective doses ALARA for RWP P046005 was a performance deficiency, no violation of regulatory requirements occurred. This issue was considered a finding of very low safety significance (FIN 05000255/2005006-02). The issues associated with this finding were documented in the licensee's corrective action program as CAP 047486, CAP 047511, and CAP 047517.

## .2 Verification of Dose Estimates and Exposure Tracking Systems

### a. Inspection Scope

The inspectors reviewed the assumptions and bases for the current (Calendar Year 2005) annual collective exposure estimates in order to evaluate the licensee's methodology for estimating work activity-specific exposures and the intended dose outcome. Dose rate and person-hour estimates were evaluated for reasonable accuracy.

These reviews represented one inspection sample.

### b. Findings

No findings of significance were identified.

.3 Source Term Reduction and Control

a. Inspection Scope

The inspectors evaluated if the licensee had developed an understanding of the plant source term, that this included knowledge of input mechanisms to reduce the source term, and that the licensee had a source term control strategy in place. Elements of the licensee's program including a cobalt reduction strategies, shutdown ramping, and operating chemistry plan (all of which were designed to minimize the source term external to the core) were evaluated. Other methods used by the licensee to control the source term, including component and system decontamination and use of shielding, were evaluated.

The licensee's identification of specific sources was reviewed along with exposure reduction actions and the priorities the licensee had established for implementation of those actions. The results that had been achieved against these priorities since the last refueling cycle were reviewed. For the current assessment period, source reduction evaluations were verified along with actions taken to reduce the overall source term compared to the previous year.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolutions

The inspectors reviewed the licensee's self-assessments, audits, and Special Reports related to the ALARA program since the last inspection to determine if the overall audit program scope and frequency for all applicable areas under the Occupational Exposure Cornerstone met the requirements of 10 CFR 20.1101(c).

The inspectors verified that identified problems were entered into the corrective action program for resolution and that they had been properly characterized, prioritized, and resolved. This included dose significant post-job (work activity) reviews and post-outage ALARA report critiques of exposure performance.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

#### 4. OTHER ACTIVITIES (OA)

##### 4OA1 Performance Indicator Verification (71151)

###### **Cornerstones: Occupational Radiation Protection, Emergency Preparedness**

##### .1 Radiation Protection Strategic Area

###### a. Inspection Scope

The inspectors sampled the licensee's submittals for the PI and period listed below. The inspectors used PI definitions and guidance contained in Revision 2 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify the accuracy of the PI data. The following PI was reviewed:

- Occupational Exposure Control Effectiveness

Since no occurrences under this PI were identified by the licensee for the third quarter 2004 through the first quarter 2005, the inspectors compared the licensee's data with the corrective action program database and the radiological controlled area exit electronic dosimetry transaction records for these time periods, to verify that there were no unaccounted for occurrences in the PI. Additionally, the inspectors conducted walkdowns of accessible locked high radiation area and very high radiation area entrances to verify the adequacy of controls in place for these areas.

These reviews represented one inspection sample.

###### b. Findings

No findings of significance were identified.

##### .2 Emergency Preparedness Strategic Areas

###### a. Inspection Scope

The inspectors reviewed the licensee's records associated with the three EP PIs listed below. The inspectors verified that the licensee accurately reported these indicators in accordance with relevant procedures and Nuclear Energy Institute guidance endorsed by NRC. Specifically, the inspectors reviewed licensee records associated with PI data reported to the NRC for the period July 2004 through March 2005. Reviewed records included: procedural guidance on assessing opportunities for the three PIs; assessments of PI opportunities during predesignated Control Room Simulator training sessions, the 2004 biennial exercise, and other drills; revisions of the roster of personnel assigned to key ERO positions; and results of periodic ANS operability tests. The following PIs were reviewed:

Common

- C ANS;
- C ERO drill participation; and
- C drill and exercise performance.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

.2 Annual Sample for Follow-up Inspection

a. Inspection Scope

The inspectors completed two inspection samples regarding annual reviews of problem identification and resolution evaluations by reviewing the following cause evaluations:

- C RCE000373 "Loss of Condenser Vacuum", and
- C RCE000375, "Ineffective Use of the Corrective Action Program."

The inspectors verified that: (1) the problems were accurately identified; (2) the root cause, apparent cause, and contributing causes were adequately justified; (3) extent of condition and generic implications were appropriately addressed; (4) previous occurrences were considered; and (5) corrective actions were appropriately focused to address the problem and implemented commensurate with the safety significance of the issue.

b. Findings

Introduction: The inspectors determined that one finding of very low significance (Green) was self-revealed on January 9, 2005, when there was an unexpected lowering of condenser vacuum which subsequently required a manual reactor trip. The finding was not considered a violation of regulatory requirements.

Description: On January 9, 2005, the plant was operating at 100 percent power when condenser vacuum began to lower unexpectedly. Although the operators commenced a rapid power reduction, condenser vacuum continued to decrease; therefore, the operators manually tripped the reactor. The operators stabilized the plant in Mode 3 to investigate the cause of the lowering condenser vacuum.

Site personnel investigated the cause of the transient and found that the low pressure turbine #6 bearing drain line had failed causing air in-leakage into the condenser. Through further review, site personnel determined that this drain line was to have been permanently plugged by plant modification package EAR-2002-0138, "Permanently Plug Low Pressure Turbine Slop Drains." This package was developed in December 2002 to address secondary water chemistry and air in-leakage concerns by permanently plugging all four turbine bearing drains. The licensee implemented the modification in March 2003 via a work package that was developed by contractor personnel. This work package only included three of the four bearing drains to be plugged. Reviews and approvals completed for this work plan by contractors and site personnel did not identify that this bearing drain was not in the work scope as directed by the modification package. After the work and final reviews were complete, site personnel questioned why turbine #6 bearing drain was not within the work scope and initiated action to search for the drain in order to verify that it had been plugged. Due to the configuration of the piping, the drain line was not found. There was no further action to locate this drain line and it remained unplugged until January 9, 2005, when it failed.

Immediate corrective actions included plugging the low pressure #6 bearing drain line. The corrective actions to prevent recurrence included a change to the work processing procedure to require a review by the responsible engineer to verify that the work order implemented the scope of the associated modification package.

Analysis: The inspectors determined that the March 2003 failure to plug the turbine #6 bearing drain as directed by the permanent plant modification was a performance deficiency which warranted a significance determination.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," since the finding was associated with the design control attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operation. This finding was also an issue in the cross-cutting area of human performance because licensee personnel failed to include the drain in the modification package and failed to locate the drain line while investigating its omission from the work package.

Using IMC 0609, Appendix A, "SDP Phase 1 Screening Worksheet for IE [Initiating Events], MS [Mitigating Systems], and B [Barrier Integrity] Cornerstones," the inspectors determined that only the initiating events cornerstone was affected. The inspectors reviewed the transient initiators category in the initiating events column and the finding was determined to be of very low safety significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation functions would not be available.

Enforcement: No violation of regulatory requirements occurred. The inspectors determined that the finding (FIN 05000255/2005006-03) did not represent a noncompliance because the deficiency occurred on nonsafety-related secondary plant equipment. The licensee entered this issue into their corrective action program as CAP 046023, "Loss of Main Condenser Vacuum."

.3 Semi-annual Trend Review

a. Inspection Scope

The inspectors completed the semi-annual review of trends to verify that a more significant safety issue did not exist than would be apparent in a single condition report. The inspectors reviewed the Department Roll-up Meeting Reports from January 2005 through March 2005 for the Maintenance and Operations Departments. The inspectors reviewed Palisades' Station Trend Reports for the 1<sup>st</sup> and 2<sup>nd</sup> quarter of 2005. The inspectors also reviewed condition reports for licensee identified potential trends to verify that the trend had been evaluated and that appropriate corrective actions were planned or implemented as necessary.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

The inspectors completed five inspection samples related to event follow-up as described below.

.1 Declared Unusual Event

a. Inspection Scope

On May 9, 2005, at 7:46 p.m., control room operators declared an Unusual Event because primary coolant system leakage was momentarily greater than TSs requirements. The inspectors responded to the control room and walked down the control panels and reviewed control room logs to verify that key plant parameters such as pressurize level and pressure were stable; that safety-related equipment was maintained available; and that control room operators had appropriately implemented plant procedures while responding to the leak.

The inspectors reviewed the completed event notification form to verify that the event classification, and notifications to offsite agencies and the NRC, were completed in an accurate and timely manner as required by the emergency plan implementing procedures. The inspectors reviewed Condition Report CAP 047816, "Unusual Event Entered Due to Excessive PCS [Primary Coolant System] Leakage," to verify that this problem was entered into the corrective action program with the appropriate significance characterization.

b. Findings

Introduction: A finding of very low safety significance (Green) and an associated Non-Cited Violation of TS 5.4, "Procedures," was self-revealed on May 9, 2005, when the licensee created an unexpected loss of primary coolant inventory while depressurizing a portion of a safety injection line.

Description: On May 9, 2005, the licensee performed a routine evolution to refill safety injection tank T-28C using the HPSI system. The licensee attempted to close the HPSI pump discharge valve, MO-3064; however, the valve failed to close. In order to avoid exceeding the pressure limit for filling the safety injection tank, the licensee closed pressure control valve CV3047. Subsequently, the licensee secured the HPSI pump and closed MO-3064. Due to the system configuration, this isolated a section of piping. Thermal expansion of the water in the piping increased the piping pressure above that of the primary and unseated the check valve. When the licensee noted the increased pressure, operators depressurized the line by opening the pressure control valve and drained water to the primary system drain tank. The licensee determined that the flow to the tank was 45 gpm and secured the lineup by closing the pressure control valve. Due to the volume of water loss, the licensee also declared an Unusual Event. The licensee evaluated the plant condition and concluded that the leakage occurred due to the unseating of check valve C ES3131 and closure of the pressure control valve had successfully arrested the water loss. The licensee performed an engineering evaluation and concluded that the check valve could be reseated by rapidly opening the pressure control valve, creating a larger pressure differential across the valve. The licensee successfully completed this evolution on May 11, 2005.

The licensee performed a root cause on the event and determined the root causes were: 1) insufficient training of operators on preparation for evolutions and on recognition of situations that were outside of procedural guidance; and 2) operators acceptance of procedures that contained non-specific directions. The root cause report also stated that had the HPSI pump been secured prior to closing the pressure control valve, the check valve would not have unseated. In addition, the report stated that had the pressure control valve been opened more rapidly, the check valve would have reseated.

Analysis: The inadequate procedures used for this evolution represented a performance deficiency which warranted a significance determination. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," since the finding was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and

challenge critical safety functions during power operations. Specifically, the event resulted in a unexpected loss of coolant in excess of TSs allowable leakage rates.

Using IMC 0609, Appendix A, "SDP Phase 1 Screening Worksheet for IE [Initiating Events], MS [Mitigating Systems], and B [Barrier Integrity] Cornerstones," the inspectors determined that only the Initiating Events cornerstone was affected and that the finding involved leakage exceeding the TSs allowable limit of 10 gpm. Because the leakage exceeded the TSs allowable leakage, the inspectors performed an SDP phase 2 analysis. In conjunction with the Senior Risk Analyst, the inspectors determined that because the leakage was within the capacity of the charging pumps, the finding was of very low safety significance (Green).

Enforcement: Technical Specification 5.4 required that procedures be established, implemented, and maintained as recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 recommended procedures for the operation of Emergency Closed Cooling Systems. Contrary to this requirement, on May 9, 2005, during an evolution to refill safety injection tank T-28C, the procedures used by the licensee failed to provide adequate instruction to prevent leakage of primary coolant in excess of TSs limits. Specifically, procedure MC-11B, "Safeguards Boron Sample Safety Injection Tanks," failed to secure the HPSI pump prior closing the pressure control valve thus establishing the condition that led to unseating of the check valve. In addition, the procedure used to depressurize the line, SOP-3, "Safety Injection and Shutdown Cooling System," failed to stipulate operation of the pressure control valve in a manner that would result in reseating of the check valve.

Because this violation was associated with a finding of very low safety significance and because the finding 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 05000255/2005006-04). Corrective actions included isolating the leak and reseating the check valve. This issue was entered into the licensee's corrective action program as CAP 047821.

.2 (Closed) Licensee Event Report (LER) 2004-002-00: Leak Path Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations

On October 16, 2004, during a refueling outage, the licensee identified crack indications in the Inconel buttering of the J-groove weld on reactor pressure vessel head control rod drive mechanism penetrations No. 29 and No. 30. Although no evidence of leakage was visible during the bare metal inspection, an ultrasonic examination revealed leak path indications. A subsequent dye penetrant examination was performed on the penetration nozzle J-groove welds, which revealed a 1/4-inch long crack perpendicular to the fusion line in penetration No. 29 and a 1-inch long crack adjacent to the fusion line in penetration No. 30. The licensee attributed the cause of these cracks to primary water stress corrosion cracking, repaired the effected nozzles and returned the reactor head to service. The licensee determined that the risk significance of this event was minimal due to the size and orientation of the cracks. The LER was reviewed by the inspectors and no findings were identified. This LER is closed.

.3 (Closed) LER 2004-003-02: Main Steam Safety Valves Exceed Lift Setpoint Acceptance Band

The inspectors reviewed this supplemental report which corrected a minor error that existed in the text for the original LER and the previous supplement. This LER is closed.

.4 (Closed) LER 2005-004-00: Fuel Handling Area Ventilation System Not Properly Aligned During Movement of Irradiated Fuel Assemblies

On April 18, 2005, the licensee identified that the procedures used for operation of the fuel handling building ventilation system did not ensure the system was aligned in accordance with TSs. The inspectors determined that this was a licensee identified violation discussed further in Section 4OA7. No additional findings were identified. This LER is closed.

.5 (Closed) LER 2005-003-00: Positive Differential Pressure Not Maintained Between Control Room Envelope and Adjacent Room

On April 13, 2005, the licensee determined through review of test data that the site was not in compliance with TS 3.7.10. Specifically, the licensee failed to maintain a pressure of \$0.125 inches water gauge between the Control Room Envelope and the adjacent electrical equipment room. The inspectors determined that this was a licensee identified violation discussed further in Section 4OA7. No additional findings were identified. This LER is closed.

4OA4 Cross-Cutting Aspects of Findings

.1 Section 1R13 describes a finding with a primary cause of a human performance deficiency in that contractor personnel improperly established plant conditions for work that resulted in the loss of a source of offsite power. In addition, licensee personnel failed to provide adequate oversight of the switchyard breaker testing to ensure it occurred without incident.

.2 Section 4OA2 describes a finding with one of its primary causes being human performance in that contractor personnel did not develop a work package to adequately implement a permanent modification. In addition, licensee personnel failed to find the low pressure turbine #6 bearing drain line and took no further action to verify whether this drain had been plugged.

4OA5 Other Activities

.1 (Closed) Temporary Instruction (TI) 2515/163: "Operational Readiness of Offsite Power."

The objective of TI 2515/163, "Operational Readiness of Offsite Power," was to confirm, through inspections and interviews, the operational readiness of offsite power (OSP) systems in accordance with NRC requirements. The inspectors reviewed licensee procedures and discussed the attributes identified in TI 2515/163 with licensee

personnel. In accordance with the requirements of TI 2515/163, inspectors evaluated licensee procedures against the attributes discussed below.

The operating procedures that the control room operator used to assure the operability of the OSP have the following attributes:

1. Identify the required control room operator actions to take when notified by the transmission system operator (TSO) that post-trip voltage of the OSP will not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply.
2. Identify the compensatory actions the control room operator is required to perform if the TSO is not able to predict the post-trip voltage for the current grid conditions.
3. Identify the notifications required by 10 CFR 50.72 for an inoperable OSP system when the site is either informed by its TSO or when an actual degraded voltage condition is identified.

The procedures to ensure compliance with 10 CFR 50.65(a)(4) had the following attributes:

1. Direct the plant staff to perform grid reliability evaluations as part of the required maintenance risk assessment before taking a risk-significant piece of equipment out-of-service to perform maintenance activities.
2. Direct the plant staff to ensure that the current status of the OSP system has been included in the risk management actions and compensatory actions to reduce the risk when performing risk-significant maintenance activities or when loss of offsite power (LOOP) or station blackout (SBO) mitigating equipment are taken out-of-service.
3. Direct the control room staff to address degrading grid conditions that may emerge during a maintenance activity.
4. Direct the plant staff to notify the TSO of risk changes that emerge during ongoing maintenance at the nuclear power plant.

The procedures to ensure compliance with 10 CFR 50.63 had the following attribute:

1. Direct the control room operators on the steps to be taken to attempt to recover offsite power within the SBO coping time.

The results of the inspectors' review were forwarded to the Office of Nuclear Reactor Regulation for further review and evaluation.

#### 4OA6 Meetings

##### .1 Exit Meeting

The inspectors presented the inspection results to Mr. P. Harden and other members of licensee management on July 6, 2005. Licensee personnel acknowledged the findings presented. The inspectors asked licensee personnel whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

##### .2 Interim Exit Meeting

An interim exit meeting was conducted for:

- Occupational radiation safety - radiological access control and ALARA programs inspection with Mr. D. J. Malone on April 15, 2005; and
- Emergency preparedness inspection with Mr. P. Harden on June 10, 2005.

#### 4OA7 Licensee-Identified Violations

The following violations of very low safety significance were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy for being disposed as NCVs.

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

- .1 On April 18, 2005, the shift engineer identified that procedures in place for operation of the fuel handling area ventilation system did not ensure that the system was operated in accordance with TS 3.7.12, "Fuel Handling Area Ventilation System." Licensee review of operating history identified two instances in the previous 3 year period during which the licensee failed to operate the ventilation system as required by TS. Technical Specification 3.7.12 required operation with one fuel handling area exhaust fan aligned to the emergency bank and operating. Contrary to this requirement, the licensee operated the system with more than one exhaust fan operating. The licensee compared the operational condition with the accident analysis and determined that the bounding analysis assumed no credit for fuel handling area ventilation; therefore, the finding was of minimal safety significance. The inspectors reviewed the finding in accordance with IMC 0609 and concluded that since it only affected the degradation of a radiological barrier for the spent fuel pool, the finding was of very low safety significance. The licensee entered this issue into their corrective action program as CAP 048108.
- .2 On April 13, 2005, the licensee determined during review of test data that differential pressure between the control room and an area adjacent to the control room was not maintained \$0.125 inches water gauge. This condition constituted a violation of TS 3.7.10, "Control Room Ventilation Filtration." Upon discovery, the licensee restored TS compliance by blocking open a door between the room and an adjacent space that met the TS requirements. The licensee determined that the condition resulted from an

improper modification that removed a fusible link and closed the door. The inspectors reviewed the associated LER and cause analysis and concluded that the improper modification constituted a violation of 10 CFR 50, Appendix B, Criterion III, "Design Control." The inspectors reviewed the finding in accordance with IMC 0609 and determined that since the finding only affected the control room ventilation envelope, the finding was of very low safety significance. The licensee entered this issue into their corrective action program as CAP 047488.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

P. Harden, Site Vice President  
T. Blake, Emergency Preparedness Supervisor  
M. Carlson, Engineering Director  
G. Hettel, Plant Manager  
L. Lahti, Licensing Manager  
D. Malone, Regulatory Affairs  
B. Patrick, Manager, Chemistry and Radiation Protection  
K. Smith, Operations Manager  
K. Yeager, Assistant Operations Manager

#### Nuclear Regulatory Commission

M. Padovan, Project Manager, NRR

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

#### Opened

05000255/2005006-01	FIN	Failure to Provide Adequate Oversight of Maintenance Activities in the Switchyard (Section 1R13)
05000255/2005006-02	FIN	Failure to Maintain Collective Doses ALARA for RWP No. P046005 (Section 2OS2)
05000255/2005006-03	FIN	Failure to Provide Adequate Oversight of Contractors Modifying Turbine Drains (Section 4OA2)
05000255/2005006-04	NCV	Loss of Primary Coolant Due to Unseated Check Valve (Section 4OA3)

#### Closed

05000255/2004-002-00	LER	Leak Path Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations (Section 4OA3)
05000255/2004-003-02	LER	Main Steam Safety Valves Exceeded Lift Setpoint Acceptance Band (Section 4OA3)
05000255/2005-003-00	LER	Positive Differential Pressure Not Maintained Between Control Room Envelope and Adjacent Room (Section 4OA3)

05000255/2005-004-00	LER	Fuel Handling Area Ventilation System Not Properly Aligned During Movement of Irradiated Fuel Assemblies (Section 4OA3)
05000255/2005006-01	FIN	Failure to Provide Adequate Oversight of Maintenance Activities in the Switchyard (Section 1R13)
05000255/2005006-02	FIN	Failure to Maintain Collective Doses ALARA for RWP No. P046005 (Section 2OS2)
05000255/2005006-03	FIN	Failure to Provide Adequate Oversight of Contractors Modifying Turbine Drains (Section 4OA2)
05000255/2005006-04	NCV	Loss of Primary Coolant Due to Unseated Check Valve (Section 4OA3)

Discussed

None

**LIST OF DOCUMENTS REVIEWED**

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

1R01 Adverse Weather Protection

System Operating Procedure, Att. 10; Warm Weather Checklist; Revision 20  
 Work Order (WO) 24421327; V-21 D, E, F, G, H; Cold Weather Cover  
 CAP 048078; Emergency Diesel Generator Room Design Basis Temperature Not  
 Demonstrated at Design Basis Outside Air Temperature

1R04 Equipment Alignment

Plant Procedures and Miscellaneous Documents

SOP-3; Checklist 3.9, Engineered Safeguards Administrative Control Verification;  
 Revision 63

Condition Reports Reviewed to Assess Corrective Actions

CAP 047295; Kewaunee Industry Operating Experience (CAP026497) Auxiliary  
 Feedwater Pump Operating Below ASP May Cause Loss of Prime

1R05 Fire Protection

Plant Procedures

ONP25.2; Off-Normal Procedure - Fire Which Threatens Safety-Related Equipment  
Fire Area 5

FPSP-RP-11; Fire Barrier Penetration Seal/Conduit Seal Inspection Form for Fire  
Areas 15, 4, 26, 13, 28, and 9

Condition Reports Reviewed to Assess Corrective Actions

CAP 048020; Review of T2078 Conduit Sealing Requirement

1R06 Flood Protection

Condition Reports Reviewed to Assess Corrective Actions

CAP 047560; Missing Pipe Support On MV-CW555, Downstream Drain Line

1R07 Heat Sink Performance

Plant Procedures

Master Heat Exchanger Testing Plan; Rev. 3

Heat Exchanger Condition Assessment Program EM-09-16; Rev. 4

Data

EDG 1-1 and 1-2 Service Water Flow Rates; April 2004-May 2005

1R11 Licensed Operator Requalification

Simulator Exercise Guide PL-LOR-SPE-00396; Course N00320; Revision 2

1R12 Maintenance Effectiveness

Condition Reports

CAP 047669; Degraded Motor Inboard for P-52A

CAP 047570; Spare CCW Motor Oil Level Indication Anomaly

CAP 040745; Adverse Trend in EDG 1-1 Maintenance Rule Availability Performance  
Monitoring

CAP 047639; SV-0884A, Service Water to 1-1 D/G Appears Failed

CAP 042739; Maintenance Rule Scoping and Emergency Operating Procedure Issues

CAP 042738; Review Maintenance Rule Performance Monitoring for Cranes Due to  
DAEC Issue

CAP 040385; Monitoring of RGEM Performance Issues May Have Been Inappropriate

CAP 046941; Maintenance Rule Goal Setting for CCW HX Outlet Valves CV-0823 and  
CV-0826

## 1R13 Maintenance Risk Assessments and Emergent Work Evaluation

### Plant Procedures

Administrative Procedure 4.02; Safety Assessments; Revision 29  
Administrative Procedure 4.02; Control of Plant Equipment; Revision 29  
Administrative Procedure 4.28; Control of Palisades Switchyard Activities; Revision 0

### Miscellaneous Documents

Operator's Risk Reports; April 12-13, April 18-20, April 25-30, May 2-4, 2005  
Daily Maintenance Work Schedules; April 12-13, April 18-20, April 25-30, May 2-4, 2005  
Operations Log entries; April 12-13, April 18-20, April 25-30, May 2-4, 2005  
Consumers Energy; System Maintenance and Construction Services Department; Field Procedures XII-2.2; Basler Breaker Failure Relay BE-1BPR; Revision 1  
Consumers Power Company; Switching and Tagging Order; Test OP 31R8 Then Remove B.F.R. Tests; April 15, 2005

### Condition Reports Reviewed to Assess Significance Characterization for Identified Problems

CAP 047630; Initial Event Investigation Palisades Nuclear Power Plant  
CAP 047729; EOOS Program Modeling for Undervoltage Relaying  
CAP 047630; Loss of Rear Bus Due to Testing  
CAP 048291; Water in Manholes #1, #2 and #4 and Cables in Water

## 1R14 Operator Performance During Non-Routine Evolutions and Events

### Miscellaneous Documents

Work Instruction WI-FC-977-02; FC-977 Reactor Power Uprate; Revision 0  
System Operating Procedure 3; Safety Injection and Shutdown Cooling System; Revision 62  
System Operating Procedure 8; Att. 2; Turbine Valve Testing; Revision 70

### Condition Reports

CAP 040448; Westinghouse Technical Bulletin TB-04-4  
CAP 041525; Apparent Sensitivity to Power Changes Exhibited by the B Loop UFM System

## 1R15 Operability Evaluations

CAP 047488; Electrical Equipment Room Pressure Greater Than Control Room Envelope Pressure  
CAP 047746; Control Rod 34 Not Exercised During Surveillance Test QO-34  
CAP 040196; Calculated Short Circuit > 480V AC Breaker Interrupt Rating  
CAP 037153; Palisades Control Room Habitability Not in Complete Conformance with NRC Guidance  
CAP 047755; XJ-0423, Flood Barrier on HB23-168#8221; Service Water Return Line is

Degraded  
CAP 047839; Discrepancies Identified in Engineering Analysis  
CAP 045779; Potential Fire Induced Cable Damage May Spuriously Operate MOV

1R16 Operator Workarounds

OWA-05-02; Startup Transformer 1-2; February 8, 2005  
AP-4.12, Attachment 3; Operator Work-Around / Challenge Monthly Aggregate Impact Assessment; April 21, 2005  
Operator Burdens and Operations Concerns; April 20, 2005

Condition Report Reviewed to Assess Significance Characterization

CAP 045772; Trend AR to Document Negative Trend in Operator Burden

1R17 Permanent Plant Modifications

EAR-2003-0210; Design Replacement Stack Effluent Gas Square Root Extractor For Obsolete Square Root Extractor  
WO 24323030; FM-1818, Stack Effluent Gas Flow Meter  
Admin Proc No 3.07; Attachment 1, 50.59 Screen of EAR-2003-0210; Revision 13

1R19 Post Maintenance Testing

Work Orders

24422472 EMA-1109; Component Cooling Pump P-52A Motor (repair O/B motor bearing)  
24423112 EMA-1109; Component Cooling Pump P-52A Motor (install oilers on bearings)  
24521864; Bus 1C Undervoltage Circuit Control Power; April 29, 2005  
24520223; RV-3267; P-66A Discharge Relief; April 20, 2005  
24423203; P-66A High Pressure Safety Injection Pump; April 20, 2005  
24111070; MV-ES3287 High Pressure Safety Injection Pump P-66A Casing Vent; April 20, 2005  
24420636; P-66A High Pressure Safety Injection Pump; April 20, 2005  
24214483; 152-207 High Pressure Safety Injection Pump P-66A Breaker; April 20, 2005  
24520402; EEQ EMA-1207 High Pressure Safety Injection Pump P-66A Motor; April 20, 2005  
24521824; G1-1/ESR2; D/G 1-1 Engine Start Relay Circuit B; May 3, 2005  
24521381; CV-0884 D/G 1-1 Service Water Inlet; May 3, 2005  
24521961; MO-3064; May 10, 2005  
24521412; ED-15 Battery Charger Number 1; June 2, 2005  
24423411; ED-15 Battery Charger Number 1 PM; June 2, 2005

Plant Procedures and Drawings

QO-15; Component Cooling Water System; Revision 21  
E-137; Sheet 1; 2400V and 4160V Bus Undervoltage and Load Shedding; Revision 25

QO-19; Inservice Test of High Pressure Safety Injection and ESS Check Valve Operability Test; Revision 23  
RE-133; Performance Test - Battery Charger Number 1 (ED-15); Revision 3

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP 047688; Unexpected Alarm EK-0524, Load Shedding Control Circuit Undervoltage  
CAP 047771; HPSI P-66B Casing Vents Leakby During Post Maintenance Testing

1R22 Surveillance Testing

Completed Surveillance Test Procedures

QO-1; Safety Injection System; Revision 48  
T-336; control Room Envelope Integrated Unfiltered In-Leakage Test; Revision 0  
RO-128-2; Emergency Diesel Generator 1-2 24-Hour Load Run; Revision 9  
QO-34; Control Rod Exercising; Revision 4  
RE-132; Emergency Diesel Generator 1-2 Load Reject; Revision 2  
QI-3; Reactor Protection Matrix Logic Tests; Revision 0

Condition Reports Reviewed to Assess Corrective Actions

CAP 047461; Unable to Perform Step 5.6.2.c. of RO-128-2  
CAP 047466; K-6B, 1-2 EDG Ampmeter Reading Erratically  
CAP 047470; EDG 1-2 Exhaust Manifold Nut/Bolt Loose

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP 047569; EDG Surveillance Test Basis Does Not Provide Detailed Basis for Acceptance Criteria

1R23 Temporary Plant Modifications

TM-2004-010; Temporary Installation of Ultrasonic Flow Monitoring Device to Measure Flow on 'B' Loop of Feedwater System

1EP2 Alert and Notification System (ANS) Testing

PAL PWS; Public Warning System Operating Procedures; Revision 15  
FEMA Report on Technical Review of the Palisades Nuclear Power Plant Replacement Public Warning System; December 19, 2002  
Summary of Public Warning System Tests; July 2004 through May 2005  
CAP 047913; Public Warning System Siren Failure - Site #30 (EM08); May 16, 2005

### 1EP3 Emergency Response Organization (ERO) Augmentation Testing

SEP; Site Emergency Plan, Sections 5 and 6; Revision 11  
EI-2.2; Emergency Staff Augmentation; Revision 9  
PL-BEP-SEP; Site Emergency Plan Training Program; March 10, 2005  
Emergency Augmentation System Instructions  
Palisades Manual Call Out List; May 11, 2005  
Semi-Annual Augmentation Test Results For December 8, 2003, June 22, 2004, and December 9 and 10, 2004  
ACE 003224; Unannounced EP Augmentation Drill, December 9, 2003  
CAP 048272; ERO Member Training Lapsed (EM15); June 9, 2005  
[NRC-Identified Issue]  
CAP 047962; No Documented Evidence That FFD Procedural Requirement for Unscheduled Overtime Are Met; May 19, 2005

### 1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

EI-1; Emergency Classification and Actions; Revision 45  
EI-3; Palisades Event Notification Form; May 9, 2005  
Palisades Nuclear Plant NRC Performance Indicator (DEP/EP-1) Improvement Plan; November 1, 2004  
May 9, 2005; Unusual Event Summary Report; June 9, 2005  
Critique Comments From May 9, 2005 Unusual Event; May 23, 2005  
RCE 000379, Root Cause Evaluation; Unusual Event Entered Due to Excessive PCS Leakage, Draft; June 7, 2005  
PRACTEX 2004; Palisades Third Quarter Exercise; July 21, 2004  
Tabletop Drill Report; 2004 Palisades First Quarter Drill, February 18, 2004  
NOS Observation Report 2005-001-8-024; Fleet Integrated EP Assessment - Main Report; April 15, 2005  
NOS Observation Report 2005-001-8-025; Fleet Integrated EP Assessment - State and Local Interface; April 15, 2005  
Nuclear Oversight Assessment of NMC Fleet Emergency Preparedness - 2003/2004; March 30, 2004  
Palisades Nuclear Plant Emergency Preparedness Evaluation; May 27, 2003  
CAP 048271; Assessment of Emergency Plan Interface with Local Governments Not Documented in 2003; June 9, 2005 [NRC-Identified Issue]  
CAP 047816; Unusual Event Entered Due to Excessive Primary Coolant System Leakage; May 9, 2005  
CAP 047255; Potential Emergency Plant Issues with Radiation Protection Staffing; March 25, 2005  
CAP 047244; Differences Between the SEP and the Emergency Implementing Procedures; March 24, 2005  
CAP 043082; PALEX 2004 Selected GE Category Differs From Design Category; August 19, 2004  
CAP 042667; EP Exercise Objective (3a) For Site Evacuation Was Not Met; July 23, 2004  
CAP 042650; Site Emergency Plan Notification Inaccuracies; July 23, 2004

1EP6 Emergency Preparedness Drill Evaluation

Plant Procedures

Scope and Objectives, Table Top drill; May 23, 2005  
EI-1; Emergency Classification and Actions; Revision 45

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning And Controls

CAP 045954; Deficiencies in the Cobalt Reduction Program for Valves; dated January 4, 2005

CAP 047486; V-27 C and D Motor Removal Required Cutting and Welding, Not Identified in WO; dated April 13, 2005 [NRC-Identified Issue]

CAP 047510; Enhancement Identified in ALARA Planning Process; dated April 15, 2005 [NRC-Identified Issue]

CAP 047511; Enhancement Identified in ALARA Planning Process; dated April 15, 2005 [NRC-Identified Issue]

CAP 047517; Inadequate Work Planning/ALARA Planning for Safeguard Room Cooler (V-27) Work; dated April 15, 2005 [NRC-Identified Issue]

Dose Estimation Process for Work Week 2513 (T-4 Dose Estimates, T-2 Dose Estimates, Dose Estimates for Work Week, Dose Performance for Work Week, and Dose Summary for Work Week); dated through April 15, 2005

Departmental and Site-wide Dose Goals for Calendar Year 2005; dated April 15, 2005

HP 11.1; Processing Radiation Work Permits and ALARA Reviews; Revision 18

RWP Package No. P045000; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Chemistry and Radiation Protection Activities in Containment;' dated June 29, 2004 through March 22, 2005

RWP Package No. P045008; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Remove and Replace Control Rod Drive Motors and Seal Housings;' dated September 1, 2004 through April 8, 2005

RWP Package No. P045006; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'High Contamination Area/Hot Particle Area Decon Activities (Ctmt);' dated August 31, 2004 through March 22, 2005

RWP Package No. P045108; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Reactor Head Reassembly and Refueling Closeout Activities;' dated September 3, 2004 through March 28, 2005

RWP Package No. P045111; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Remove/Install Incore Control Instrumentation Flanges;' dated August 25, 2004 through April 7, 2005

RWP Package No. P045308; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Insulation Work in Containment;' dated June 1, 2004 through March 28, 2005

RWP Package No. P045151; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Steam Generator Inspection - Primary Side Manway Activities;' dated August 18, 2004 through April 11, 2005

RWP Package No. P045152; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Installation and Removal of ROSA, Eddy Current Testing and Tube Plugging;' dated August 18, 2004 through April 11, 2005

RWP Package No. P045510; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Inspection of the Reactor Vessel Closure Head;' dated August 27, 2004 through March 28, 2005

RWP Package No. P045512; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Reactor Head Lift System;' dated September 27, 2004 through March 27, 2005

RWP Package No. P045514; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Support Tube Lift Rig;' dated July 28, 2004 through March 27, 2005

RWP Package No. P045515; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Removal of the Thermal Sleeves;' dated August 31, 2004 through March 28, 2005

RWP Package No. P045520; RWP Revisions, Pre-Job Review, In-Progress Reviews, and Post Job Review for 'Inspection of the Reactor Vessel Closure Head (Penetrations 29 and 30);' dated October 14, 2004 through March 29, 2005

RWP Package No. P046005; RWP Revisions, In-Progress Reviews, and Post Job Review for 'Engineered Safeguards Room Cooler Maintenance;' dated September 23, 2004 through March 27, 2005

SA011364; Pre-NRC Assessment - RP ALARA Planning; dated April 4, 2005

WI-CRS-E-02; Work Instruction: Safeguards Room Cooler Fan Replacement; Revision 0

Work Order 24412138; Summary Report - V-27D Motor Changeout; dated July 21, 1995

Work Order 24322787; Remove/Reinstall Motor to Support EEQ Motor EMB-0221 (V-27D); dated November 5, 2004

#### 4OA1 Performance Indicator Verification

NRC Indicator Occupational Exposure Control Effectiveness (OR-01) Memos; August 3, September 1, October 3, October 28, and December 7, 2004, and January 24, March 1, and April 1, 2005

##### Alert and Notification System (ANS) Reliability

NRC Indicator Alert and Notification System Reliability (EP-03); July 2004 through March 2005  
Summary of Public Warning System Tests; July 2004 through March 2005  
NRC Indicator Emergency Response Organization Drill Participation (EP-2); July 2004 through March 2005

##### Emergency Response Organization Participation

Monthly Records of Key ERO Members's Drill Participation; July 2004 through March 2005

##### Drill and Exercise Performance (DEP)

EI-3; Palisades Event Notification Forms (for various Drills/Exercises); July 2004 through March 2005  
Emergency Preparedness Performance Indicators - PRACTEX; July 21, 2004  
NRC Indicator Drill/Exercise Performance (EP-01); July 2004 through March 2005

#### 4OA2 Problem Identification and Resolution

Operations Department Roll-up Meeting Reports; January 2005 - March 2005  
Maintenance Department Roll-up Meeting Reports; January 2005 - March 2005  
Station Trend Reports; 1<sup>st</sup> and 2<sup>nd</sup> Quarter 2005  
CAP 045659; Apparent Negative Trend in Operations Department Human Performance  
CAP 045391; Release for Repair Signature Not Obtained Prior to Starting Work  
CAP 046250; Ineffective Use of the Corrective Action Program

#### 4OA3 Event Follow-up

LER 2004-003-02; Main Steam Safety Valves Exceeded Lift Setpoint Acceptance Band; April 19, 2005  
LER 2004-002-00; Leak Path Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations; December 9, 2004  
LER 2005-004-00; Fuel Handling Area Ventilation System Not Properly Aligned During Movement of Irradiated Fuel Assemblies  
LER 2005-003-00; Positive Differential Pressure Not Maintained Between Control Room Envelope and Adjacent Room

4OA5 Other Activities

Plant Procedures

Emergency Operating Procedure 3; Station Blackout Recovery; Revision 13  
Administrative Procedure 4.02; Control of Equipment; Revision 29  
Administrative Procedure 4.02, Att. 3; Risk Management and Risk Monitoring;  
Revision 29  
System Operating Procedure 30; Station Power; Revision 42

Condition Reports Reviewed to Assess Corrective Actions

CAP 047855; Enhancements For Palisades Substation Interface  
CAP 047857; Changes to the Grid Topical Report DBD-6.01 Not Timely  
CAP 047861; Logic Print E-17 Sheet 18A Did Not Show Relay Logic

## LIST OF ACRONYMS USED

ALARA	As Low As Is Reasonably Achievable
ANS	Alert and Notification System
CAP	Corrective Action Program
EP	Emergency Preparedness
ERO	Emergency Response Organization
FIN	Finding
HPSI	High Pressure Safety Injection
IMC	Inspection Manual Chapter
IR	Inspection Report
LER	Licensee Event Report
LOOP	Loss of Offsite Power
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OSP	Offsite Power
PI	Performance Indicator
RP	Radiation Protection
RWP	Radiation Work Permit
SDP	Significance Determination Process
TI	Temporary Instruction
TS	Technical Specification
TSO	Transmission System Operator
WO	Work Order