

May 11, 2006

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 INSPECTION REPORT 05000255/2006002

Dear Mr. Harden:

On March 31, 2006, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Palisades Nuclear Plant. The enclosed report documents the inspection findings which were discussed on April 5, 2006, 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, three NRC-identified findings of very low safety significance (Green) were identified. Two of these findings were determined to involve a violation of NRC requirements. However, because the violations were of very low safety significance and because the issues have been entered into your corrective action program, the NRC is treating these findings as a non-cited violations (NCVs) consistent with Section VI.A.1 of the Enforcement Policy.

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

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Sincerely,

**/RA/**

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

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

Enclosure: Inspection Report 05000255/2006002  
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-255

License No: DPR-20

Report No: 05000255/2006002

Licensee: Nuclear Management Company, LLC

Facility: Palisades Nuclear Plant

Location: Covert, MI

Dates: January 1 through March 31, 2006

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000255/2006002; 01/01/2006 - 03/31/2006; Palisades Nuclear Plant; Operator Performance During Non-routine Evolutions and Events; Maintenance Risk Assessments; Surveillance Testing; Identification and Resolution of Problems

This report covers a 3-month period of baseline inspections. The inspections were conducted by Region III inspectors and resident inspectors. This report includes three green findings, two of which were NCVs. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)." Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

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

#### **Cornerstone: Initiating Events**

- Green. The inspectors determined that a finding of very low safety significance (Green) was self-revealed when a Moisture Separator Reheater relief valve failed to reseal during testing. This failure resulted in a slight power rise due to the additional steam demand. Although the operations staff believed a method existed to manually close the valve, a manual method did not exist and a power reduction was needed to reseal the valve. This finding also affected the cross-cutting area of human performance. The licensee stopped use of the procedure and entered the item into their corrective action program.

The inspectors determined that not having adequate planning, contingency plans and procedures in place to reseal the relief valve is more than minor because the failure affected the initiating event cornerstone attribute of procedure quality and increased the likelihood an initiating event due to the increased steam demand of an unsealed relief valve. The finding is of very low safety significance since the event did not impact LOCA initiators, mitigation equipment or external event initiators. Corrective action included placing a hold on all relief valve testing until completion of a formal cause evaluation as well as placing this in the CAP system. No violation of NRC requirements occurred. (Section 1R14)

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

- Green. The inspectors identified a finding of very low safety significance (Green) when the procedure used to install commercial grade portable ground detection equipment did not provide adequate Class 1E to non-Class 1E separation. During this installation, the licensee did not declare the affected bus inoperable. This finding represented a non-cited violation of Technical Specification (TS) 5.4.1, "Procedures," for an inadequate procedure related to installing a commercial grade, portable ground detector which was not appropriate for the circumstances. The licensee entered the item in the corrective

action program and has restricted use of the procedure. The portable ground detection equipment has been removed.

This finding is more than minor because the installation of this temporary equipment impacted the DC bus and made the bus more susceptible to a fault thus degrading a mitigating system function. The finding is of very low safety significance because the improper installation did not result in loss of availability of the bus and only one bus was affected at a time. (Section 1R13)

- Green. The inspectors identified a finding of very low safety significance (Green) when the Emergency Diesel Generators (EDGs) were unacceptably preconditioned prior to testing. This finding represented a non-cited violation of 10 CFR 50 Appendix B, Criterion XI in that the tests were not performed under suitable environmental conditions. The licensee entered the item in the corrective action program.

This finding is more than minor because unacceptable preconditioning can change the as-found condition of the EDG system and therefore mask potential performance issues. The finding is of very low safety significance due to the limited impact that the preconditioning had on the EDG performance. All indications after the testing was performed with an acceptable test is that the machine performance is currently acceptable. (Section 1R22)

**B. Licensee-Identified Violations**

None.

## REPORT DETAILS

### Summary of Plant Status

The plant operated at or near full Rated Thermal Power during the inspection period with the following exceptions:

- The plant was shutdown at the start of the inspection period to repair three leaking control rod drive mechanisms. The plant restarted on January 4, 2006 and attained full power on January 7, 2006.
- On February 2, 2006, during routine testing of MSR relief valves, one valve unseated and would not reseal. In response to a minor power increase to 100.07 percent, the licensee reduced power to 95 percent. After reseating the relief valve, the plant returned to 100 percent power.
- On March 25, 2006, the licensee reduced power to 99 percent for main steam relief valve testing.
- On March 31, 2006, the licensee commenced a shutdown in accordance with TS 3.5.2 for one Emergency Core Cooling System train inoperable. This was reported to the NRC as Event Number 42462. The shutdown was completed on April 1, 2006.

### 1. REACTOR SAFETY

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

#### 1R04 Equipment Alignment

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

#### a. Inspection Scope

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

- 'A' High Pressure Safety Injection (HPSI) in preparation for 'B' HPSI outage
- 1-2 EDG during inoperability of the 1-1 EDG for testing

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. The documents reviewed during this inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown (71111.04S)

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

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

1R05 Fire Protection

.1 Fire Area Walkdowns (71111.05Q)

a. Inspection Scope

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

- C Turbine Lube Oil Room (Fire Area 22)
- C Electrical Equipment Room (Fire Area 21)
- C Component Cooling Water Rooms (Fire Area 16)
- C Diesel 1-1 Fuel Oil Day Tank Room (Fire Area 7)
- C Diesel 1-2 Fuel Oil Day Tank Room (Fire Area 8)
- C Intake Structure (Fire Area 9)
- C East Engineered Safeguards Room (Fire Area 10)

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

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

b. Findings

No findings of significance were identified.

1R06 Flood Protection (71111.06)

a. Inspection Scope

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

The inspectors toured selected plant areas with safety-related equipment that were below flood levels susceptible to groundwater ingress or seiche. Plant areas that were checked included the AFW pump room, emergency diesel generator room, 2400-volt bus 1C switchgear room, and the intake structure. Utilizing Standard Operating Procedure 3, Checklist 3.4, "Plant Flood Door System Checklist," the inspectors verified that flood doors designed to protect areas with safety-related equipment from external flooding were functional. The inspectors reviewed Off Normal Procedure 12, "Acts of Nature," and verified that adequate guidance for coping with external flooding existed. In addition, the inspectors performed a general area walkdown of the plant's outdoor perimeter drainage system to verify that drains and drain covers were free from obstruction, and that no materials or debris were in proximity to the drain covers that could potentially obstruct them.

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

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q)

.1 Quarterly Review

a. Inspection Scope

The inspectors completed one inspection sample pertaining to licensed operator requalification by observing licensed operator actions in the control room simulator on March 3, 2006. The inspectors assessed the operators' ability to use plant procedures to respond to simulated plant alarms and emergency conditions. The inspectors assessed the operators' ability to evaluate plant conditions and determine the proper

emergency action level. The inspectors assessed the licensee evaluators' ability to evaluate the operators' performance and to identify operator performance deficiencies.

b. Findings

No findings of significance were identified.

.2 Facility Operating History

a. Inspection Scope

The inspectors reviewed the plant's operating history from January 2004 through December 2005 to assess whether the Licensed Operator Requalification Training (LORT) program had identified and addressed operator performance deficiencies at the plant. Any deficiencies were then verified to have been addressed by the facility licensee in accordance with the station's approved Systems Approach to Training (SAT) program which would satisfy the requirements of 10 CFR 55.59(c)(3), "On-the-job training."

b. Findings

No findings of significance were identified.

.3 Licensee Requalification Examinations

a. Inspection Scope

The inspectors performed a biennial inspection of the licensee's LORT test/examination program for compliance with the station's SAT program which would satisfy the requirements of 10 CFR 55.59(c)(4), "Evaluation." The operating examination material reviewed consisted of five operating tests, each containing approximately three dynamic simulator scenarios and approximately five job performance measures (JPM). The written examinations reviewed consisted of three written examinations, each containing approximately 35 questions. The inspectors reviewed the annual requalification operating test and biennial written examination material to evaluate general quality, construction, and difficulty level. The inspectors assessed the level of examination material duplication from week-to-week during the current year operating test, and compared the operating test material from this year's operating tests (2006) with last year's operating tests (2005). The annual operating tests were conducted in February/March/April 2005 and January/February 2006. The examiners assessed the amount of written examination material duplication from week-to-week for the written examination administered in February/March/April 2005. The inspectors reviewed the methodology for developing the examinations, including the LORT program 2-year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications.

b. Findings

No findings of significance were identified.

.4 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of a requalification operating test to assess the licensee's effectiveness in conducting the test to ensure compliance with 10 CFR 55.59(c)(4). The inspectors evaluated the performance of one shift crew in parallel with the facility evaluators during four dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the administration of several JPMs. The inspectors assessed the facility evaluators' ability to determine adequate crew and individual performance using objective, measurable standards. The inspectors observed the training staff personnel administer the operating test, including conducting pre-examination briefings, evaluations of operator performance, and individual and crew evaluations upon completion of the operating test. The inspectors evaluated the ability of the simulator to support the examinations. A specific evaluation of simulator performance was conducted and documented under Section 1R11.9, "Conformance With Simulator Requirements Specified in 10 CFR 55.46," of this report.

b. Findings

No findings of significance were identified.

.5 Examination Security

a. Inspection Scope

The inspectors observed and reviewed the licensee's overall licensed operator requalification examination security program related to examination physical security (e.g., access restrictions and simulator considerations) and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of examinations and tests." The inspectors also reviewed the facility licensee's examination security procedure, any corrective actions related to past or present examination security problems at the facility, and the implementation of security and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the examination process.

b. Findings

No findings of significance were identified.

.6 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT Program up to date, including the use of feedback from plant events and industry experience information. The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department

self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions. This evaluation was performed in accordance with 10 CFR 55.59 (c) and with respect to the licensee's SAT program.

b. Findings

No findings of significance were identified.

.7 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous biennial requalification examinations and the training planned for the current examination cycle to ensure that they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans. This evaluation was performed in accordance with 10 CFR 55.59 (c) and with respect to the licensee's SAT program.

b. Findings

No findings of significance were identified.

.8 Conformance With Operator License Conditions

a. Inspection Scope

The inspectors reviewed the facility and individual operator licensees' conformance with the requirements of 10 CFR Part 55. The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53 (e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted watch-standing credit for maintaining active operator licenses. The inspectors reviewed the facility licensee's LORT program to assess compliance with the requalification program requirements as described by 10 CFR 55.59 (c). Additionally, medical records for 15 licensed operators were reviewed for compliance with 10 CFR 55.53 (I).

b. Findings

No findings of significance were identified.

.9 Conformance With Simulator Requirements Specified in 10 CFR 55.46

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors also reviewed a sample of simulator performance test records (i.e., transient tests, scenario test and discrepancy resolution validation test), simulator discrepancy and modification records, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics. The inspectors conducted interviews with members of the licensee's simulator staff about the configuration control process and completed the IP 71111.11, Appendix C, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46 (c) and (d).

b. Findings

No findings of significance were identified.

.10 Annual Operating Test Results

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of JPM operating tests, simulator operating tests, and the biennial written examination (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from January 18 through February 17, 2006. The overall results were compared with the significance determination process in accordance with NRC Manual Chapter 0609I, "Operator Requalification Human Performance Significance Determination Process (SDP)."

This inspection counts as one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors reviewed the one sample listed below for items such as: (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the maintenance rule (MR); (4) characterizing reliability issues for performance; (5) trending key parameters for condition monitoring; (6) charging unavailability for performance monitoring; (7) classification and

reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (8) appropriateness of performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). In addition, the inspectors specifically reviewed events to determine if ineffective equipment maintenance has resulted in invalid automatic actuations of Engineered Safeguards Systems. Documents reviewed are listed in the Attachment. The inspectors reviewed the following system:

- Control Rod Drive System

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

##### a. Inspection Scope

The inspectors completed seven inspection samples. The inspectors reviewed the following seven activities to verify that the appropriate risk assessments were performed prior to removing equipment for work. The inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4), and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors verified the appropriate use of the licensee's risk assessment tool and risk categories in accordance with Administrative Procedure 4.02, Control of Equipment, Revision 29, and Fleet Procedure FP-OP-RSK-01, Risk Monitoring and Risk Management, Revision 0. Documents reviewed are listed in the attachment.

- Planned in service testing of 1-2 Emergency Diesel Generator (EDG) and the work week of 01/15-01/21/2006 (WW 0603)
- Planned work on CV-3025 Shutdown Cooling to Low Pressure Safety Injection 02/06-02/09/2006 (WW 0606)
- Emergent equipment issue with DC bus ground on D20R on 02/23-02/24/2006 (WW0608)
- Planned work on Station Power Transformer cubicle extension 1-2 02/06/2006-03/04/2006 (WW 0609)
- Planned testing of Service Water pumps and the week of 02/12-02/18/2006
- Planned in service testing of 1-1 EDG and the work week of 03/06-03/10/2006 (WW 0610)
- Planned in service testing of 1-1 and 1-2 EDGs and emergent work on CV-3070 in work week of 03/26/06-04/01/2006 (WW 0613)

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

##### b. Findings

Introduction: The inspectors identified a finding involving an NCV of TS 5.4.1, "Procedures," having very low safety significance (Green) for an inadequate procedure

related to installing a commercial grade, portable ground detector. The procedure did not ensure that adequate electrical isolation was maintained, and did not ensure seismic restraints when Non-1E equipment was connected to a safety-related DC bus.

Description: On February 24, 2006, the inspectors were reviewing the circumstances surrounding a DC ground which had occurred the previous day on bus D20R, DC Bus #2. During troubleshooting the previous day, the licensee noted an arc flash. The inspectors noted that the licensee installed a non-safety, commercial ground detector across the safety-related DC bus. The licensee used quality procedure EPS-E-9, "Use of Portable DC Ground Fault Detection System," to install the test equipment. The inspectors questioned why the bus was still operable without proper separation between 1E to non 1E electrical components, and without seismic restraints or attendant personnel. The licensee wrote a corrective action program (CAP) document to capture the inspectors' concerns. As a result, the licensee took interim corrective actions which included putting an administrative hold on the procedure, and conducting an extent of condition review for use of other test equipment. The licensee subsequently located and isolated the ground.

The inspectors reviewed the Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards and licensing basis. An inspection of the Procedure EPS-E-9 concluded that there had been no evaluations in the area of 1E to non-1E equipment, seismic evaluations or single failure assessments as described in IEEE-384, -344, and -379; respectively. The installation of the portable ground detector was covered under Temporary Modifications (TM) written in 1997 (97-018 and 97-019), which indicated there were "no applicable codes or standards." UFSAR Section 8.1 notes that the above mentioned IEEE standards are intended to be met within the limits of practicality consistent with the original design features. The inspectors concluded that the licensee failed to have adequate procedures covering the installation of the portable ground detection equipment.

Analysis: The inspectors assessed this finding using the SDP. The inspectors reviewed the samples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and determined that there were no examples related to this issue. Consistent with the guidance in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," the inspectors determined that the finding was of more than minor significance because this issue was associated with the Equipment Performance and Procedure Quality attributes of the Mitigating Systems Cornerstone and affected the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." In accordance with the "SDP Phase 1 Screening Worksheet for IE [Initiating Events], MS [Mitigating Systems], and B [Barrier Integrity] Cornerstones," the inspectors determined that use of the inadequate test procedure resulted in a qualification deficiency which did not result in loss of function. Based



on this assessment, the issue screens Green in accordance with Phase I of IMC 609, Appendix A. In addition, the inspectors assessed the maintenance risk and determined it to be very low since no other major risk components were out of service at the time.

Enforcement: Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33. Appendix A, Item 9.a., states that maintenance that can affect the performance of safety-related equipment should be preplanned and performed in accordance with written procedures appropriate to the circumstances. This includes procedures such as EPS-E-9, which implements actions to install the non-Class 1E temporary ground detector. Contrary to this requirement, inspectors identified that Procedure EPS-E-9 was not appropriate to the circumstances since there was no establishment of 1E to non 1E separation, no establishment of seismic controls, and no evaluation that such controls were not required. However, because this violation was of very low safety significance and because the issue was entered into the licensee's corrective action program (AR 01016519, 01016392) this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000255/2006002-01). The licensee's initial corrective action included putting a hold on using this procedure until appropriate controls for connection of temporary equipment to class 1E equipment could be established.

#### 1R14 Operator Performance During Nonroutine Evolutions and Events (71111.14)

##### a. Inspection Scope

The inspectors completed one sample of evaluation of a non-routine event. For the non-routine event described below, the inspectors reviewed operator logs, plant computer data, and strip charts as appropriate to determine what occurred and how the operators responded, and to determine if the response was in accordance with plant procedures:

- Operator response to an unseated moisture separator relief valve on February 2, 2006

##### b. Findings

Introduction: The inspectors determined that a finding of very low safety significance (Green) was self-revealed when a Moisture Separator Reheater (MSR) relief valve failed to reseal. This failure resulted in a slight increase in reactor power to 100.07 percent. Because the licensee did not have procedures in place to reseal the valve, the licensee reduced reactor power and the attendant drop in MSR pressure allowed the valve to reseal.

Description: On February 2, 2006, while conducting planned testing of the Moisture Separator Relief Valve (MSR) RV-0538, Moisture Separator E-9D Inlet, at full power, the relief valve lifted, opened 1/3 to 1/2 but did not reseal. RV-0538 is non-safety-related. The licensee entered Abnormal Operating Procedure ONP-9, Excess Load, and reduced power about 1 percent. After power stabilized, the licensee recognized that they had limited confidence that the valve would not open further and reduced power to

about 95 percent. During this power reduction, the valve reseated. The maximum power recorded was less than 100.07 percent and the duration of the power excursion was only a few minutes. Although the licensee had discussed the contingency of manually reseating a valve should it fail to close, no procedure had been developed for this activity; thus although the licensee believed a method existed to quickly reseat an unseated relief valve, the licensee could not manually reseat the valve.

The licensee reduced power to prevent exceeding power limits, and the attendant drop in MSR pressure allowed the valve to close. About 1 ½ hours after the initial unseating, the relief valve reseated at approximately 98 percent thermal power.

The licensee determined a potential cause for the valve's failure to reseat was that at 100 percent power the MSR remained above blowdown for the relief. The licensee validated through document review of vendor records that the setting for this relief was not at the 10 percent range as the other tested valves had been. For this valve, blowdown had been set 12-14 percent and no documentation could be found to explain the difference in the blowdown setting. The licensee wrote AR 01013190 to document the issue and instituted the following immediate corrective actions: they reset the site event clock and postponed the upcoming main steam safety relief valves testing which used the same test rig and procedure. The licensee will perform a root cause on the issue.

During the subsequent investigation, the licensee determined that poor communication existed between the various departments, particularly engineering and operations. In this instance, while the rig could be repositioned to close the relief, no procedures had been put in place to do so nor had analysis been performed to determine the acceptability of using the test rig in this manner. Thus, operations personnel were surprised when the valve could not be manually closed and the risk assessment failed to accurately quantify the risk.

Because of the identified lack of manual closure capability, the inspectors also reviewed the Probabilistic Safety Assessment (PSA) used to determine the risk for this activity. Based on this review, the inspectors concluded the PSA was flawed; however, the change in risk did not result in an increase above the green/white threshold. However, the licensee planned on using the same rig and similar PSA analysis techniques for testing of Main Steam Safety Valve (MSSV) the following week. When that work was evaluated with the understanding that manual closure capability did not exist, the risk also would increase. In addition, the MSSV risk assessment performed in 2004 also inappropriately credited the operator capability. The inspectors noted this flawed evaluation for the MSSV and the licensee wrote a CAP to evaluate this flawed maintenance risk assessment. The licensee analysis in EA-PSA-SDP-06-01 evaluated the risk deficit (incremental core damage probability minus the flawed incremental core damage probability) to be about 4E-8. Based on review of the licensee's analysis and comparison with results obtained by the inspectors, the inspectors concluded the results were reasonable. The inspectors determined this aspect of the performance deficiency was minor based on review of IMC 0612, Appendix E, "Examples of Minor Issues."

Analysis: The inspectors determined that not having adequate contingency plans and procedures for conducting this maintenance task was a licensee performance deficiency

that warranted a significance evaluation. The inspectors concluded that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," issued September 30, 2005. The initiating cornerstone attribute of procedure quality was impacted and the objective was affected since there was an increase in the likelihood of an initiating event due to the power increase associated with the lifting of a MSR relief and the valve not reseating. Since the event did not impact LOCA initiators, mitigation equipment or external event initiators, the issue screens as Green in accordance with IMC 0609, Appendix A, "Phase One Screening Worksheet for IE, MS and B cornerstone." Therefore, the inspectors concluded that the issue was of very low Safety significance (Green).

The finding also included a cross-cutting aspect in the area of human performance. In this case, licensee organizations failed to adequately communicate with each other as to the actual capabilities of manually reclosing relief valves. As a result, both control room personnel and risk analysts assumed a manual closure capability that did not exist.

Enforcement: No violation of NRC requirements occurred. The inspectors determined that the finding (FIN 05000255/2006002-02) did not represent a non-compliance with NRC requirements because the deficiency occurred on non-safety-related secondary equipment. The licensee entered the item into their CAP program (AR 1013190) and put a hold on all relief valve testing, including testing safety-related equipment until a detailed root cause was completed. The maintenance risk assessment review pursuant to 10 CFR 50.65 (a)(4) was determined to be minor for both the MSR relief valve and for the 2004 testing for the safety-related, MSSVs.

#### 1R15 Operability Evaluations (71111.15)

##### a. Inspection Scope

For the four operability evaluations described in the Operability Recommendations (OPRs) listed below, the inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors reviewed the UFSAR to verify that the system or component remained available to perform its intended function. In addition, the inspectors reviewed compensatory measures implemented to verify that the compensatory measures worked as stated and the measures were adequately controlled. In addition, the inspectors verified that the condition reports generated for equipment operability issues were entered into the licensee's corrective action program with the appropriate significance characterization. Documents reviewed are listed in the attachment

- OPR 01015197 A1, AFW Pump Steam Trap Blow Down Concern
- OPR 01014535 A1, Design Basis Potentially Not Fully Met for T-2 and AFW Pumps
- OBD 024553, Resolve Operable but Degraded Condition of Control Room HVAC Habitability Conformance with NRC Guidance
- OPR 01018366, Postulated Safety Injection Actuation Signal followed by Containment High Pressure Event

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the three post-maintenance tests listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the licensee's test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed the test data, to verify that test results adequately demonstrated restoration of the affected safety function(s). Further, the inspectors reviewed condition reports to verify that post maintenance testing problems were entered into the corrective action program with the appropriate significance characterization. For select condition reports, the inspectors verified that the corrective actions were appropriate and implemented as scheduled. Documents reviewed are listed in the attachment.

- C Retest of CV-3025 actuator software replacement
- C Fire Pump P-9B pressure switch replacement
- C EDG 1-1 following overspeed and load reject testing

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

During the beginning of the inspection period, the plant was in a planned shutdown to repair the Control Rod Drive seals on three leaking seals. The inspectors observed control room activities during restart. The inspectors also completed a closeout walkdown of accessible portions of containment with site personnel. The inspectors evaluated these activities to ensure licensee personnel were performing within TS requirements, plant procedures, and other applicable requirements. This sample was counted in NRC Inspection Report 0500255/2005-012; therefore, it does not count as an inspection sample.

In addition, the inspectors reviewed planned outage activities for a scheduled refueling outage. The inspectors reviewed the licensee's risk control plan to verify the licensee considered risk, industry experience and site specific issues. The inspectors verified the licensee coordinated schedule activities to minimize scheduled periods when the plant would be in elevated risk. Since the outage continues into the second quarter, this did not constitute an inspection sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- C QI-4, Pressurizer Low Pressure Safety Injection Signal Initiation: Functional Check
- C QI-25, Thermal Margin Monitor Constant Checks
- C QO-21, In Service Test Procedure Auxiliary Feedwater Pumps, completed for TDAFW pump
- C QO-5 Attachment 3, Valve Stroke and Anticipated Transient Without Scram Testing CV-0522B
- C RO-28B, Control Room Ventilation "B" Train Test
- C QR-22, Process Monitor Functional Checks- Quarterly
- C FWS-I-18, Auxiliary Feedwater Pump P-8C Trip on Low Suction Water Pressure
- C RE-131, Diesel Generator 1-1 Load Reject
- C RM-29, Main Steam Safety Valve Testing

b. Findings

Introduction: An inspector-identified finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR 50 Appendix B, Criterion XI occurred when tests of the EDGs were not performed under suitable environmental conditions. The EDGs were unacceptably preconditioned prior to testing.

Description: The inspectors reviewed activities to support performance of surveillance test MO-7A-1, "Emergency Diesel Generator 1-1." The test, in part, timed the EDG up to speed and voltage in accordance with surveillance requirement SR 3.8.1.2. The inspectors questioned the licensee on whether rolling the EDG in the test procedure, prior to the surveillance run, represented unacceptable preconditioning. The licensee rolled the engine prior to the scheduled surveillance to look for cylinder leakage. The licensee admitted air to the air start motor by manually overriding the air solenoid valve. The licensee admits air to the air start motor for "at least five seconds." The licensee

then performed a periodic surveillance of the EDG with one set of air start motors isolated. The procedure did not prohibit the licensee from using the manually overridden air start motor for the surveillance start; in addition, the EDG would have rotated several revolutions with the air motors actuated. Preconditioning is discussed in NRC Information Notice 97-16, "Preconditioning of Plant Structures, Systems, and Components before ASME Code Inservice Testing or TS Surveillance Testing;" NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants;" and NRC Inspection Manual, Part 9900, "Technical Guidance on Maintenance - Preconditioning of Structures, Systems, and Components before Determining Operability." These references state that components should be tested from an as-found condition. In addition, Part 9900 guidance has specific guidance on rolling the EDG to detect cylinder leakage. The guidance indicates in some cases personal protection or equipment preservation could outweigh the benefits of testing the as-found condition. The 9900 guidance provides examples of acceptable preconditioning for EDGs related to cylinder checks to detect leakage. Specifically, 9900 guidance states "rolling (or cranking) the diesel using the air start system may be considered unacceptable preconditioning..." Since the air start solenoid valve could be used during the surveillance after it had been manually overridden in the roll, and the air start motor providing a motive force for over five seconds could provide more lubrication to the engine than an engine which is manually barred or rotated in a slower method, the inspectors, in consult with the Office of Nuclear Reactor Regulation (NRR) and Region III, determined that the actions were unacceptable preconditioning. The licensee subsequently modified the surveillance procedure to eliminate this source of preconditioning. The inspectors also discovered potential preconditioning issues during turbine driven AFW pump testing (surveillance test QO-21) where suction piping is vented and a valve cycled prior to the test. The licensee documented these items in a CAP document and has taken corrective action to remove these possible preconditioning activities.

Analysis: The failure to properly test the EDG is considered more than minor because if left uncorrected the finding could become a more safety significant concern. Continued preconditioning, if left uncorrected, could mask the as-found condition of the EDG and any potential performance issues. The finding is in the mitigating systems cornerstone. The finding is of very low safety significance (Green) due to the limited impact that the preconditioning had on the results of the surveillance test. The licensee took prompt corrective action to revise the 1-1 EDG procedure to ensure that the air start solenoid valve that was overridden to roll the EDG for leak checks is not used for the surveillance. In addition, the roll time was reduced to around 2 seconds to limit engine roll to about two EDG revolutions. The testing was completed March 8, 2006 with acceptable results. The licensee revised the 1-2 EDG procedure, as well, prior to testing and this EDG successfully passed its surveillance test.

Enforcement: 10 CFR 50, Appendix B, Criterion XI, "Test Control," requires, in part, "that the test is performed under suitable environmental conditions." Suitable environmental conditions include conditions representative of the expected conditions when the equipment is required to perform its safety function. The overriding of the air solenoid valve to rotate the air start motors and the significant roll time of the engine (at least five seconds), represented a failure to test under expected conditions (i.e., the equipment was pre-conditioned). Because the finding is of very low safety significance and has been entered into the corrective action program (AR 01017004) with immediate

actions to remove the preconditioning, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000255/2006002-03), failure to properly test the emergency diesel generators resulting in preconditioning.

c. Unresolved Item

The inspectors identified an issue associated with potential non-conservative trip setpoints for AFW during severe weather (tornado). The item has been entered into the corrective action process. Current compensatory actions are in place to ensure the AFW safety function is maintained during tornado conditions. This is an unresolved item (URI) pending completion of assessment by the licensee and review by the NRC.

Description

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

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

The second concern is related to the licensee's evaluation for the loss of the CST. Evaluation EA- SGK-02-001 was created to validate that an adequate water volume exists in the AFW suction pipe to ensure an air slug does not enter the pump before it has stopped after the low pressure suction trip. The evaluation had two potential non-conservatisms present. The first was that the coastdown time was assumed to be 3.5 seconds for the turbine driven AFW pump (P8-B). The most recent coastdown data shows the pump takes 23 seconds which indicates that more water would be pumped by the P8-B pump than assumed. The second item is response of one of the motor driven AFW pumps, P8-C. The evaluation assumes this motor driven pump is flowing at about 330 gpm. This value is based on the air signal control to the valves. However since the loss of air to the valves can be expected during this natural event, due to a loss of offsite power, the valves would open further to a higher flowrate.

The licensee wrote AR 01014535 and AR 01017135 to document this issue and wrote an Operability Recommendation (OPR) which determined the AFW pumps are Operable but Nonconforming. The licensee instituted a compensatory action to remove one of the

three AFW pumps from Automatic controls if conditions indicate a potential tornado. This action would ensure survivability of an AFW pump until the issues could be resolved. This would render one pump inoperable and is considered an operator burden. The licensee is taking action which includes completing a detailed tornado analysis, including tornado evaluation, for the site by an industry expert. The evaluation will look at the CST structure and potential tornado scenarios. The licensee is also reviewing the actual response of components during a postulated loss of the CST to determine survivability of the AFW pumps. The inspectors will review the information after the licensee completes their assessment. This issue will be treated as an Unresolved Item (URI 05000255/2006002-04) pending completion of the assessment by the licensee and review by the NRC.

1R23 Temporary Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the one temporary modification listed below and the associated 10CFR 50.59 screening, and compared each against the UFSAR and the TSs to verify the modification did not affect operability or availability of the affected system. The inspectors also walked down the modification, to the extent practical, to ensure it was installed in accordance with the documents and reviewed the post installation and removal testing to verify the actual impact on permanent systems and was adequately verified for the actual or planned tests.

- EC544, Temporary Jumper of Test Switch for EDG 1-1 output breaker

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES (OA)**

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

Cornerstone: Initiating Events

The inspectors sampled licensee submittals for the two Performance Indicators listed below. The inspectors reviewed the last 8 quarters of data that was submitted. The inspectors used the guidance contained in NEI 99-02 "Regulatory Assessment Indicator Guidance," Revision 3 to verify the licensee accurately reported each data element.

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

The inspectors reviewed operator logs, events reports, and CAPs to verify the licensee accurately reported the subject data.



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: Review of CCW Issues with Foreign Material and System Performance

a. Inspection Scope

The inspectors performed a detailed review of CCW issues that related to foreign material fouling of specific components. The review began as a look back approximately 5 years based on collected trend data which showed some issues with foreign material in the system. Since the system is a closed system and not subject to issues seen in raw water systems, there are no strainers or other devices to remove debris. Further there is no expectation that debris will be present in the system. The licensee had identified flow issues in the system in the 2001 refueling outage through observation of reduced flows to safety-related pumps. In 2002 debris from a throttled butterfly valve seat apparently prevented a CCW pump from performing its design function. Although the licensee corrected the problem by repairing the valve, no other actions other than radiographing two other valves, to determine if the seats were still intact, were done. The inspectors focused on the extent of condition and extent of cause evaluations.

In 2003, during the outage test for CCW flow, the licensee discovered the as-found CCW flow rates to all the containment spray pumps were below the FSAR values; other safety-related pumps also had low flows, but still had acceptable flow per the FSAR. The licensee did an operability assessment and determined CCW met its safety function. The inspectors evaluated the actions taken by the licensee in these two events. In addition, the inspectors reviewed other CAPs on the CCW system to determine if an underlying theme exists and if the licensee is taking adequate corrective action to address this issue.

.3 Annual Sample: Review of Component Cooling Water (CCW) Issues with Foreign Material and System Performance

Inspection Scope

The inspectors performed a detailed review of CCW issues which related to foreign material fouling specific components. The review began as a look back approximately five years based on collected trend data which showed some issues with foreign material in the system. Since the system is a closed system and not subject to issues seen in raw water systems, there are no strainers or other devices to remove debris. Further, there is no expectation that debris will be present in the system. The licensee had identified flow issues in the system in the 2001 refueling outage through observation of reduced flows to safety related pumps. In 2002 debris from a damaged throttled butterfly valve seat prevented a CCW pump from performing its design function. Although the licensee removed the major pieces from the pump and repaired the valve, no causal analysis was performed nor were there any long term corrective actions to prevent recurrence. In addition, the licensee limited the extent of condition review to radiographing two other valves, to determine if the seats were still in-tact. The licensee also determined that some FME remained in the system, but reasoned it would not cause further flow degradation.

In 2003, during the outage test for CCW flow, the licensee discovered the as-found CCW flow to all the containment spray pumps were below the FSAR values; other safety pumps also had low flows, but still had acceptable flow per the FSAR. The licensee did an operability assessment and determined CCW met its safety function. However, the licensee again failed to determine the cause of reduced flow and did not consider whether the FME remnants from the valve failure may have caused the general reduction of CCW cooling.

The licensee's corrective action program in effect at the time of these events stipulated that a condition defined as "foreign material intrusion into safety related systems that is not retrievable and determined to be significantly engineering" would meet the criteria for categorization as a significant condition adverse to quality (SCAQ). However, the licensee did not determine that this issue would be categorized as an SCAQ, and therefore, was not required to take measures to assure the cause of the condition was determined and action was taken to prevent repetition. The inspectors concluded the issue was of minor safety significance. The inspectors based this conclusion on the more recent CCW flow data which did not indicate flow changes that could be attributed to flow reduction. In addition, valves in the CCW system have yet to experience the type of catastrophic material loss that led to 2002 pump failure. The licensee has documented the failure to properly categorize and evaluate this condition in their corrective action program as Condition Reports CAP021589 and CAP021744.

#### 4OA3 Event Follow-up

##### .1 (Closed) LER 05000-255/2005-006-00: Inoperable Containment Due to Containment Air Cooler Through Wall Flaws

On October 9, 2005, a small service water leak (nominally 0.55 gallons per minute) was identified in containment air cooler VHX-4. Since VHX-4 cooling coil tubing is a part of the containment pressure boundary, an operability evaluation addressing containment leakage was performed. Subsequently, it was determined that procedural requirements were not followed with respect to the operability evaluation. The operability determination procedure requires that for discovery of pressure boundary leakage from a Class 1, 2 or 3 component, the affected component shall be declared inoperable. Since VHX-4 cooling coil tubing is a Class 3 pressure boundary, the containment should have been declared inoperable at the time of discovery. The period of time from discovery of the service water leak in VHX-4 to the subsequent repair would have resulted in the containment being inoperable for a longer time than allowed by TSs. The issue associated with this Licensee Event Report (LER) was identified by NRC inspectors, was a violation of NRC requirements, and was determined to be a finding of very low safety significance (NCV 05000255/2005012-02). This LER is closed.

#### 4OA5 Other

##### .1 (Closed) URI 0720007/2004-002-01: Translation of Site Safe Shutdown Earthquake (SSE) to Independent Spent Fuel installation (ISFSI) pad

During an inspection of pre-operational activities associated with dry fuel storage, the inspectors reviewed the licensee's input parameters used in the design of the ISFSI pad to account for the potential amplification of earthquakes through soil interaction and subsequent soil liquefaction. The licensee performed the seismic analysis using the SSE horizontal acceleration value of 0.2 g anchored at the top of the sand dune at an elevation of 623 feet. The licensee used the same SSE horizontal acceleration value of 0.2 g in its seismic analysis of the reactor building which was constructed on top of compacted glacial till at an elevation of 590 feet. The inspectors noted significant differences between elevations and subsurface soil composition of the reactor building and the ISFSI pad and challenged the licensee's application of the site SSE acceleration value at the ISFSI pad and the conservatism of the results. The inspectors recognized that incorporation of a larger input acceleration value due to the pad elevation and the soil profile differences would likely result in a seismic horizontal acceleration value of in excess of the spent fuel canister design limit.

Upon further review of the licensing basis for the site, the NRC staff determined that the horizontal acceleration value of 0.2 g is the site maximum anticipated ground surface acceleration taking the existence of sand dunes into consideration. In the NRC Safety Evaluation Report (SER), dated February 7, 1967, Section C titled "Seismology," the staff described that the NRC accepted 0.2 g as the bounding horizontal acceleration value for the site including the sand dunes. The staff drew its conclusion from a study performed by the U.S. Coast and Geodetic Survey as described in Appendix E of the NRC SER titled "Report on the Seismicity of the Holland, Michigan area." After reviewing the seismicity data in the vicinity of the proposed plant, the study concluded

that during the lifetime of the reactor facility, the plant may experience earthquakes with a horizontal acceleration of 0.1 g considering the site geology consisting of sand dunes between elevations of 575 feet to 600 feet. However, to increase the safety margin and to consider other possible regional factors including the presence of sand dunes, the U.S. Coast and Geodetic Survey staff recommended accelerations of 0.2 g as the site maximum potential earthquake.

The NRC staff indicated that 10 CFR 72.103 (a)(2) permits general licensees to use the nuclear power plant's existing seismic sitting and design criteria SSE for co-located ISFSI structures. The potential soil structure interaction and soil liquefaction due to earthquakes have been factored into determining the maximum potential acceleration at the ground surface, anywhere on site. In conclusion, the licensee's application of this value at the base of the ISFSI pad for the SSE, on top of a sand dune is correct according to the site original licensing documents. Since the input horizontal acceleration value in the pad seismic analysis was correct, the licensee's results are bound by the cask design limits. This Unresolved Item is closed.

.2. Implementation of Temporary Instruction (TI) 2515/165 - Operational Readiness of Offsite Power and Impact on Plant Risk

a. Inspection Scope

The objective of TI 2515/165, "Operational Readiness of Offsite Power and Impact on Plant Risk," was to confirm, through inspections and interviews, the operational readiness of offsite power systems in accordance with NRC requirements. On March 13 through March 29, the inspectors reviewed licensee procedures and discussed the attributes identified in TI 2515/165 with licensee personnel. In accordance with the requirements of TI 2515/165, the inspectors evaluated the licensee's operating procedures used to assure the functionality/operability of the offsite power system, as well as the risk assessment, emergent work, and/or grid reliability procedures used to assess the operability and readiness of the offsite power system.

The information gathered while completing this Temporary Instruction was forwarded to the Office of Nuclear Reactor Regulation for further review and evaluation.

b. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. P. Harden and other members of licensee management on April 5, 2006. Licensee personnel acknowledged the findings presented. The inspectors asked licensee personnel whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exit meetings were conducted for:

- Biennial Operator Requalification Program Inspection with Mr. P. Harden, Site Vice President, on January 27, 2006.
- Licensed Operator Requalification 71111.11B with Mr. J. Walker, Licensed Operator Requalification Training Supervisor, on February 27, 2006, via telephone.
- Independent Spent Fuel Storage Installation exit meeting with Mr. D. Malone, Regulatory Affairs, was conducted on March 2, 2006.

4OA7 Licensee-Identified Violations

None

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

P. Harden, Site Vice President  
T. Blake, Nuclear Safety Assurance Manager  
M. Carlson, Engineering Director  
B. Dotson, Regulatory Compliance  
G. Baustian, Training Manager  
W. Godes, Operations Fleet Simulator Supervisor  
G. Hettel, Plant Manager  
L. Lahti, Licensing Manager  
D. Malone, Regulatory Affairs  
P. Schmidt, Simulator Training Supervisor  
J. Walker, Licensed Operator Requalification Training Supervisor  
K. Yeager, Assistant Operations Manager

#### Nuclear Regulatory Commission

M. Padovan, Project Manager, NRR

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

#### Opened

05000255/2006002-01	NCV	Failure to comply with TS 5.4.1, "Procedures," for an Inadequate Procedure Installing a commercial grade, portable ground detector (Section 1R13)
05000255/2006002-02	FIN	MSR Relief Valve Could Not Be Reseated (Section 1R14)
05000255/2006002-03	NCV	Failure to Properly Test the Emergency Diesel Generators Resulting in Preconditioning (Section 1R22)
05000255/2006002-04	URI	Potentially Non-conservative Setpoints for AFW Suction Pressure Trips (Section 1R22)

#### Closed

05000255/2006002-01	NCV	Failure to comply with TS 5.4.1, "Procedures," for an inadequate procedure installing a commercial grade, portable ground detector (Section 1R13)
05000255/2006002-02	FIN	MSR Relief Valve Could Not Be Reseated (Section 1R14)

05000255/2006002-03	NCV	Failure to Properly Test the Emergency Diesel Generators Resulting in Preconditioning (Section 1R22)
0720007/2004-002-01	URI	Translation of Site Safe Shutdown Earthquake to Independent Spent Fuel installation pad (Section 4OA5)
05000255/2005-006-00	LER	Inoperable Containment Due to Containment Air Cooler Through Wall Flaws (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 or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a documents on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### 1R04 Equipment Alignment

Palisades Nuclear Administrative Procedure 4.02, Control of Equipment, Revision 29  
SOP-3, Safety Injection and Shutdown Cooling System, Revision 66  
AFW Pump Performance Data, October 31, 2004 - January 25, 2006  
SOP-12, Auxiliary Feedwater System, Revision 46  
SOP-22, Emergency Diesel Generators, Revision 38

### 1R05 Fire Protection

Palisades Nuclear Plant Fire Hazards Analysis, Revision 5  
FPSP-RP-11-Attachment 25, Fire Barrier Penetration Seal/Conduit Seal Inspection  
Form - Component Cooling Water Pump Rooms, Revision 6

### 1R06 Flood Protection

SOP-3, Safety Injection and Shutdown Cooling System, Revision 66  
WO 00110963 01, Inspection and Pump Out of Manholes, January 18, 2006  
DBD 7.08, Plant Protection Against Flooding, Revision 5

### 1R11 Licensed Operator Requalification

License Operator Requalification, Simulator Evaluation Cycle 05E, November 21, 2005

### 1R12 Maintenance Effectiveness

EGAD-EP-10, Maintenance Rule Scoping Document, Revision 4  
EM-25, Maintenance Rule Program, Revision 5  
System Health Report, Control Rod Drive, January 11, 2006  
Open Work Order Query- CRD system, January 10, 2006  
Open Corrective Action Query- CRD system, January 10, 2006  
ACE003467, Control Rod Drop Time for Rod 26 is Longer than Expected,  
December 10, 2004  
OPR000083, Control Rod Drive 26, December 18, 2004  
MRE000277, Maintenance Rule Evaluation CR 19 seal leakage, August 18, 2004  
Maintenance Rule Performance Indicator for CRD, August 7, 2005  
AR00794226, Slower Than Expected Rod Drop Times for Some Control Rods,  
January 15, 2005  
AR01009449, CRD-26, Control Rod Drive Failed RO-22 Rod Drop Times,  
January 5, 2006  
CAPs/ARs initiated in last year for CRD System, January 11, 2006

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

Risk assessment for Work Week 0603, 1/15/06-1/21/06 (yellow) for In service testing  
of 1-2 EDG



Risk assessment for Work Week 0606, 2/5/06-2/11/06  
Risk assessment for Work Week 0607, 2/12/06-2/18/06  
Risk assessment for Work Week 0609, 2/26-3/4/2006  
Risk assessment for Work Week 0610, 3/5-3/11/2006  
Risk assessment for Work Week 0608, 2/19-2/25/2006  
Risk assessment for Work Week 0613, 3/26-4/1/2006  
AR 01016519, Design Requirements for Temporary Test Equipment, February 27, 2006  
AR 01016392, Seismic Concern Regarding Portable test Equipment for DC bus T/S,  
February 24, 2006  
EPS-E-9, Use of Portable DC Ground Fault Detection Equipment System, Revision 1

1R14 Operator Performance During Nonroutine Evolutions and Events

CAP043516, During In-Place Testing, RV0709, 'B' S/G Code Safety Was Inadvertently Lifted, September 14, 2004  
EA-PSA-SDP-06-01, Significance Determination for Changes to Prior Risk Assessment, Revision 0  
AR 01013190, MSR Relief Valve Lifted and Failed to Reseat, February 2, 2006

1R15 Operability Evaluations

FP-OP-OL-1, Corporate Office Quality Procedures: Operability Determination, Revision 1  
OPR 01015197 A1, AFW Pump Steam Trap Blow Down Concern  
OPR 01014535 A1, Design Basis Potentially Not Fully Met for T-2 and AFW Pumps  
QO-21, In service Testing Procedure- Auxiliary Feedwater Pumps, Revision 25  
EA-FC-966, Upgraded Steam Supply to Auxiliary Feedwater Pump Turbine Driver K-8, Revision 0  
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1R19 Post Maintenance Testing

WO 00019031 01, VOP-3025 Replacement Diaphragm and Regulator, February 7, 2006  
WO 00020131 01, VOP-3025, Perform Static Testing per MSM—57, February 7, 2006  
WO 00026401 01, Fire Pump P-9B, Pressure Switch, PS-1310, March 3, 2006  
MO-7B, Fire Water Pumps P-9A, P-9B, P-41 Test, Revision 29  
MO-7A-1, Emergency Diesel Generator 1-1, Revision 62  
T-302, Emergency Diesel Generator 1-1 Overspeed Trip Setpoint Verification, Revision 5

1R22 Surveillance Testing

QI-4, Pressurizer Low Pressure Safety Injection Signal Initiation Functional Check, Revision 0  
QI-25, Thermal margin Monitor Constant Checks, February 9, 2006  
QO-21, In Service Test Procedure, Auxiliary Feedwater Pumps, January 25, 2006 for TDAFW pump  
QO-5 Attachment 3, Valve Stroke and ATWS Testing CV-0522B, February 27, 2005  
EGAD-EP-10, Maintenance Rule Scoping Document, Revision 4  
EM-25, Maintenance Rule Program, Revision 5

RO-28B, Control Room/TSC Ventilation "B" Train Test, February 7, 2006  
QR-22, Process Monitor Functional Checks- Quarterly, Revision 12  
RE-131, Diesel Generator 1-1 Load Reject, Revision 3  
AR 01017856, K-6A Fasteners Loose on Diesel Generator Exhaust Heat Shield,  
March 8, 2006  
AR 01017858, Door 116 (Bus 1C to 1-1 D/G) not verified closed, March 8, 2006  
QI-39, Auxiliary Feedwater System Logic Test, Revision 1  
AR 01017004, EDG cyl leak check may precondition EDG Surveillance Tests March 2,  
2006  
AR01016434, Preconditioning of AFW Pump During Surveillance Test, February 27,  
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MO-7A-1, Emergency Diesel Generator 1-1, Revision 61  
CAP005255, Potential Preconditioning of EDGs During MO-7A-1/2, April 16, 1997  
AR 01014535, Potential for Tornado Rupture of CST Resulting in Damage to AFW  
Pumps Due to Air Entrainment, February 13, 2006  
FC-966, Upgrade Steam Supply to Auxiliary Feedwater Pump Turbine Driver K-8,  
Revision 0  
E-238 sheet 5, Schematic Auxiliary Feedwater Pump Turbine Steam Valves,  
Revision 28  
E-238 sheet 4A, Schematic Auxiliary Feedwater System, Revision 4  
E-238 sheet 7, Schematic Auxiliary Feedwater Pump Turbine Steam Valves, Revision 6  
E-238 sheet 6, Schematic Auxiliary Feedwater Pump Turbine Steam Valves,  
Revision 11  
FC-954-02, Low Pressure Suction Trip on the Auxiliary Feedwater Pump - Setpoint  
Change, Revision 3  
EA-SGK-02-001, Evaluation of the Impact of a Loss Of Condensate Storage Tank on  
the Auxiliary Feedwater Pumps  
OPR 01014535, Potential for Tornado Rupture of CST Resulting in Damage to AFW  
Pumps Due to Air Entrainment, Revision 0  
ONP-12, Off Normal Procedure: Acts of Nature, Revision 21  
FWS-I-18, Auxiliary Feedwater Pump P-8C Trip on Low Suction Water Pressure,  
Revision 4

#### 1R23 Temporary Modifications

Temporary Modification EC544, Temporary Jumper of Test Switch Contacts on  
TPS-187Z-107, Revision 0  
Fleet Procedure FP-E-MOD-03, Temporary Modification, Revision 2  
Fleet Procedure FP-E-DWG-02, Critical Drawing Mark-Ups, Revision 0  
Drawing E-129 SH 6A, Breaker 152-107, modified December 8, 2005 with EC-544

#### 1EP4 Emergency Action Level and Emergency Plan Changes

Palisades Nuclear Plant Site Emergency Plan, Revisions 11 and 12

#### 4OA2 Problem Identification and Resolution

Procedure No T-223, Component Cooling Water Flow Verification, Revision 13,  
completed April 1, 2003  
AR 01015270, Unresolved CCW Issue Identified During NRC PI&R Inspection,  
February 17, 2006  
CAP Search "CCW" 2001 to October 2005.

CE002966, Debris Found Similar to Debris Removed Following Work,  
December 20, 2002  
CE002999, Post Replacement Flowrate through MV-CC923, December 20, 2003  
Drawing M 209, Component Cooling System, Revision 7  
WO 24210560, MV-CC923, Replace valve, December 19, 2002  
CAP029749, Component Cooling Water System Maintenance Rule Category (A)(1),  
July 24, 2002  
CAP030375, Component Cooling Water pump P52C Failed Tech Spec Surveillance  
QO-15C, February 7, 2002 (C-PAL-02-0526)  
OPR CPAL0200702, Restoration Identifies a New Condition, February 22, 2002  
CAP009486, Potential Containment Spray Pump Component Cooling Water Flow Rate  
Anomalies, February 22, 2002  
CPAL0200527 and OPR CPAL0200527, Pieces of Hard Black Rubber Found Inside  
Pump Casing During Disassembly, February 8, 2002  
CPAL0200546 and OPR CPAL0200546, Valve Seat Found Loose in Component  
Cooling Water System, February 8, 2002  
CAP009756, CCW Flow Rates to Containment Spray Pump 54C Below Expected Value,  
March 13, 2002  
CAP034777, CCW Flow to P54B and P54C Found Low During T-223, April 1, 2003

## LIST OF ACRONYMS USED

ADAMS	Agency-Wide Document and Management System
AFW	Auxiliary Feedwater Pump
ALARA	As Low As Is Reasonably Achievable
AR	Action Request
CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
CTS	Condensate Storage Tank
DC	Direct Current
EDG	emergency diesel generator
ESS	Engineered Safety System
HPSI	High Pressure Safety Injection
IEEE	Institute of Electrical & Electronics
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
JPM	Job Performance Measure
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
LORT	Licensed Operator Requalification Training
LPSI	Low Press Safety Injection
MSR	Moisture Separator Reheater
MSSV	Main Steam Safety Valve
NCV	Non-Cited Violation
OPR	Operability Recommendations
OWA	Operator Work Around
PARS	Publicly Available Records
PSA	Probabilistic Safety Assessment
RP	Radiation Protection
SAT	System Approach to Training
SDP	Significance Determination Process
SER	Safety Evaluation Report
SSC	Structures, Systems, and Components
SSE	Safe Shutdown Earthquake
TI	Temporary Instruction
TM	Temporary Modification
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item