

January 30, 2008

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

SUBJECT: PALISADES NUCLEAR PLANT NRC INTEGRATED
INSPECTION REPORT 05000255/2007007

Dear Mr. Schwarz:

On December 31, 2007, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Palisades Nuclear Plant. The enclosed report documents the inspection findings which were discussed on January 9, 2007 with you and members of your staff.

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

The report documents five NRC-identified findings of very low safety significance (Green). All of these findings were determined to involve violations 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 Non-Cited Violations (NCVs) consistent with Section VI.A.1 of the Enforcement Policy.

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

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

Sincerely,

/RA/

Christine A. Lipa
Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000255/2007007
w/Attachment: Supplemental Information

cc w/encl: M. Kansler, President and Chief Executive Officer/
Chief Nuclear Officer
J. Herron, Senior Vice President
Senior Vice President, Engineering and
Technical Services
M. Balduzzi, Senior Vice President and
Chief Operating Officer, Regional
Operations, NE
O. Limpas, Vice President, Engineering
J. Ventosa, General Manager, Engineering
J. DeRoy, Vice President, Operations Support
Director, NSA
J. McCann, Director, Nuclear Safety & Licensing
E. Harkness, Director of Oversight
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C. Faison, Manager, Licensing
L. Lahti, Manager, Licensing
W. Dennis, Assistant General Counsel
W. DiProfio
W. Russell
G. Randolph
Supervisor, Covert Township
Office of the Governor
State Liaison Officer, State of Michigan
Michigan Department of Environmental Quality -
Waste and Hazardous Materials Division
Michigan Office of the Attorney General

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Letter to C. Schwarz from C. Lipa dated January 30, 2008

SUBJECT: PALISADES NUCLEAR PLANT NRC INTEGRATED INSPECTION
REPORT 05000255/2007007

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-255

License No: DPR-20

Report No: 05000255/2007007

Licensee: Entergy Nuclear Operations, Inc.

Facility: Palisades Nuclear Plant

Location: Covert, MI

Dates: October 1, 2007, through December 31, 2007

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

Enclosure

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SUMMARY OF FINDINGS

IR 05000255/2007007; 10/01/2007 – 12/31/2007; Palisades Power Plant; Post Maintenance Testing; Outage Activities; Surveillance Testing; Follow up of Events.

The inspection was conducted by resident inspectors and regional inspectors. The report covers a three-month period of inspection. This report includes five findings, all of which were non-cited violations (NCVs). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green," or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. NRC identified violations of Technical Specification (TS) 5.4.1 occurred on October 4, and October 13, 2007, when the licensee violated Operational Requirements Manuals limits on movement of heavy loads. On October 4, the licensee moved a heavy load in the Spent Fuel Pool (SFP) with irradiated fuel less than 30 days old in the SFP. On October 13, the licensee moved a heavy load in containment with pressurizer temperature greater than 225F. The licensee successfully landed the loads and entered the issues into the corrective action program.

The finding was more than minor because the failure to comply with the Operating Requirements Manual requirements affected the initiating event cornerstone objective of maintaining the availability and reliability of the primary coolant boundary and the SFP. The issue screened as green because no load drops occurred and the loads were suspended for a short time. The finding has a cross cutting aspect in the area of human performance, coordination of work activities (H.3(b)). (Section 1R20)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures and Drawing" for failure by the licensee to follow procedural requirements for testing safety-related pumps after bearing replacement. Specifically, the licensee's post-maintenance testing plan and work order for both High Pressure Safety Injection (HPSI) pumps was not in accordance with the site's post-maintenance test (PMT) procedure, and did not have adequate re-tests for bearing replacement. Following identification, the licensee entered the item into their corrective action program and revised the post-maintenance testing for the pumps.

The finding was more than minor because, if left uncorrected, the issue would have become a more significant safety concern in the area of PMTs. The inspectors determined this finding did not result in a loss of function, because the HPSI pump bearings were adequately tested after the inspectors brought the issue to the

licensee. Therefore, the finding was considered to be of very low safety significance (Green). (Section 1R19)

- Green. The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures and Drawings," failure by the licensee to follow procedural requirements for closing out the containment sump. Specifically, the licensee failed to comply with the containment sump closeout procedure. After closeout by the site, the inspectors found metal debris of greater than 1/8" in the sump area. Following identification, the licensee entered the item into their corrective action program and removed all debris prior to mode 4 operations.

The finding was more than minor because, if left uncorrected, the issue would have become a more significant safety concern in the area of containment sump performance. The inspectors determined this finding did not result in a loss of function, because the sump was properly cleaned after the inspectors brought the issue to the licensee. Therefore, the finding was considered to be of very low safety significance (Green). The finding has a cross-cutting aspect in the area of human performance in that the licensee failed to effectively communicate expectations regarding procedural compliance and personnel following procedures. (H.4(b)) (Section 1R22)

- Severity level (SL) IV. The inspectors identified a SL IV NCV of 10 CFR 50.59, "Changes, Tests, and Experiments" for the licensee's failure to perform a written evaluation prior to implementing a calculation change based on raising the acceptance criteria for back leakage from valves which leak containment activity. Specifically, the change of back leakage affected the post accident dose impact to control room operators and this was not evaluated in accordance with 10 CFR 50.59. The licensee entered the item into their corrective action program. After removing margin from other components, the licensee determined the change to acceptance criteria could be implemented without prior NRC approval.

The inspectors concluded this finding was more than minor since it impacted the NRC's ability to perform its regulatory function and if left uncorrected would have raised the dose to control room operators above the level requiring NRC approval. The inspectors concluded the original calculation would have required prior NRC approval. The issue screened as SL IV since the inspectors brought the issue to the attention of the licensee before plant start-up, so there was no actual impact with the plant at power. In addition, the issue was not repetitive or willful. Therefore, it was of very low safety significance. (Section 1R22)

- Green. NRC identified violations of TS 5.4.1 occurred on October 1, 2007; October 28, 2007, and November 19, 2007, due to licensee personnel failing to maintain doors in the proper configuration to support operability of TS required systems. The failure to maintain doors in the proper configuration resulted in unplanned entries into Limiting Conditions for Operation (LCO). After identification of the discrepant door status, the licensee restored each of the doors to the proper configuration to support operability.

The finding was more than minor because it impacted the mitigating systems cornerstone objective of configuration control. The issue was not of more than very low safety significance due to the short duration the doors were improperly

positioned. The finding had a cross cutting aspect in human performance error prevention techniques (H.4.(a)) (Section 4OA3)

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

Summary of Plant Status

The plant began the inspection period in a refueling outage. On October 20, the licensee took the reactor critical. On October 21, the licensee synchronized to the grid and began power ascension. On October 24, the licensee reduced power from 85 percent to 55 percent in order to troubleshoot vibration and noise on the P-1B Main Feed Pump (MFP). The licensee remained between 55 and 65 percent power until October 30 when the licensee ascended in power to 100 percent. The plant remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Readiness For Impending Adverse Weather Condition

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems, which included auxiliary feedwater and emergency core cooling system suctions, was reviewed to ensure that these systems would remain functional when challenged by inclement weather. A walkdown of the systems was performed. Cold weather protection, such as heat tracing, was verified to be in operation where required. This is considered one seasonal sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed two partial walkdowns of the following equipment trains to verify operability and proper equipment lineup. These systems were selected based upon risk significance, plant configuration, system work or testing, or inoperable or degraded conditions.

- Spent fuel pool cooling system during a refueling outage
- High pressure safety injection during suction valve maintenance

The inspectors verified the position of critical redundant equipment and looked for any discrepancies between the existing equipment lineup and the required lineup.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors walked down the following risk significant areas looking for any fire protection issues. The inspectors selected areas containing systems, structures, or components that the licensee identified as important to reactor safety.

- Diesel 1-2, Fire Area 6
- Diesel 1-1, Fire Area 5
- D switchgear Room, Fire Area 3
- West engineering safeguards room, Fire Area 28
- Track Alley, Fire Area 19
- Spent Fuel Pool (SFP) and SFP equipment room, Fire Area 13G and 17

The inspectors reviewed the control of transient combustibles and ignition sources, fire detection equipment, manual suppression capabilities, passive suppression capabilities, automatic suppression capabilities, and barriers to fire propagation. These activities constituted six quarterly fire protection inspection samples as defined by Inspection Procedure 71111.05-05.

b. Findings

No findings of significance were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors completed one inspection sample pertaining to flood protection measures for internal flooding events. The inspectors evaluated the licensee's actions to protect the auxiliary feedwater (AFW) room from sources of internal flooding. The inspectors reviewed alarm response procedures and other procedures. In addition, the inspectors performed a walkdown of the flood control barriers to verify the barriers were intact and not degraded. Further, the inspectors reviewed Condition Reports (CR) to verify that corrective actions for previously identified flood protection problems were appropriate and had been properly implemented.

This inspection constitutes one internal flooding sample as defined in Inspection Procedure 71111.06.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07B)

.1 Biennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed documents associated with maintenance and inspection of diesel generator jacket water cooler E22A and the component cooling water heat exchanger E54B. These heat exchangers were chosen based on their high risk significance in the licensee's probabilistic safety analysis, their important safety-related mitigating system support functions and their relatively low margin. While on site, the inspectors reviewed operability determinations, completed surveillances, vendor manual information, associated calculations, performance test results and heat exchanger inspection results. The inspectors also reviewed documentation to confirm that methods used to maintain and monitor the operational effectiveness of the heat exchangers were consistent with expected degradation and that the established acceptance criteria was consistent with design accident requirements and accepted industry standards. The inspectors walked down the component cooling water heat exchangers and the jacket water coolers to ensure proper installation and configuration of these heat exchangers. The inspectors also reviewed eddy current results and held discussions with licensee engineers regarding acceptance criteria.

Two attributes of the ultimate heat sink were verified during the inspection. The inspectors verified that the service water pump performance met the minimum required for accident analysis. Additionally, the inspectors performed walkdowns of accessible portions of the ultimate heat sink supply and return piping, including the cooling towers to look for possible settlement or movement that would indicate loss of structural integrity. The inspectors also reviewed the results of the latest inspection of the ultimate heat sink intake structure and underwater piping.

In addition, the inspectors reviewed condition reports concerning heat exchanger or heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions to the identified issues. The documents that were reviewed are included at the end of the report.

This inspection constitutes two samples as defined in Inspection Procedure 71111.07B.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On November 28 the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

This inspection constitutes one quarterly licensed operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors reviewed the licensee's handling of performance issues and the associated implementation of the Maintenance Rule (10 CFR 50.65) to evaluate maintenance effectiveness for the selected systems. The following systems were selected based on designation as risk significant under the Maintenance Rule and identification of issues or problems that potentially impacted maintenance rule classification:

- Supplemental Diesel Generator 1-3
- Component Cooling Water

The inspectors review included verification of the licensee's categorization of the system. The inspectors reviewed Systems, Structures and Components (SSC) performance problems and conditions to evaluate work practices, common cause errors, and extent of

condition. Additionally, the inspectors reviewed the licensee's implementation of the maintenance rule requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with the condition reports reviewed, and current equipment performance status.

These maintenance effectiveness reviews constituted two inspection samples.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed and observed emergent work, preventive maintenance, or planning for risk significant maintenance activities. The inspectors observed maintenance or planning for the following activities or risk significant systems undergoing scheduled or emergent maintenance.

- Planned Orange risk for mid-loop operations
- Planned reactor start-up during tornado watch on October 19
- Emergent inoperability of a Safety injection Tank and HPSI due to CV 3047 Leak-by
- Unplanned Orange risk online due to ED02, # 2 battery inoperable

The inspectors also reviewed the licensee's evaluation of plant risk, risk management, scheduling, and configuration control for these activities in coordination with other scheduled risk significant work. The inspectors verified that the licensee's control of activities considered assessment of baseline and cumulative risk, management of plant configuration, control of maintenance, and external impacts on risk. In-plant activities were reviewed to ensure that the risk assessment of maintenance or emergent work was complete and adequate, and that the assessment included an evaluation of external factors. Additionally, the inspectors verified that the licensee entered the appropriate risk category for the evolutions. This constituted four samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Missing lateral supports for Main Steam Safety Relief Valves
- Weld leak from 'C' Primary Coolant Pump in mode 3
- Heated cables for containment purge and exhaust

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and Updated Final Safety Analysis Report (UFSAR) to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the attachment.

This inspection constitutes three samples as defined in Inspection Procedure 71111.15.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

.1 Annual Resident Inspector Review

a. Inspection Scope

The inspectors reviewed the following modifications to verify that the design basis, licensing basis, and performance capability of risk significant systems were not degraded by the installation of the modification. The inspectors also verified that the modifications did not place the plant in an unsafe configuration.

- Generic Safety Issue (GSI)-191 modifications
- Cross connect of charging and containment spray for coolant cleanup

The inspectors considered the design adequacy of the modification by performing a review, or partial review, of the modification's impact on plant electrical requirements, material requirements and replacement components, response time, control signals, equipment protection, operation, failure modes, and other related process requirements. This constitutes two samples.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

.1 Post Maintenance Testing

a. Inspection Scope

The inspectors selected the following post-maintenance activities for review. Activities were selected based upon the structure, system, or component's ability to impact risk.

- Motor Operated Valve (MOV) diagnostic testing on MO-3011 and MO-3013 HPSI Injection to the Reactor
- Primary Cooling Pump P-50C following weld repair
- Work Order (WO) 00289112, HPSI Pump Modification MOD EC-8354
- 1A Main Feed Pump repair
- Station Battery Number 2, cell 43, change out

The inspectors verified by witnessing the test or reviewing the test data that post-maintenance testing activities were adequate for the above maintenance activities. The inspectors' reviews included, but were not limited to, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use and compliance, control of temporary modifications or jumpers required for test performance, documentation of test data, TS applicability, system restoration, and evaluation of test data. Also, the inspectors verified that maintenance and post-maintenance testing activities adequately ensured that the equipment met the licensing basis, TS, and UFSAR design requirements.

The inspectors' review of these post maintenance testing activities constituted five inspection samples.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures and Drawing" for failure of the licensee to follow procedural requirements for testing safety-related pumps after bearing replacement. Specifically, the licensee's post-maintenance testing plan and work order for both HPSI pumps did not include appropriate qualitative or quantitative acceptance criteria. The test procedure did not include tests identified in site's PMT procedure for bearing replacement.

Description: The inspectors reviewed the PMT requirements for the modification being performed on both safety-related HPSI pumps (P-66A and P-66B) as part of the resolution to GSI 191. Part of the outage modification EC-8354 was to install new bearings in the pumps. The only PMT listed was to perform an In-Service Test procedure surveillance. The surveillance procedure does not assess the pumps' bearing temperature to ensure they are properly installed. The inspector reviewed the licensee's administrative control document for PMT's, Administrative procedure 5.19, Post Maintenance Testing. Section 5.5 of Admin 5.19 says the maintenance planner: "Shall consult Attachments 2 through 8 of this procedure for recommendations." Attachment 7 lists several tests for bearing replacement including bearing temperature, contact ultrasound and infrared thermography. These tests were not listed as required for PMT, nor were there reasons listed as to why these tests would not be required. The

inspectors raised their concerns to the licensee and CR-PLP-2007-04612 was generated. Engineering determined that the PMT should include a section to specifically monitor bearing temperatures for stabilization. The inspectors concluded the PMT as written was deficient in that it did not monitor the performance of the bearings which were replaced. Since the deficient PMTs were brought to the licensee's attention before the actual PMT was run, the licensee corrected the PMT and the tests were run satisfactorily.

As part of the extent of condition, the inspectors interviewed other personnel and reviewed other work orders. In interviews with system engineering, the inspectors identified WO 0002690501 to replace the turbine bearings for the turbine driven auxiliary feed water pump which also failed to include bearing monitoring as part of the PMT. The system engineer brought that to the planner's attention, but no CR was written. The licensee corrected the PMT and performed a satisfactory test.

Analysis: The inspectors determined the failure to adequately plan the work order PMT was a performance deficiency that warranted a significance evaluation in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening." As part of the review of the condition, one additional safety-related pump that did not have an adequate PMT specified was identified. The licensee wrote a CR on the pump PMTs after prompting by the inspectors. The finding impacted the mitigating systems cornerstone. The inspectors concluded that the finding was more than minor because multiple examples existed where the licensee specified inadequate PMT. Since PMT verifies that SSCs are operable prior to return to service, the failure to perform adequate PMT could result in return to service of inoperable SSCs and thus become a more significant safety concern. Because the inadequate PMT specification did not result in return to service of an inoperable SSC, the issue screens out as Green.

Enforcement: 10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed and accomplished by procedures appropriate to the circumstances and include appropriate quantitative or qualitative acceptance criteria. Contrary to these requirements, the licensee failed to include appropriate quantitative or qualitative acceptance criteria. The licensee failed to implement Administrative Procedure 5.19, "Post Maintenance Testing." Administrative Procedure 5.19, a procedure used for safety-related equipment, requires, in part, that the licensee consult the required attachments for the appropriate PMTs. Contrary to this, the licensee failed to consult the appropriate appendix and thus failed to prescribe the proper PMT. Because this finding was of very low safety significance and because the finding was entered into the licensee's corrective action program as CR-PLP-2007-04612, this violation is being treated as a NCV (NCV 0500255/2007007-01, Inadequate PMT for HPSI pumps) consistent with Section VI.A of the NRC Enforcement Policy.

1R20 Outage Activities (71111.20)

Refueling Outage Activities

a. Inspection Scope

The inspectors evaluated outage activities for a refueling outage that began on September 9, 2007, and ended on October 21. The inspectors began the inspection

sample and documented activities in report 05000255/2007-006. The inspectors observed the following activities in addition to those recorded in the previous report:

- Transition to mid-loop operations
- Decay heat removal
- Containment and containment sump closeout
- Reactor startup
- Reactor physics testing

The inspectors observed or reviewed outage equipment configuration and risk management, electrical lineups, selected clearances, control and monitoring of decay heat removal, control of containment activities, startup and heatup activities, and identification and resolution of problems associated with the outage. A containment closeout finding is reported in section 1R22. Coupled with activities performed and documented in Inspection Report 0500255/2007-06, this constitutes one inspection sample.

b. Findings

Failure to Comply with Operating Requirements Manual (ORM) for Lifting Heavy Loads

Introduction: The inspectors identified a Green NCV of TS 5.4.1 for failing to follow procedures regarding movement of heavy loads in containment and in the spent fuel pool.

Description: On October 4 and again on October 13, the licensee failed to comply with ORM Section 3.21 regarding crane operations and heavy loads. On October 4, the licensee began an evolution to move an Ultrasonic Fuel Cleaner from the SFP. The workers that prepared the plan for the evolution failed to understand the procedural requirements and prepared the plan such that a heavy load would be moved with irradiated fuel in the pool less than 30 days old. ORM Section 3.21 prohibits movement of heavy load in the spent fuel pool with irradiated fuel less than 30 days old in the pool. A member of the outage control center staff observed the evolution, recognized that it did not meet the ORM, and took action to safely land the load.

On October 13, the licensee began a primary heat up with heavy load movement still in progress in containment. Specifically, licensee was moving floor plugs weighing up to 6000 lbs. ORM Section 3.21 prohibits movement of heavy loads over the primary coolant system when coolant temperature of steam in the pressurizer exceeds 225° F. During the heat-up, Operations personnel in the work control center realized that pressurizer temperature exceeded 225° F and heavy load movements were still in progress. The licensee stopped heavy load movement.

The inspectors reviewed the apparent cause analysis and proposed corrective actions for these events. The inspectors concluded that the cause analysis did not provide a thorough evaluation of the events and the corrective actions identified would not reasonably prevent recurrence. Weaknesses in the cause analysis included failure to evaluate overall procedure adequacy and failure to determine why outage schedules did not identify conflicts. In addition, the inspectors concluded that since the cause evaluation was flawed, the corrective actions could not reasonably be shown to address the underlying issues.

Analysis: The inspectors concluded that the failure to comply with ORM requirements regarding heavy load lifts was a finding that warranted a safety significance determination. The inspectors concluded that the issue was more than minor because the finding was associated with the initiating event cornerstone objective of maintaining the availability and reliability of the primary coolant boundary and the spent fuel pool. The ORM states that heavy load lifts are precluded over the pressurized primary coolant boundary to preclude dropping objects which could rupture the boundary; movement over the spent fuel pool is precluded to minimize criticality and radiological effects of a load drop. Heavy loads are defined as loads heavier than a fuel bundle and loads weighing in excess of 1300 lbs are classified as heavy loads.

The inspectors, in consultation with a region based Senior Reactor Analyst, concluded that the finding was not suited for further evaluation under the SDP due to the lack of adequate SDP tools for evaluating the change in risk due to heavy load drops. Although the estimated frequency of heavy load drops is low, there is considerable uncertainty when determining the risk of heavy load movement. Drop frequency is also highly dependent on human performance. In this instance, given the short period of time that the licensee was in violation, the relatively small size of the loads involved, and the availability of systems to add inventory to the primary system and SFP, regional management determined that the finding was of very low safety significance. In addition, this finding included a cross-cutting aspect in the area of human performance (H.3(b)) in that the licensee failed to effectively coordinate work activities by keeping plant personnel aware of plant conditions that may affect work activities.

Enforcement: Technical Specification 5.4.1 requires, in part, that written procedures shall be established, implemented and maintained covering applicable procedures recommended in Appendix A of Regulatory Guide 1.33. Appendix A item 9 requires that maintenance that can affect the performance of safety-related equipment should be properly planned and performed in accordance with written procedures. The licensee developed procedures FHS-M-23, "Movement of Heavy Loads in the Spent Fuel Pool Area" and FHS-M-24, "Movement of Heavy Loads in the Containment Building Area" in part to implement ORM restrictions on heavy load movements. Contrary to the requirements of these procedures, personnel moved heavy loads when prohibited by the ORM. Specifically, on October 4, personnel moved a heavy load in the SFP with irradiated fuel in the pool less than 30 days old; on October 13, personnel moved heavy loads in containment over primary coolant piping with pressurizer temperature over 225° F. Because this finding was of very low safety significance and it was entered into the licensee's corrective action program as CR-PLP-2007-04850, 5199 and 5258 the finding is being treated as a NCV (NCV 0500255/2007007-02, Failure to Comply with ORM Restrictions on Heavy Load Movement) consistent with Section VI.A of the NRC Enforcement Policy.

1R22 Surveillance Testing (71111.22)

Routine Surveillance Testing

a. Inspection Scope

The inspectors selected the following surveillance test activities for review. Activities were selected based upon risk significance and the potential risk impact from an

unidentified deficiency or performance degradation that a system, structure, or component could impose on the unit if the condition were left unresolved.

- Quarterly Inservice testing of Component Cooling Water Pump P-52B
- Pressure test of Emergency Core Cooling System (ECCS) Suction
- Containment Sump Inspection

The inspectors observed the performance of surveillance testing activities, including reviews for preconditioning, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use, control of temporary modifications or jumpers required for test performance, documentation of test data, TS applicability, impact of testing relative to performance indicator reporting, and evaluation of test data.

The review of these surveillance activities by the inspectors constituted three inspection samples.

b. Findings

(1) Containment Sump Debris Found at Closeout

Introduction: The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures and Drawing" for failure by the licensee to follow procedural requirements for closing out the containment sump. Specifically, the licensee failed to comply with the containment sump closeout procedure. After closeout by the site, the inspectors found metal debris of greater than 1/8" in the sump area.

Description: On October 10, 2007, the licensee completed scheduled work activities and an engineering sump closeout. The licensee notified the inspectors that the sump was ready for NRC inspection. During the outage, licensee implemented modifications as part of GSI 191 implementation that removed screens in the sump and replaced them with larger screens external to the sump. With this design change, debris located in the sump could be transported to the HPSI pumps. After this closeout, the sump area would be isolated except for connections from the sump screens of floor drains with small diameter holes. During inspection, the inspectors found six pieces of metal in standing water in the sump. The metal was most likely from the old screens which were ground out. The lengths of the pieces varied, but were about 1 inch long. After finding the six pieces the inspector exited before completing the full inspection (for ALARA reasons) and informed the licensee of the issues. The licensee wrote CR PLP-2007-05055 to document the issue and sent a team to vacuum up the debris found. More metal pieces were found although not specifically quantified by the licensee. Subsequently, the inspector completed another closeout tour and no debris was present. The inspectors reviewed the site sump closure procedure. Acceptance criteria 6.1.e requires all debris that could potentially impact Emergency Core Cooling System pump operation be removed from the sump. The inspectors concluded that the debris found could impact ECCS pump performance and that the closure performed by the licensee was deficient.

Analysis: The inspectors determined the failure to adequately complete the containment sump closeout procedure was a performance deficiency that warranted a significance evaluation in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening." The finding impacted the mitigating systems

cornerstone. The finding was more than minor because, if left uncorrected, the sump debris would have become a more significant safety concern and could have impacted both trains of the ECCS. The issue was found by the inspectors before the transition to mode 4; therefore there was no loss of safety function. In accordance with IMC 0609 Appendix A, the issue screens out as Green since no loss of a required safety function existed in phase 1. The finding has a cross-cutting aspect in the area of human performance in that the licensee failed to effectively communicate expectations regarding procedural compliance and personnel following procedures. (H.4(b))

Enforcement: 10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed and accomplished by procedures appropriate to the circumstances. The licensee failed to implement RT-92, "Inspection of Containment Sump Envelope." Procedure RT-92, a quality procedure used for safety-related equipment, requires, in part, that for the as-left condition no debris be present in the sump which could impact ECCS pump performance. Contrary to this, after the site completed its inspection, the inspector discovered metal screen debris which could have impacted ECCS performance. Because this finding was of very low safety significance, it was entered into the licensee's corrective action program as CR PLP-2007-05055; and the sump subsequently was cleaned, this violation is being treated as a NCV (NCV 0500255/2007007-03, Containment Sump Debris Found During NRC Closeout) consistent with Section VI.A of the NRC Enforcement Policy.

(2) Failure to Perform a 10 CFR 50.59 Evaluation for a Revised Dose Calculation

Introduction: The inspectors identified a SL IV NCV of 10 CFR 50.59, "Changes, Tests, and Experiments" for the licensee's failure to perform a written evaluation prior to implementing a calculation change based on raising the acceptance criteria for back leakage from valves which leak containment activity. Specifically the change of back leakage affected the post accident dose impact to control room operators and this was not evaluated in accordance with 10 CFR 50.59.

Description: While reviewing RT-71L, Technical Specification 5.5.2 Pressure Test of Engineered Safeguards Systems Pump Suction Piping, the inspectors noted that a back leakage acceptance criteria was exceeded for post-recirculation valves. CR-PLP-2007-05032 was written to document that that the 1.9 gallons per minute (gpm) back leakage was exceeded. The total acceptance criteria (which involves two test procedures) for back leakage from containment to the Safety Injection Refueling Water Tank is listed in section 6.3 of the procedure and is at 2.2 gpm. The value from just this procedure alone was at 2.43 gpm.

The back leakage acceptance criterion is based on using the Alternate Source Term (AST) methodology. At the time the issue arose, the NRC had approved the Technical Specification Amendment (TSA), but the official implementation date had not occurred. However, the licensee had been using the AST methodology as the design basis methodology for calculating off-site and on-site dose consequences. Based on the out-of-specification acceptance criteria, the licensee revised their design basis dose calculation, Calculation NAI-1149-014, "Palisades Design Basis AST MHA/LOCA Radiological Analysis" in Revision 4 to raise the acceptance criteria for back leakage to 3.6 gpm. The inspectors asked to see the 50.59 which addressed this change and was informed that no 50.59 was completed and that a 50.59 would be performed after start-up, as part of the TSA implementation. The inspectors questioned why no 50.59 was

completed prior to start-up since there is reliance on these calculations as part of the licensing and design basis. Based on this feedback the licensee indicated they would perform a 50.59 screening and evaluation. The inspector noted the NAI-1149-014 calculation, as written, showed a dose margin reduction of approximately 50 percent for the control room dose (4 Rem CR dose for Loss of Coolant Accidents to 4.4 Rem). The industry guideline, Nuclear Energy Institute 96-07, and accepted by the NRC in Regulatory Guide 1.187, allows reductions in dose margin of less than 10 percent to be completed under 50.59 control without NRC prior approval. The inspectors concluded that the original calculation for the change to back leakage acceptance criteria to 3.6 gpm would require NRC approval.

The licensee wrote CR-PLP-2007-05351 to document the issue. The licensee also took administrative action to take margin from other components to reduce the revised calculation dose impact to the Control Room. A 50.59 evaluation was performed on the revised calculation and the dose reduction was at less than 10 percent. The inspectors concluded, without NRC intervention, the licensee would have removed more dose margin than would have been allowed without NRC approval and started up the plant. The licensee has administratively controlled other parameters such as operator response times and leakage specifications to tighter bands until a long term solution can be found.

Analysis: The inspectors determined that the licensee's failure to perform a 10 CFR 50.59 evaluation for the revised calculation for containment sump back leakage was a performance deficiency. Because this is a violation of 10 CFR 50.59, it is considered to be a violation which potentially impedes or impacts the regulatory process. Therefore, such violations are disposed using traditional enforcement process instead of the Significance Determination Process. In this case, the licensee failed to perform an evaluation in accordance with 10 CFR 50.59 for changes made to the design basis AST radiological analysis. This finding was determined to be more than minor because the inspector could reasonably determine that the original calculation required prior NRC approval. To determine the significance of the violation, the inspectors determined the risk of the underlying technical issue. The inspectors completed a Significance Determination Review using IMC 0609, Appendix A, Significance Determination of Reactor Inspection Findings for At Power Situations. The finding impacted the mitigating systems cornerstone. Because the finding did not occur at power, did not involve a loss of safety function and was resolved prior to start-up, the finding is of very low safety significance in phase 1. Even if the change did occur at power, the resultant dose projections were still under all regulatory limits. Therefore, this issue would screen out as having very low safety significance (Green).

Enforcement: 10 CFR 50.59(d)(1) requires, in part, that licensees maintain records of changes in the facility, of changes in procedures, and of tests and experiments. These records must include a written evaluation which provides the basis for determination that the change, test, or experiment does not require a license amendment. Contrary to the above, the licensee approved a change to a radiological dose calculation that would have required NRC approval in accordance with 10 CFR 50.59. After the inspectors informed the licensee of the finding, the licensee took immediate actions to control other parameters. However, because this violation was of very low safety significance, was not repetitive or willful, and was entered into the licensee's corrective action program as CR-PLP-2007-05351 this violation is being treated as an NCV consistent

with Section VI.A.1 of the NRC Enforcement Policy: (NCV 05000255/2007007-04, Failure to Perform a 10 CFR 50.59 Evaluation for a Revised Dose Calculation).

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

a. Inspection Scope

The inspectors performed a screening review of Revision 16 of the Palisades Standardized Emergency Plan to determine whether these changes decreased the effectiveness of the licensee's emergency plan. This review did not constitute an approval of the changes, and as such, the changes are subject to future NRC inspection to ensure that the emergency plan continues to meet NRC regulations.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on November 6, 2007, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator control room, Technical Support Center and Emergency Operations Facility to verify that event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package listed at the end of this report.

This inspection constitutes one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Occupational Radiation Safety [OS]

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

.1 Monitoring of Declared Pregnant Women and Dose to Embryo/Fetus

a. Inspection Scope

The inspectors reviewed the licensee's monitoring methods and procedures, radiation exposure controls, and the information provided to declared pregnant women to assess whether an adequate program had been implemented to limit embryo/fetal dose. The inspectors also reviewed the pregnancy declaration forms and the radiation exposure information for several individuals that declared their pregnancy to the licensee to evaluate if the licensee met the requirements of 10 CFR 20.1208 and 20.2106.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the Palisades UFSAR to identify applicable radiation monitors associated with measuring transient high and very high radiation areas, including those used in remote emergency assessment. The inspectors identified the types of portable radiation detection instrumentation used for job coverage of high radiation area work, including fixed area radiation monitors used to provide radiological information in various plant areas and continuous air monitors used to assess airborne radiological conditions and work areas with the potential for workers to receive a 50 millirem or greater committed effective dose equivalent. Contamination monitors, whole body counters, and those radiation detection instruments utilized for the release of personnel and equipment from the radiologically controlled area were also identified. This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Identification and Walkdowns of Additional Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors conducted walkdowns of selected area radiation monitors (ARMs) to verify that they were located as described in the UFSAR and were adequately positioned relative to the potential sources of radiation they were intended to monitor. Walkdowns

were also conducted of those areas where portable survey instruments were calibrated/repared and maintained for radiation protection (RP) staff use to assess if those instruments designated "ready for use" were sufficient in number to support the radiation protection program, had current calibration stickers, were operable, and were in adequate physical condition. Additionally, the inspectors observed the licensee's instrument calibration units and the radiation sources used for instrument checks to assess their material condition and discussed their use with RP staff to evaluate if they were used appropriately. Licensee personnel demonstrated the methods for performing source checks of portable survey instruments. This review represented one inspection sample.

b. Finding.

No findings of significance were identified.

.3 Calibration and Testing of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors selectively reviewed calibration data for radiological instrumentation associated with monitoring transient high and/or very high radiation areas, instruments used for remote emergency assessment, and radiation monitors used to identify personnel contamination and for assessment of internal exposures to verify that the instruments had been calibrated as required by the licensee's procedures, consistent with industry and regulatory standards. The inspectors also reviewed alarm setpoints for selected ARMs to verify that they were established consistent with the UFSAR or TS, as applicable, and were consistent with industry practices and regulatory guidance. Specifically, the inspectors reviewed calibration procedures and the most recent calibration records and/or source output verification documents for the following radiation monitoring instrumentation and instrument calibration equipment:

- High Range Containment Area Monitor
- High Range Containment Gamma Isolation Monitors
- Whole Body Counter

The inspectors evaluated what actions were taken when, during calibration or source checks, an instrument was found out of calibration or exceeded as-found acceptance criteria. When that occurred, the inspectors verified that the licensee's actions included a determination of the instrument's previous usages and the possible consequences of that use since the prior calibration. The inspectors also discussed with radiation protection staff the plant's 10 CFR Part 61 source term (radionuclide mix) to evaluate whether the calibration sources used were representative of the plant source term and to verify that difficult to detect nuclides were scaled into whole body count dose determinations. This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program (CAP) documents and any special reports that involved personnel contamination monitor alarms due to personnel internal exposures to evaluate whether these exposures were monitored using calibrated equipment. Licensee self-assessments, audits, and associated CAP records were also reviewed to verify that problems with radiological instrumentation or self-contained breathing apparatus were identified, characterized, prioritized, and resolved effectively using the corrective action program.

The inspectors reviewed CAP reports related to exposure significant radiological incidents that involved radiation monitoring instrument deficiencies since the last inspection in this area; none were identified. Members of the radiation protection staff were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes; and
- Identification and implementation of effective corrective actions.

The inspectors assessed whether the licensee's self-assessment and audit activities completed for the two-year period that preceded the inspection were identifying and addressing repetitive deficiencies or significant individual deficiencies in problem identification and resolution, as applicable.

This review represented three inspection samples.

b. Findings

No findings of significance were identified.

.5 Radiation Protection Technician Instrument Use

a. Inspection Scope

The inspectors selectively verified that calibrations for those radiation survey instruments recently used by the licensee and for those currently designated for use had not lapsed. The inspectors also discussed instrument calibration methods and source response check practices with radiation protection staff and observed staff complete instrument source checks prior to use.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.6 Self-Contained Breathing Apparatus (SCBA) Maintenance/Inspection and User Training

a. Inspection Scope

The inspectors reviewed aspects of the licensee's respiratory protection program for compliance with the requirements of Subpart H of 10 CFR Part 20 and to assess whether SCBAs were properly maintained and ready for emergency use. The inspectors reviewed records of inspection and functional tests for all SCBAs staged in the plant that were required by the licensee's emergency plan. The inspectors verified the licensee's capabilities for refilling and transporting SCBA air bottles during emergency conditions. The inspectors verified that selected control room staff designated for the active on-shift duty roster from each shift (including those individuals on the station's fire brigade) were trained, respirator fit tested, and medically certified to use SCBAs. Additionally, the inspectors reviewed SCBA qualification records for members of the licensee's radiological emergency teams including the radiation protection, chemistry, and maintenance staffs to evaluate if a sufficient number of staff were qualified to fulfill emergency response positions consistent with the licensee's emergency plan and the requirements of 10 CFR 50.47. The inspectors verified that personal SCBA air bottle change-out was adequately covered as part of the annual retraining plan.

The inspectors walked down spare SCBA air bottle stations located outside the main control room and inspected SCBA equipment maintained in the control room and staged for emergency use in various other areas of the plant. During the walkdowns, the inspectors examined several SCBA units to assess their material condition, to verify that air bottle hydrostatic tests were current, and to verify that bottles were pressurized to meet procedural requirements. The inspectors reviewed records of SCBA equipment inspection and testing and observed a member of the licensee's staff demonstrate the methods used to conduct the inspections and functional tests to assess if these activities were performed consistent with procedure and the equipment manufacturer's recommendations. The inspectors also evaluated if the required air cylinder hydrostatic testing was documented and current, if the Department of Transportation required retest air cylinder markings were in place for three randomly selected SCBA units and spare air bottles, and if the air quality for the compressor used to fill SCBA air bottles was routinely tested to verify Grade-D quality. Additionally, the inspectors verified that licensee staff do not perform repairs of SCBA pressure regulators and maintenance on components vital to equipment function, therefore no manufacturer qualification was required.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

Public Radiation Safety [PS]

2PS1 Radioactive Gaseous And Liquid Effluent Treatment And Monitoring Systems
(71122.01)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the most current Radiological Effluent Release Report to verify that the program was implemented as described in Radiological Environmental Technical Specifications (RETS)/ Offsite Dose Calculation Manual (ODCM) and to determine if ODCM changes were made in accordance with Regulatory Guide 1.109 and NUREG-0133. The inspectors evaluated whether the modifications made to radioactive waste system design and operation changed the dose consequence to the public. The inspectors assessed whether technical and/or 10 CFR 50.59 reviews were performed when required and determined whether radioactive liquid and gaseous effluent radiation monitor setpoint calculation methodology changed since completion of the modifications. The inspectors evaluated whether anomalous results reported in the current Radiological Effluent Release Report were adequately resolved.

The inspectors reviewed RETS/ODCM to identify the effluent radiation monitoring systems and its flow measurement devices, effluent radiological occurrence performance indicator incidents in preparation for onsite follow-up, and the UFSAR description of all radioactive waste systems.

These reviews in addition to the inspection activities documented in Inspection Report 05000255/2007002 represent one sample.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors assessed the licensee's understanding of the location and construction of underground pipes and tanks, and storage pools (spent fuel pool) that contain radioactive contaminated liquids.

The inspectors assessed the licensee's capabilities of detecting spills or leaks and of identifying groundwater radiological contamination both on site and beyond the owner controlled area. The inspectors discussed the licensee's plan to develop a comprehensive technical document that will describe its onsite groundwater monitoring program. The inspectors reviewed vendor reports which evaluated the hydrogeologic characteristics of the area and discussed the licensee's plans to conduct additional activities to validate the information to better understand local groundwater flow patterns for the site. Additionally, the inspectors discussed with the licensee its plans for enhancing its existing groundwater monitoring program for identifying potential onsite leaks and spills. These reviews were performed to determine if the licensee had or was

developing a program for early detection of spills/leaks, understood the sites groundwater flow characteristics and pathways to the environment, and to determine if the licensee had the capability through its groundwater monitoring initiatives to assess the radiological impact of a future spill/leak should it occur. This included a discussion of the tritium contamination that was recently identified in newly developed groundwater monitoring wells and any potential impact on a nearby campground and a small community well located south of the facility.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Initiating Events, Mitigating Systems, and Barrier Integrity Performance Indicator Verification

a. Inspection Scope

The inspectors reviewed Licensee Event Reports (LERs), licensee data reported to the NRC, plant logs, and NRC inspection reports to verify the following performance indicators:

- Mitigating System Performance Indicator - Cooling Water Systems
- Safety System Functional Failures
- Unplanned Transients per 7000 Critical Hours
- Reactor Coolant System Leakage

The inspectors verified that the licensee accurately reported performance as defined by the applicable revision of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline."

b. Findings

No findings of significance were identified.

.2 Review of Licensee's Quarterly PI Data

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the Fourth Quarter 2007 performance indicators for any obvious inconsistencies prior to its public release in accordance with IMC 0608, "Performance Indicator Program."

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

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

.1 Routine Review of items Entered Into the Corrective Action Program

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue.

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

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's self-assessment and quality assurance documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review focused on issues that maybe documented outside of the corrective action process but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors compared

and contrasted their results with the results contained in the licensee's CAP trending reports.

This review constituted a single semi-annual trend inspection sample.

.4 Annual In-depth Sample: Review of Operator Workarounds (OWAs)

a. Inspection Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of the OWAs on system availability and the potential for improper operation of the system, for potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of OWAs. The documents listed in the attachment were reviewed to accomplish the objectives of the inspection procedure. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee was identifying operator challenges at an appropriate threshold, had entered them into their corrective action program and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Additionally, all temporary modifications were reviewed to identify any potential effect on the functionality of Mitigating Systems, impaired access to equipment, or required equipment uses for which the equipment was not designed. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified operator workarounds.

The above constitutes completion of one operator workarounds annual inspection sample.

.5 Annual In-depth Follow-up Inspection: Spent Fuel Pool Rack Swelling

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting immovable spent fuel stored in the spent fuel pool. Discussions with licensee personnel revealed that over the course of plant life, multiple fuel bundles became stuck in the fuel racks. Previous evaluation of the condition in 1994 determined that the fuel rack walls in some cells had swelled and bound the stored fuel bundle. Although the licensee had evaluated the condition, the licensee did not conclusively identify the cause of the binding fuel nor did the licensee implement corrective actions to prevent further binding of the stored fuel. Based on the information provided by the licensee, the inspectors evaluated the current condition for any safety concerns. The information provided did not reveal any immediate safety concerns, however, the inspectors determined that additional testing and analysis were needed to confirm the licensee's hypotheses and ensure the ongoing safety of the spent fuel pool. Specific concerns included criticality and mechanical impingement concerns due to

changes in the poison matrix. The above constitutes completion of one in-depth problem identification and resolution sample.

b. Findings

No findings of significance were identified.

.6 Annual In-depth Follow-Up Inspection: Component Based Design Inspection (CBDI) Issues

a. Inspection Scope

The inspectors completed one inspection sample regarding problem identification and resolution by the conducting in-depth reviews for the following condition reports generated as a result of a CBDI:

AR 01063336, "Impact of elevated temperatures on cable resistance"

AR 01062644, "Error in air entrainment calculation for auxiliary feed water trip set point"

AR 01062531, "Discrepancy in calculation EA-RTD-91-01"

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

b. Findings

No findings of significance were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) LER 05000255/2007008-00: Auxiliary Feedwater Pump Inoperable in Excess of Technical Specification Requirements Due to Postulated Steam Line Break

On October 11, 2007, the licensee reported an LER for an issue identified by inspectors regarding potential damage to AFW pumps and its support equipment located in the turbine building. The issue surrounds possible steam breaks causing the AFW pumps to lose function. The evaluation of the risk for the performance deficiency and the associated NCV were reported in 4OA5 of inspection report 2007006 as part of closure of an Unresolved Item (URI). The inspectors identified one finding, which was a violation of NRC requirements, and was documented as NCV 05000255/2007006-07, AFW Pumps Inoperable Due to High Energy Line Breaks in the Turbine building. The licensee has modified the turbine building to prevent a harsh environment in the AFW pump room. No additional findings were identified. This LER is closed.

.2 (Closed) LER 05000255/2006008-00: Inoperable Containment Due to Containment Air Cooler through-Wall Flaw

On November 29, 2006, the licensee discovered an un-isolable Service Water (SW) leak on Containment Air Cooler, VHX-4. The leak was a through-wall leak in American Society of Mechanical Engineers (ASME) Code Class III piping. Due to the location of the failure, the flaw could not be identified and characterized to allow continued use of the heat exchanger. Therefore, the licensee concluded the closed loop portion of the SW section which services the containment was no longer operable and entered TS Action 3.6.1 B for an inoperable containment. The licensee made temporary repairs to the cooler. The licensee has not categorized the flaw and determined there was limited benefit in doing so. The NRC evaluated the risk significance of one tube in the VHX-4 cooler completely failing for this safety system functional failure in NCV 05000255/2005012-02 and determined the risk to be of very low safety significance (Green). The licensee replaced the cooler with a material which is less susceptible to erosion in November of 2007. No additional findings were identified. This LER is closed.

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

On January 19, 2007, the licensee discovered an un-isolable SW leak on Containment Air Cooler, VHX-4. The leak was a through-wall leak in ASME Code Class III piping. Due to the location of the failure, the flaw could not be characterized to allow continued use. Therefore, the licensee concluded the closed loop portion of the SW section which services the containment was no longer operable and entered TS Action 3.6.1 B for an inoperable containment. The licensee made temporary repairs to the cooler. The licensee has not categorized the flaw and determined there was limited benefit in doing so. The NRC evaluated the risk significance of one tube in the VHX-4 cooler completely failing for this safety system functional failure in NCV 05000255/2005012-02 and determined the risk to be of very low safety significance (Green). The licensee replaced the cooler with a material which is less susceptible to erosion in November of 2007. No additional findings were identified. This LER is closed.

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

On November 1, 2006, the licensee discovered an un-isolable SW leak on Containment Air Cooler, VHX-4. The leak was a through-wall leak ASME Code Class III piping. Due to the location of the failure, the flaw could not be identified and characterized to allow continued use. Therefore, the licensee concluded the closed loop portion of the SW section which services the containment was no longer operable and commenced a shutdown in accordance with TS Action 3.6.1 B for an inoperable containment. The licensee made temporary repairs to the cooler. The licensee has not categorized the flaw and determined there was limited benefit in doing so. The NRC evaluated the risk significance of one tube in the VHX-4 cooler completely failing for this safety system functional failure in NCV 05000255/2005012-02 and determined the risk to be of very low safety significance (Green). The licensee replaced the cooler with a material which is less susceptible to erosion in November of 2007. No additional findings were identified. This LER is closed.

.5 Rapid Downpower

a. Inspection Scope

On October 24, the licensee performed a rapid downpower from 84 percent to 55 percent due to high noise and vibration of the P-1B Main Feed Pump (MFP). The inspectors observed control room response to verify the licensee used applicable procedures and complied with technical specifications. The licensee reduced power and manually secured the MFP.

b. Findings

No findings of significance were identified.

.6 (Closed) LER 05000255/2007007-00, Fuel Handling ventilation System Inoperable

a. Inspection Scope

On October 1, 2007, with refueling activities in progress, improper door operation by a contractor or plant employee rendered the fuel handling building ventilation system inoperable. The inspectors reviewed LER 0500255/2007-007 and associated condition reports to determine if the licensee properly characterized the condition. Following discovery of the improperly open door, the licensee immediately suspended movement of fuel assemblies consistent with entered TS 3.7.12 condition A. The licensee then restored the door to the required closed position and exited the LCO. The licensee estimated that the door was opened for 10 minutes. The inspectors determined that the improper control of the door was a performance deficiency and issued a NCV described below (0500255/2007007-05). This LER is closed.

b. Findings

Introduction: NRC identified violations of very low safety significance (Green) of TS 5.4.1 occurred on October 1, 2007; October 28, 2007, and November 19, 2007, due to licensee personnel failing to maintain doors in the proper configuration to support operability of TS required systems. The failure to maintain doors in the proper configuration resulted in unplanned entry into various LCOs. After identification of the discrepant door status, the licensee restored each of the doors to the proper configuration to support operability.

Discussion: Between October 1, 2007, and November 19, 2007, licensee personnel placed doors in positions that rendered TS required systems inoperable. Plant procedures require evaluation of TS and the ORM for required actions prior to removing an SSC from service and assessment of total inoperable equipment for aggregate effects. Contrary to these requirements, on three occasions the licensee placed doors in a configuration that rendered SSCs inoperable without evaluation of requirements.

- On October 1, 2007, a licensee employee or contractor allowed a door to stick open in track alley during movement of spent fuel. Technical Specification 3.7.12.A requires that fuel handling building ventilation be available during fuel movement and to immediately suspend fuel movement if ventilation is not operable. The door in question, in track alley, is required to be closed for the

ventilation system to be operable. Contrary to this requirement, a plant employee or contractor allowed a door to stick open on the uneven concrete floor of track alley. An Auxiliary Operator noted an extension cord running under the door and contacted health physics to remove the extension cord. The health physicist who responded noted that the door was also stuck open and informed the control room. The control room entered the appropriate action statement and suspended fuel movement until the door was closed.

- On October 28, 2007, a security officer closed a roll-up door in the turbine building rendering one train of AFW inoperable. Due to high energy line break (HELB) concerns in the AFW pump, the licensee determined that the roll-up door must remain open to support AFW operability. This action was specified in operability recommendation CR-PLP-2007-02860-OPR-1. Despite a caution tag on the door to prevent improper closure, a security officer closed the roll-up door. An Auxiliary Operator identified that the door was closed and reopened the door in coordination with control room personnel. Closure of the door resulted in AFW pump inoperability and an unplanned entry into LCO 3.7.5.
- On November 19, a licensee employee closed the door between the 1D switchgear room and the Electrical Equipment Room. By design, the doorway functions as part of the ventilation system and must be open to ensure proper differential pressure between the Control Room and Electrical Equipment Room. An operator transiting the D switchgear room saw the closed door and reopened the door with coordination of the control room. Closure of the door resulted in inoperability of control room ventilation filtration and an unplanned entry into LCO 3.7.10.

Although licensee personnel identified the discrepant door positions, corrective actions taken by the licensee following the October 1 error were not effective in preventing recurrence of unplanned TS entries due to personnel errors in door positioning. In addition, these door mispositionings occurred after the inspectors had identified several examples where fire doors were not properly closed and latched. The inspectors have reviewed the cause and corrective actions the licensee developed to address the improper positioning of the doors. Based on the review, the inspectors concluded the licensee's cause evaluation and corrective actions were not timely in preventing additional door positioning errors, did not effectively identify causes, and did not identify effective corrective actions.

Analysis: The inspectors concluded that the failure to maintain doors in the proper position to maintain operability of safety-related equipment represented a performance deficiency that warranted a safety significance determination. 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 similar to this issue. The inspectors concluded that the issue was more than minor because the finding was associated with the configuration control attribute in the mitigating systems cornerstone. The inspectors had previously evaluated the significance of inoperable AFW due to the HELB concern (reference NCV 05000255/2007006-07) and determined that the risk significance for this current finding is bounded by the significance of the AFW HELB finding. In addition, the inspectors determined that the inoperability of SFP ventilation did not impact the safety function. The significance of the closed door between the 1D switchgear room and the electrical equipment room was determined to be of very low safety significance in report 05000255/2005006. Therefore, the inspectors concluded

that the finding was not of more than very low safety significance, (Green). In addition, the finding had a cross-cutting aspect in the area of human performance for inadequate use of human error prevention techniques (H.b(4)).

Enforcement: Technical Specification 5.4.1 requires, in part, that written procedures shall be established, implemented and maintained covering applicable procedures recommended in Appendix A of Regulatory Guide 1.33. Appendix A item 9 requires that maintenance that can affect the performance of safety-related equipment should be properly planned and performed in accordance with written procedures. The licensee developed procedure ADM 4.02, Control of Equipment, which includes requirements for evaluating TS requirements prior to removing equipment from service as well as requirements for caution tags and control of doors. Specifically, plant personnel rendered systems inoperable by repositioning doors contrary requirements on caution tags requirements or door signs. The inspectors reviewed the guidance provided in IMC 0609 Appendix A which states that "If...multiple functional degradations resulted from a common cause (e.g. a single inadequate maintenance procedure that directly resulted in deficient maintenance being performed on multiple components), then a single finding is written. Because each incident had an underlying cause related to implementation of ADM 4.02, the inspectors treated the degradations as a single finding. Because this finding was of very low safety significance, the finding was entered into the licensee's corrective action program as CR-PLP-2007-04714, 05890, and 05495; and the doors were rapidly restored to proper position, this finding is being dispositioned as a NCV (NCV 0500255/2007007-05, Inoperable Safety Systems Due to Improper Door Positioning) consistent with Section VI.A of the NRC Enforcement Policy.

40A5 Other Activities

.1 Pressurized Water Reactor Containment Sump Blockage (TI 2515/166)

a. Inspection Scope

In response to evolving NRC staff concerns with the adequacy of pressurized water reactor recirculation sump designs, on September 13, 2004, the NRC issued Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors." In GL 2004-02, the NRC requested that pressurized water reactor licensees evaluate the potential for post-accident debris to impede or prevent the recirculation functions of emergency core cooling and containment spray systems. The NRC also requested that addressees implement any needed plant modifications to ensure system functionality and stated that all actions should be completed by December 31, 2007. In order to verify that licensee's implemented the commitments made in response to GL 2004-02, the NRC issued Temporary Instruction (TI) 2515/166, "Pressurized Water Reactor Containment Sump Blockage. Specifically, the TI required inspectors to:

- Verify the implementation of the plant modifications and procedure changes committed to by the licensee in its GL 2004-02 responses;
- Verify that changes to the facility or procedures, as described in the UFSAR, that were identified in the licensee's GL 2004-02 responses were reviewed and documented in accordance with 10 CFR 50.59; and

- Verify that the licensee has obtained NRC approval prior to implementing those changes that require such approval as stated in 10 CFR 50.59.

During this inspection period, the inspectors reviewed the licensee's responses to GL 2004-02 to verify that the licensee had completed the plant modifications and procedure changes as committed to the NRC. As stated in the temporary instruction, the inspectors performed portions of the inspection under baseline Inspection Procedures 71111.7A, 71111.19, and 71111.20.

b. Observations

The inspectors did not identify any significant discrepancies based upon review of plant modifications and procedure changes completed to address GL 2004-02.

In accordance with the requirements of TI 2515/166, the inspectors evaluated and answered the following questions:

1. Did the licensee implement the plant modifications and procedure changes committed to in its GL 2004-02 responses?

Yes. The licensee completed plant modifications and procedure changes that were committed to be accomplished during the Fall 2007 refueling outage. All modifications were performed during the outage and completed by October 12, 2007. The modifications included:

- Addition of a passive strainer to prevent debris entry into the sump
- Replacement of tri-sodium phosphate baskets with sodium tetraborate baskets
- Modification to containment spray valves to include a throttle position to increase net positive suction head to containment spray pump
- Modification to HPSI pump seals to address downstream effects

In addition, the licensee committed to procedure changes to address programmatic controls on debris loading in containment. The licensee revised numerous procedures and specifications to institute programmatic controls for foreign material exclusion in containment. All needed revisions were completed by October 12, 2007.

2. Has the license updated its licensing bases to reflect the corrective action taken in response to GL 2004-02?

The licensee updated and received approval for changes made to support corrective actions to implement modifications associated with GL 2004-002. The licensee has changes to license basis documents, e.g. UFSAR updates, in progress. The license plans to update license basis documents consistent with regulatory requirements. The inspectors reviewed 10 CFR 50.59 screening and evaluations used to support GL 2004-02. Based on the review, the inspectors did not identify instances where the licensee failed to obtain a required NRC approval.

3. Did the licensee request an extension past the completion date of the TI?

The licensee requested and obtained approval from the NRC to extend completion chemical effects testing, debris transport analysis and testing, ex-vessel downstream effects evaluation and in-vessel effects testing until June 30, 2008.

This inspection did not complete the actions needed to close the TI because license basis changes are still in progress and the licensee obtained approval for an extension.

c. Findings

No findings of significance were identified.

.2 URI 1-1 Emergency Diesel Generator (EDG) Fuel Header Leak

On September 17, 2007 the licensee performed test RT-8C, "Engineered Safeguards System - Left Channel". This test is done every cycle to load the diesel and sequence loads in accordance with plant design. The inspectors watched the diesel start automatically and load from the control room as part of the surveillance baseline inspection. The inspectors then went down to the 1-1 EDG and during a walkdown noted fuel dripping from the bottom of the fuel pump cover for cylinder 1R. The leak rate was five drops per second. The inspectors brought the issue to the licensee's attention. The licensee briefly removed the cover and discovered two screws present at the bottom of the cover and a much higher leakrate (on the order of hundreds of milliliters per minute) of fuel oil. The screws were from the mechanical joint between the fuel rail and the low pressure fuel line on the 1R cylinder. After discussion between Engineering and Operations, the 1-1 EDG was shutdown and the test terminated. The licensee wrote CR-PLP-2007-04078 to address the issue. They discovered the screws in question should have been torqued. The licensee repaired the connection with new screws and torqued all similar connections on other cylinders on the 1-1 EDG. The test was completed satisfactory. The licensee also torqued the screws for the 1-2 EDG.

The licensee performed an apparent cause for the CR in question. The apparent cause concluded that there was inadequate preventative maintenance to ensure the fuel oil header to fuel pump connection remained tight. The 1R screws were not torqued when last known to be tightened in 1994, but were "tightened evenly until metal-to-metal contact was made." The licensee noted there were opportunities to address the issue from internal and external operating experience. In 2001 a CR was written (C-PAL-01-03293) when a cylinder on the 1-2 EDG had the screws over-torqued. The action was to use new screws and tighten the screws to the value provided by the vendor of 25 ft-lb. Hitherto, no torque value was specified by the vendor manual or procedure. The procedure change request was generated to update the vendor manual and maintenance procedure with new specifications from the vendor to 25-27 ft-lb. The vendor manual update was not accomplished, nor was a corrective action put in place to torque the existing screws. In 2002 another procedure change request was submitted to add these torquing requirements to the EDG maintenance procedure during maintenance which discovered there was torquing deficiencies on an adjacent bolt (C-PAL-02-02053). This was accomplished, but no corrective actions were put in place to torque the existing screws on the cylinders. In May of 2003 the 1L cylinder of the 1-1 EDG had a fuel oil leak on an adjacent joint to the joint in question on 1R. WO 24320418 was accomplished which removed, then reinstalled, the fuel oil header to

fuel pump connection, then torqued the screws off the fuel header to 25 ft-lb. In March of 2007, an Operating Experience (OE) from another plant was received which noted a fuel leak from the same cylinder (1R) and identical bolts due to the bolts not being torqued correctly. The item was screened by the OE group and no OE review was assigned. The system engineer entered the OE as action request (AR) 01082056, but it was not screened as an adverse condition to quality by the corrective action screening team, and was designated as a non-CAP. A non-CAP action, Other Action (OTHA) 01082056-01, was scheduled for review in July, but was extended until after the outage in November.

The inspectors concluded that the failure to take corrective action to torque the screws from the fuel oil header to the fuel pump to a value specified by the vendor was within the licensee's ability to foresee and correct and is therefore a performance deficiency. Because this deficiency could have an impact on the EDG ability to adequately deliver fuel to the cylinders required in an accident, and because this condition may have existed (in some state where the bolts could loosen) for some time, the issue may be more than minor. This item will remain an URI (URI 05000255/2007007-06, 1-1 EDG Fuel Header Leak) until the licensee completes its past operability assessment and the NRC reviews this assessment. There is no current safety issue, as all screws have been torqued to the required value.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 9, the inspector presented the inspection results to C. Schwarz and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. Items identified as proprietary were destroyed.

.2 Interim Exit Meeting

- An interim exit was conducted for baseline procedure 71121.03 with Mr. T. Kirwin and other members of licensee management on November 16, 2007. The inspectors returned proprietary information reviewed during the inspection.
- An interim exit was conducted for Emergency Plan inspection with Ms. J. Ford on December 17, 2007.
- An interim exit was conducted for baseline procedure 71122.01 with Ms. L. Lahti and other members of licensee management on December 20, 2007. The inspectors returned proprietary information reviewed during the inspection.
- An interim exit was conducted for the heat sink biennial inspection 71111.07B with Mr. Tom Kirwin and other members of licensee management on November 28, 2007.

4OA7 Licensee-Identified Violations

None

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Alderink, Cooling Tower System Engineer
C. Schwarz, Site Vice President
S. Bell, Radiation Protection Dosimetry Program Owner
D. Bemis, Entergy/Inservice Inspection Program Owner
A. Blind, Design Engineering Manager
L. Blocker, Operations Manager
J. Broschak, Engineering Director
N. Brott, Emergency Preparedness Coordinator
J. Burnett, RETS-REMP Analyst
T. Davis, Operations Training Supervisor
E. Dehn, Environmental Coordinator
B. Dotson, Regulatory Compliance
R. Farrell, Radiation Protection Manager
J. Fontaine, Emergency Preparedness Coordinator
J. Ford, Emergency Preparedness Manager
M. Ginzell, Radiation Protection Technical Supervisor
J. Hager, Radiation Protection Respiratory Protection Owner
K. Housh, Appendix R Engineer
P. Johnson, Safety Manager
L. Lahti, Licensing Manager
A. Lyon, Design Engineer
D. Malone, Regulatory Affairs
M. McCarthy, System Engineer
R. Medora, Radiation Protection Instrumentation Owner
D. Moody, Radiation Protection Technician
D. Nestle, Acting Chemistry and Radiation Protection Manager
B. Nixon, Assistant Operations Manager
J. Plumb, Corrective Action Coordinator
M. Richey, Acting Plant General Manager
G. Sleeper, Assistant Operations Manager
K. Smith, Quality Assurance Manager
J. Smith, Mechanical Design Supervisor
B. Smoot, Radiation Protection Supervisor
T. Stell, Operations Training
T. Swiecicki, Appendix R Engineer
R. Van Wagner, Entergy/Engineering Programs Supervisor
P. Williams, Sr. RP Technician – Outage ALARA Planner

Nuclear Regulatory Commission

M. Chawla, Project Manager, NRR

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000255/2007007-01	NCV	Inadequate PMT for HPSI pumps (Section 1R19)
05000255/2007007-02	NCV	Failure to Comply with ORM Restrictions on Heavy Load Movement (Section 1R20)
05000255/2007007-03	NCV	Containment Sump Debris Found During NRC Closeout (Section 1R22)
05000255/2007007-04	NCV	Failure to Perform a 10 CFR 50.59 Evaluation for a Revised Dose Calculation (Section 1R22)
05000255/2007007-05	NCV	Inoperable Safety Systems Due to Improper Door Positioning (Section 4OA3)
05000255/2007007-06	URI	1-1 EDG Fuel Header Leak (Section 4OA5)

Closed

05000255/2007007-01	NCV	Inadequate PMT for HPSI pumps (Section 1R19)
05000255/2007007-02	NCV	Failure to Comply with ORM Restrictions on Heavy Load Movement (Section 1R20)
05000255/2007007-03	NCV	Containment Sump Debris Found During NRC Closeout (Section 1R22)
05000255/2007007-04	NCV	Failure to Perform a 10 CFR 50.59 Evaluation for a Revised Dose Calculation (Section 1R22)
05000255/2007007-05	NCV	Inoperable Safety Systems Due to Improper Door Positioning (Section 4OA3)
05000255/2007008-00	LER	Auxiliary Feedwater Pump Inoperable in Excess of Technical Specification Requirements Due to a Postulated Steam Line Break (Section 4OA3)
05000255/2006008-00	LER	Inoperable Containment Due to Containment Air Cooler through-Wall Flaw (Section 4OA3)
05000255/2007007-00	LER	Fuel Handling Ventilation System Inoperable (Section 4OA3)
05000255/2006006-00	LER	Inoperable Containment Due to Containment Air Cooler through-Wall Flaw (Section 4OA3)
05000255/2007002-00	LER	Inoperable Containment Due to Containment Air Cooler Through-Wall Flaw (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

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

1R01 Adverse Weather Protection

- WO00325403, Cold Weather Checklist, November 18, 2007

1R04 Equipment Alignment

- SOP-3, Safety Injection and Shutdown Cooling System, Revision 71
- M-204, System Diagram Safety Injection, Containment Spray and Shutdown Cooling, Rev. 7
- SOP-27, Fuel Pool Cooling, Revision 50
- DBD-2.07, Design Basis Document- Spent Fuel Pool Cooling System, Revision 3
- M-221-2, Spent Fuel Pool Cooling System P&ID, Revision 53

1R05 Fire Protection

- Fire Hazards Analysis, rev. 7
- EA-PSSA-00-001, Palisades Plant Post Fire Safe Shutdown Summary Report, Fire Areas 19, 28, Revision 2
- Fire Protection Safety Evaluation Report, Section 5.9, Safeguards Area, September 1, 1978
- FP-PE-3, Fire Protection Check Sheet Fire Extinguishers – Auxiliary Building, Revision 6
- Supplement No. 2 to the Sept. 1, 1978 Fire Protection Safety Evaluation Report, Feb.10, 1981
- CR-PLP-2007-01449, Fire Brigade Pre-Fire Plans Lack Detail – Need Improvement, March 29, 2007
- CR-PLP-2007-00821, Fire Hose Station Non-Compliance with UFSAR/NFPA-14, Feb. 22, 2007
- CR-PLP-2007-05945, Jacket Water Heater for Diesel Fire Pump Not Working, Nov. 22, 2007

1R06 Flooding

- Individual Plant Examination, Appendix A, Internal Flooding Evaluation, November 1, 1992
- NUREG-0820, Integrated Plant Safety Assessment Systematic Evaluation Program, Palisades Plant, October 1982
- WO 00308040-01, Annual Inspection of Watertight Barriers, August 20, 2007
- WO 00269968-01, CK-RW421 Clean/Inspect AFW Pump Room Valve, October 4, 2006
- WO 24320466, 5 Year Inspection of Watertight Barriers, November 12, 2003
- WO 24324575, Deteriorated Caulk on FZ-0468, February 15, 2005
- WO 24323714, CK-RW421 Disassemble, Inspect, Test and Repair per EM 28-02, Sept. 28, 2004
- CAP038715, FZ 0468 Pipe Penetration in Aux Feed Pump Room, December 11, 2003

1R07 Heat Sink Performance

- QO-14, Inservice Test Procedure – Service Water Pumps (Pumps P-7C), test completed, September 7, 2007
- QO-14; Inservice Test Procedure – Service Water Pumps (Pump P-7A), test completed, September 7, 2007
- QO-14, Inservice Test Procedure – Service Water Pumps (Pump P-7B), test completed, September 30, 2007
- RO-144; Comprehensive Pump Test Procedure Service Water Pumps P-7A, P-7B, and P-7C, test completed, October 23, 2007
- RO-216; Service Water Flow Verification, test completed, October 12, 2007
- T-390, Single Tube Testing of the Component Cooling Water Heat Exchangers, test completed, April 15, 2006
- T-390; Single Tube Testing of the Component Cooling Water Heat Exchangers, test completed, March 23, 2003
- EA-A-PAL-94-307-01; CCW Heat Exchanger Tube Plugging Evaluation, February 23, 1995
- EA-TWK-95-01, Increase CCW Hx Tube Wall Loss Plugging Criteria to 70 percent, August 22, 1995
- EA-GAK-98-02, CCW Heat Exchangers (E-54A/54B) Tube Fouling Factors Acceptance Criteria, January 17, 2002
- Avondale calc; Maximum Flow Analysis CCW Heat Exchangers, March 15, 1987
- EA-DTP-88-10, Revised Component Cooling Water Operating Restrictions for Maximum Heat Exchanger Flow, October 30, 1987
- EA-GOTHIC-04-05, Development of Loss of Coolant Accident Containment Response Base Deck (Selected Pages Related to CCW Tube Plugging), Revision 1, June 4, 2007
- EA-GOTHIC-04-08; Containment Response to a Loss of Coolant Accident Using Gothic 7.2a (Selected Pages Related to CCW Tube Plugging), Revision 2, February 20, 2007
- CAP 01021894, Containment Service Water Piping Downstream of CV-0824 Requires Evaluation, April 3, 2006
- CAP 01041995, Pinhole Leak Discovered Downstream of CV-0824, July 30, 2006
- CAP 01059028; Jacket Water Cooler E-22A Tubes Found Partially Blocked During Inspection, November 1, 2006
- CR-PLP-2006-02538, Acceptance Criteria for Service Water Flow to Individual Containment Air Coolers Was Not Met, May 3, 2006
- CR-PLP-2006-04774, Intake Bay Zebra Mussel Accumulation, September 21, 2006
- CR-PLP-2006-04807, South Inlet Bay Flow less than North Inlet Bay, October 6, 2006
- CR-PLP-2007-04944; Acceptance Criteria for Service Water Flow to Individual Containment Air Coolers Was Not Met, October 6, 2007
- CR-PLP-2006-05812, Minor Uncertainty Value Error for VHX-1 in RO-216 Basis Document, December 8, 2006
- CR-PLP-2007-06003, CCW Heat Exchanger Heat Load Capacity and Tube Plugging Calculations Requires Revision, November 28, 2007
- CR-PLP-2007-06011, Heat Exchanger Condition Assessment Program Requires Revision, November 28, 2007
- ANATEC Report NMC-PN1-01; Eddy Current Inspection Report for Component Cooling Water Hx No. E-54B, March 23, 2003
- ANATEC Report NMC62-PN-02, Eddy Current Inspection Report for Component Cooling Water Hx No. E-54B, April 16, 2005
- Critical Service Water System Health Assessment, September 12, 2006
- Raw Water Corrosion Program Report Section 3.2, Operational Cycle 16 and 2003 Refueling Outage, May 3, 2004

- Raw Water Corrosion Program Report Section 3.2, Operational Cycle 18 and 2006 Refueling Outage, May 3, 2004
- Raw Water Corrosion Program Report; Operational Cycle 19 and 2007 Refueling Outage, November 13, 2007
- LO-PLPLO-2007-00207 CA-0001, Pre-NRC Biennial Ultimate Heat Sink Snapshot
- Self-Assessment, November 21, 2007
- EC-10915, Evaluation of Technical Specification Surveillance Test RO-144 Test Results for Service Water System, October 12, 2007
- Procedure EM-09-16 Attachment 1; Heat Exchanger Visual Testing Checklist - E-22A, 03/02/04
- Procedure EM-09-16 Attachment 1, Heat Exchanger Visual Testing Checklist - E-22A, October 31, 2006
- Procedure EM-09-16 Attachment 1, Heat Exchanger Visual Testing Checklist – E-54B, April 14, 2006
- Procedure EM-09-16, Heat Exchanger Assessment Program, August 18, 2004
- Master Heat Exchanger Testing Plan, April 12, 2007

1R11 Licensed Operator Regualification Program

- PL-OPS-SPE-072E, SGTR with ESDE, Rev. 0

1R12 Maintenance Effectiveness

- MRE CR-PLP-2007-04280-CA-0002, M-1005 Failure to start, Revision 0
- MRE 01086047-05, M-1005 Supplemental Diesel Generator Coolant Temp. Low, Revision, 0
- ESOMS log search for 18 months on “1-3 EDG”, “Supplemental Diesel”, “M-1005”
- System Health Report EDGs Spring 2007
- System Health Report Component Cooling, November, 17, 2007
- CE 01088092; Cause Evaluation 152-116 Breaker has both Red and Green Lights Lit, June 7, 2007
- MRE01088092, Maintenance Rule Evaluation, 152-116 Breaker has both Red and Green Lights Lit, June 14, 2007
- EM025, Maintenance Rule Program, Revision 6

1R13 Maintenance Risk Assessments and Emergent Work Control

- ONP-12, Acts Of Nature

1R15 Operability Evaluations

- Calc 5935C, Main Steam Relief Valve Supports, December 6, 1974
- OPR-PLP-2007-05719, Main Steam Relief System
- -CR-PLP-2007-06204, CV 2807 and 2808 cable in hot area

1R17 Permanent Plant Modifications

- FMEA 007PSD/051156/06-E-14, Palisades Containment Spray Isolation Valves CV-3001/Cv-3002, September 19, 2007
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LIST OF ACRONYMS USED

ALARA	As-Low-As-Is-Reasonably-Achievable
AFW	Auxiliary Feedwater
ARM	Area Radiation Monitor
ASME	American Society of Mechanical Engineers
AST	Alternate Source Term
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
DC	Direct Current
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
GL	Generic Letter
Gpm	gallons per minute
GSI	Generic Safety Issue
HELB	High Energy Line Break
HPSI	High Pressure Safety Injection
IMC	Inspection Manual Chapter
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LLRT	Local Leak Rate Testing
LOCA	Loss of Coolant Accident
MOV	Motor-Operated Valve
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OE	Operating Experience
OWA	Operator Workaround
PMT	Post-Maintenance Testing
RETS	Radiological Environmental Technical Specifications
RP	Radiation Protection
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SL	Severity Level
SSC	Systems, Structures, and Components
SW	Service Water
TS	Technical Specification
TSA	Technical Specification Amendment
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order