October 28, 2004

Mr. Daniel J. Malone
Site Vice President
Palisades Nuclear Plant
Nuclear Management Company, LLC
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR PLANT
NRC INSPECTION REPORT 05000255/2004010

Dear Mr. Malone:

On September 30, 2004, 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 October 1, 2004, with you and other members of your staff.

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

Based on the results of this inspection, three findings of very low safety significance (Green) were identified, which were determined to involve violations of NRC requirements. However, because the findings were of very low safety significance and because the issues have been entered into your corrective action program, the NRC is treating the violations as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violation, you should provide a response with a basis for your denial, within 30 days of the date of this inspection report, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 10, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Palisades facility.

Sincerely,

***/RA/***

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

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

Enclosure: Inspection Report 05000255/2004010
w/Attachment: Supplemental Information

cc w/encl: J. Cowan, Executive Vice President
and Chief Nuclear Officer
R. Fenech, Senior Vice President, Nuclear
Fossil and Hydro Operations
D. Cooper, Senior Vice President - Group Operations
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REGION III

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| Docket No: | 50-255 |
| License No: | DPR-20 |
| Report No: | 050000255/2004010 |
| Licensee: | Nuclear Management Company, LLC |
| Facility: | Palisades Nuclear Plant |
| Location: | 27780 Blue Star Memorial Highway<br>Covert, MI 49043-9530 |
| Dates: | July 1 through September 30, 2004 |
| Inspectors: | J. Lennartz, Senior Resident Inspector<br>M. Garza, Resident Inspector<br>R. Lerch, Project Engineer, RIII<br>R. Alexander, Radiation Specialist |
| Approved by: | Eric R. Duncan, Chief<br>Branch 6<br>Division of Reactor Projects |

Enclosure

## SUMMARY OF FINDINGS

IR 05000255/2004010; 07/01/2004 - 09/30/2004; Palisades Nuclear Plant; Operator Performance During Non-Routine Evolutions and Events; Surveillance Testing; Problem Identification and Resolution.

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

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

**Cornerstone: Initiating Events**

- Green. A finding of very low safety significance was self-revealed when testing of the reactor protection system by maintenance personnel caused pressurizer power operated relief valve (PORV) 1042B to open while the plant was in a water solid condition. The primary cause of this finding was related to the cross-cutting area of human performance. The finding was more than minor because it was related to the human performance and procedure quality attributes of the Initiating Events cornerstone. Also, the finding affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations since plant stability was upset while shutdown during solid plant operations with shutdown cooling in service.

  A Phase 2 Significance Determination Process (SDP) analysis was performed by the regional Senior Reactor Analyst (SRA) which evaluated the key safety functions including core heat removal capability, power availability, containment control, reactivity controls, and inventory control. The Phase 2 analysis determined that all standby injection sources were available to preclude a loss of inventory and there was no possibility that residual heat removal would have been lost. Consequently, the finding screened as Green and therefore was of very low safety significance.

  One Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified. Corrective actions included revising the work order to properly complete the testing activities and completion of an engineering evaluation to verify that no adverse impact on plant equipment resulted from the inadvertent opening of the PORV. (Section 1R14.1)

- Green. A finding of very low safety significance was self-revealed when main steam safety valve RV-0709 inadvertently lifted on September 14, 2004. Main steam safety valve setpoint testing on RV-0709 was conducted with the plant at power using hydraulic test equipment attached to the valve spindle. The test equipment required an adjustment for final verification testing but was unable to be moved due to residual hydraulic pressure from previous test steps. However, test personnel failed to turn off the hydraulic pump prior to attempting to bleed off the residual pressure. Consequently, hydraulic pressure continued to increase and RV-0709 inadvertently lifted. The primary cause of this finding was related to the cross-cutting area of human performance.

  The finding was determined to be more than minor because it was related to the procedure quality and human performance attributes of the Initiating Events cornerstone Also, the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations was affected since actions taken during testing activities increased the likelihood of opening a main steam safety valve and upsetting plant stability due to an increased steam demand while at power. However, the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available and therefore screened out as Green.

  One Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified. Corrective actions included a revision to licensee procedures to include steps from the vendor test equipment instructions on securing the hydraulic pump. (Section 1R22)

**Cornerstone: Mitigating Systems**

- Green. A finding of very low safety significance was self-revealed when the auxiliary packing on high pressure safety injection pump P-66B failed on June 3, 2004, immediately after the pump was started for surveillance testing. During a maintenance activity in March 2004 to replace the auxiliary packing, the procedure that was utilized did not contain adequate guidance. Consequently, the packing was excessively compressed and failed during the inservice surveillance test.

  The finding was determined to be more than minor because it was related to the procedure quality attribute of the Mitigating Systems cornerstone. Also, the finding affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences since high pressure safety injection pump P-66A had to be removed from service to replace the auxiliary packing only 3 months after it had been replaced previously. However, because the finding was (1) not a design or qualification deficiency that had been confirmed to result in a loss of function per Generic Letter 91-18; (2) did not represent an actual loss of a safety function; and (3) did not screen as potentially risk significant due to a seismic, flooding, or severe weather event, the finding screened out as Green.

One Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified. Corrective actions included a revision to the maintenance procedure to provide additional guidance on the installation of the auxiliary packing to preclude excessive compression. (Section 4OA2)

## B. Licensee-Identified Violations

None.

## REPORT DETAILS

### Summary of Plant Status

The plant operated at full power during the inspection period with the following six exceptions:

- On July 6, 2004, an unplanned power reduction to 59 percent was necessary to remove nonsafety-related main feedwater pump P-1B from service because the outboard shaft seal failed. On July 12th, pump P-1B was returned to service after the necessary repairs were completed and a power escalation commenced. Plant power was subsequently raised to 100 percent on July 13th where it remained until July 22nd. This problem was entered into the licensee's corrective action program as CAP042365, "Main Feedwater Pump P-1B Outboard Seal Failure."

- On July 22, 2004, an unplanned power reduction to 29 percent was necessary to remove nonsafety-related condensate pump P-2B from service because of a service water leak into the oil cooler for the upper bearing on the pump motor. Power was subsequently raised to 49 percent on July 22nd and then to 55 percent on July 23rd where it remained while necessary repairs were completed. The oil cooler was replaced and the pump motor was refurbished because water from the service water leak contacted the motor windings.

  Power was reduced to 29 percent on July 26th and condensate pump P-2B was returned to service. A power escalation was commenced on July 27th and the plant attained full power on July 28th where it was maintained until August 10th. This problem was entered into the licensee's corrective action program as CAP042625, "WW#2430: Emergent Down Power Required Due to P-2B Motor Oil/Water Leakage."

- On August 10, 2004, the plant was shutdown because of increased leakage from the control rod drive mechanism seals. Control rod drive seal leakage was collected in the seal leakoff piping which was then directed to the containment sump. The seals in the drive mechanisms for control rods 19 and 29 were known to have higher leakage and plant personnel had been monitoring the leakage for several months.

  On August 9th, a step increase from 0.37 gallons per minute to about 1.0 gallon per minute in the leak rate was noted. Leakage from the control rod drive seals was considered identified leakage and the amount remained well below the Technical Specification limit of 10 gallons per minute which would have required a plant shutdown. However, the decision to shut down the plant was made because the step increase in leakage indicated that the control rod drive seals were degrading. Therefore, the reactor was shutdown on August 10th and the plant entered Mode 5, Cold Shutdown, on August 12th to replace the seals on the drive mechanisms for control rods 19 and 29.

Following the necessary repairs, plant startup was commenced and the plant entered Mode 1, Power Operations, on August 16th. The main generator was synchronized to the grid on August 17th and plant power was subsequently raised to full power on August 19th where it was maintained until August 31st.

- On August 31st, control room operators manually tripped the reactor because of a fire in nonsafety-related condensate pump P-2B lower motor bearing. All equipment actuated as designed during the plant trip. After evaluating for adverse impact on other plant equipment from the fire and concluding that there were not any common cause problems associated with the redundant nonsafety-related condensate pump P-2A, the plant was restarted and synchronized to the grid on September 1st. Power was subsequently raised to 54 percent where it was maintained pending completion of necessary repairs to the motor for pump P-2B. This problem was entered into the corrective action program as CAP043294, "Reactor Trip Due to Fire on P-2B Condensate Pump," and the associated root cause evaluation was in progress when the inspection period ended.

- On September 12th, plant power was reduced to 41 percent and nonsafety-related condensate pump P-2B was returned to service. Plant power was subsequently raised to 90 percent on September 15th, where it was maintained until September 19th.

- On September 19th, the plant was shutdown for a scheduled refueling outage. The plant was placed in Mode 6, Refueling, on September 24th, where it was maintained for the remainder of the inspection period.

In addition, on August 6th, the plant implemented 0.6 percent of an approved 1.4 percent power uprate based on measurement uncertainty recapture which increased Palisade's generating capacity. The NRC approved the power uprate on June 23, 2004, which increased Palisades licensed rated thermal power from 2530 Megawatts thermal to 2565.4 Megawatts thermal. Because only 0.6 percent of the approved uprate was implemented, when the plant was operating at "indicated" full power it was actually operating at only 2549 Megawatts thermal which was slightly less than licensed full power. Only a portion of the approved uprate was initially implemented because of industry operating experience regarding feedwater ultrasonic flow measuring devices. To address the operating experience, licensee personnel planned to conduct additional testing during the refueling outage which commenced on September 19th to verify that the feedwater ultrasonic flow measuring devices were accurate. The remaining 0.8 percent of the approved power uprate was planned to be implemented following the refueling outage provided the ultrasonic feedwater measuring devices were proven to be accurate.

## 1. REACTOR SAFETY

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

1R04 Equipment Alignment

.1 Partial Walkdowns (71111.04Q)

a. Inspection Scope

The inspectors performed three partial equipment alignment walkdowns on the following plant equipment:

- traveling screen F-4B and screen wash system on July 19th when traveling screen F-4C was removed from service for planned maintenance.
- right train of 125 Volt vital DC (Direct Current) power on August 19th, a system designated as "high safety significant" in the licensee's maintenance rule program.
- right train of containment spray system on September 16th, including containment spray pump P-54B, which is normally aligned in a "standby" condition.

During the walkdowns, the inspectors verified that power was available, that accessible equipment and components were appropriately aligned, and that no discrepancies existed which would impact system availability.

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

b. Findings

No findings of significance were identified.

.2 Complete Walkdown (71111.04S)

a. Inspection Scope

The inspectors performed one complete walkdown inspection of containment isolation valves utilizing piping and instrumentation diagrams, system operating procedures, and the site's containment integrity checklist to verify that accessible components were correctly aligned.

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Area Walkdowns (71111.05Q)

a. Inspection Scope

The inspectors toured the following seven fire areas in which a fire could affect safety-related equipment:

- Fire Area 6 for Emergency Diesel Generator 1-2
- Fire Area 3 for Safety-Related 2400 Volt Switchgear 1D
- Fire Area 10 for the East Engineered Safeguards Room
- Fire Area 23 for the Turbine Building
- Fire Area 13 for the Auxiliary Building 590' Corridor
- Fire Area 32 for the Safety Injection Refueling Water Tank and Component Cooling Water Roof Area
- Fire Area 14 for Containment

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

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

The inspectors observed one crew of licensed operators during simulator training on August 13, 2004. The inspectors observed the operators response to the simulated events which included a lowering water level in the refueling cavity while the plant was shutdown for refueling activities. The inspectors verified that the operators were able to effectively implement Off-Normal Procedures 23.3, "Loss of Refueling Water Accident," and 7.1, "Loss of Instrument Air," to mitigate the event. The inspectors also observed the post-training critique to assess the licensee evaluators' and the crew's ability to self-identify performance weaknesses.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed Operator's Risk Reports to verify that plant risk assessments were completed as required by 10 CFR 50.65(a)(4) prior to commencing maintenance activities. The inspectors reviewed the Operations Log and daily maintenance schedules. The inspectors verified that equipment necessary to minimize plant risk was operable or available and that the Operators Risk Model accurately reflected the equipment that was out of service during the maintenance activities. The inspectors also conducted plant walkdowns to verify that equipment necessary to minimize risk was available for use. The following six activities were reviewed:

- planned maintenance on August 2-4, to replace fuel injector locknuts on emergency diesel generator 1-2 and to conduct quarterly surveillance testing on the auxiliary feedwater system;
- planned maintenance on August 20, to conduct various maintenance activities on emergency diesel generator 1-1;
- emergent maintenance on August 27-28, to replace component cooling water pump P-52A outboard motor bearing;
- planned flush of shutdown cooling piping on August 30-31, using the low pressure safety injection system;
- planned maintenance on September 8, to replace check valves between nitrogen station 5 and the instrument air system; and
- planned maintenance on September 13-16, to replace the mechanical seal on component cooling water pump P-52B and to conduct monthly surveillance testing on emergency diesel generator 1-2

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

b. Findings

No findings of significance were identified.

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

The inspectors assessed operator performance during the four non-routine evolutions described below.

.1 Operator Response to Inadvertent Opening of Pressurizer Power Operated Relief Valve

a. Inspection Scope

On September 22, 2004, the inspectors observed control room operator response when power operated relief valve 1042B inadvertently opened while the plant was in a water solid condition (i.e. pressurizer full). The inspectors verified that actions in Off-Normal

Procedure - 18, “Pressurizer Pressure Control Malfunctions,” were completed as required.

b. Findings

Introduction

The inspectors determined that a finding of very low safety significance (Green) was self-revealed when testing of the reactor protection system by Instrument and Control technicians caused pressurizer power operated relief valve (PORV) 1042B to inadvertently open. A Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was associated with this finding.

Description

On September 22, 2004, the primary coolant system was at 120°F and 250 pounds per square inch absolute pressure (psia) in a water solid condition and the pressurizer PORVs were enabled for low temperature overpressure protection. The control room operators noted a sudden rapid decrease in primary coolant system pressure to atmospheric pressure and the control panel operator immediately secured the two operating primary coolant pumps as required. In addition, the control panel operator quickly recognized that pressurizer PORV 1042B had opened unexpectedly and closed the valve. The control room supervisor directed additional actions in accordance with Off-Normal Operating Procedure - 18, “Pressurizer Pressure Control Malfunctions,” which were completed appropriately.

The sudden depressurization of the primary coolant system and challenge to the operators was the result of a performance deficiency during reactor protection system testing. The testing was being performed by instrument and control (I&C) technicians in accordance with Work Order 24324732 following maintenance which replaced the trip bistable locks and keys on reactor protection system ‘A’ channel. After testing had commenced, I&C, and system engineering personnel determined that the work order would have to be revised to complete the testing. After consulting with an I&C supervisor, the work order was revised and testing recommenced without validating, through a review of logic diagrams, that the changes would not adversely impact existing plant conditions. Also, operations personnel were not briefed or consulted regarding the changes to the work order prior to recommencing test activities.

Implementation of the revised work order steps resulted in satisfying the required logic for an open signal to be generated from the reactor protection system’s ‘A’ and ‘B’ channel pressurizer high pressure reactor trip signal to PORV 1042B. Consequently, PORV 1042B opened and depressurized the primary coolant system. Also, before the control room operators took actions to mitigate the event, about 250 gallons of primary coolant system water was transferred to the quench tank through the PORV.

Analysis

The inspectors determined that revising existing work instructions without validating that the changes would not adversely impact existing plant conditions was a performance

deficiency which warranted a significance evaluation. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because it was related to the human performance and procedure quality attributes of the Initiating Events cornerstone. Also, the finding affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations since plant stability was upset while shutdown during solid plant operations with shutdown cooling in service.

The finding also affected the cross-cutting area of human performance because maintenance personnel failed to follow applicable administrative procedures when making changes to existing work orders. Administrative Procedure 5.0, "Maintenance Organization, Responsibilities and Conduct of Maintenance," Section 5.3.3, "Job Scope Expansion," directed, in part, that if work in progress could not be completed as planned, then the assigned supervisor shall immediately notify the work control center or shift manager and the work week manager that the work order required revisions. However, the shift manager, work control center and work week manager were not informed that revisions were needed to complete the testing activities.

To assess this issue, the inspectors used IMC 0609, Appendix G, “Shutdown Operations Significance Determination Process,” Checklist 2. Using this checklist, the inspectors evaluated key safety functions that affect shutdown conditions and ensure that adequate mitigation capability exists. Key safety functions evaluated included core heat removal capability, electrical power availability, containment control, reactivity controls, and inventory control with the following results.

- Core heat removal was always available during the event since all the necessary instrumentation, procedures, and equipment for decay heat removal were available. The residual heat removal, high pressure injection, steam generators, and auxiliary feedwater systems were available for this safety function.

- Power availability (offsite and onsite) was always maintained.

- Containment controls were always maintained with the appropriate procedures, training, and equipment in place to close containment, if needed.

- Reactivity controls were in compliance with the Technical Specifications.

- Inventory controls were maintained with the proper instrumentation, and the equipment necessary to keep the core covered, such as high pressure injection and charging pumps, were always available if additional reactor coolant system inventory was lost. However, training/procedures were not adequate since a personnel error resulted in a rapid loss of reactor coolant system inventory. Therefore, an SDP Phase 2 analysis was required.

A Phase 2 analysis was performed by the regional Senior Reactor Analyst. Standby injection along with operator error contributed significantly to shutdown risk. Provided that a standby injection capability was available, operators are afforded the time necessary for recovery actions such as leak path termination and residual heat removal

recovery. For this event, the loss of reactor coolant system inventory was terminated when operators closed the PORV. Even if operators failed to close the valve, the loss of additional inventory above 250 gallons would have been minimal since the charging system was in operation and essentially making up for the inventory being lost through the PORV. If the valve remained open and charging was secured, the inventory level would have been maintained, since the motive force for inventory removal (i.e. charging pump operation) would no longer be present. Even if the charging system had not been in operation, the only mechanism for inventory to have been lost would be if there was a decrease in temperature. However, since reactor coolant system temperature was already about 100°F, a further temperature decrease would not have been a significant factor. In addition, all standby injection sources were available and there was no possibility that residual heat removal would have been lost due to the loss of additional inventory. Based on this information, the finding screened out as Green.

Enforcement

10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances. Contrary to this requirement, testing of the reactor protection system in accordance with Work Order 24324732 on September 22, 2004, an activity affecting quality, did not have guidance appropriate to the circumstances. Specifically, the work order steps resulted in completing the necessary logic to generate an open signal to power operated relief valve 1042B from the reactor protection system. Consequently, the valve opened while the primary coolant system was in a water solid condition which resulted in a rapid depressurization from 250 psia to atmospheric pressure.

However, because this violation was associated with a finding of very low safety significance and because the finding was entered into the licensee's corrective action program, this violation is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000255/2004010-01)**. This issue was entered into the licensee's corrective action program as CAP043789.

Corrective actions included revising the work order to properly complete the testing activities. Also, an engineering evaluation was completed to determine if the inadvertent opening of power operated relief valve 1042B had any adverse impact on plant equipment. The evaluation concluded that: (1) primary coolant system cooldown limits were not exceeded; (2) the two primary coolant pumps that were operating during the event were not adversely impacted; (3) the flow of water through power operated relief valve 1042B was bounded by normal operating piping loads; and (4) the quench tank rupture disc was not challenged.

.2 Emergent Derate Due to Main Feedwater Pump Seal Failure

a. Inspection Scope

On July 6, 2004, the inspectors observed control room operating crew response to the failure of the outboard seal on main feedwater pump 1B. Plant power was reduced and

main feedwater pump 1B was secured. The inspectors verified that the control room appropriately implemented necessary actions in accordance with General Operating Procedure-8, "Power Reduction and Plant Shutdown to Mode 2 or Mode 3 $ 525EF".

b. Findings

No findings of significance were identified.

.3 Implementation of 1.4 Percent Power Uprate

a. Inspection Scope

On June 23, 2004, the NRC issued an amendment to the operating license for Palisades which raised licensed power level from 2530 Megawatts thermal to 2565.4 Megawatts thermal. On August 6, 2004, the inspectors observed the pre-evolution briefing that was provided to the control room operators by engineering personnel prior to implementing a portion of the power uprate. After the software changes for the power uprate were installed, the inspectors verified that indicated power on the plant computer was as expected. The inspectors also verified that plant equipment was monitored in accordance with the described plan in the work instruction during the subsequent power increase to the amended power level.

b. Findings

No findings of significance were identified.

.4 Operator Response to Condensate Pump P-2B Motor Fire

a. Inspection Scope

On August 31, 2004, the reactor was manually tripped due to a fire on the motor of nonsafety-related condensate pump 2B. The inspectors observed control room operator response to the fire and observed trip recovery activities to verify that Emergency Operating Procedures were implemented appropriately.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed post maintenance testing for the following five activities:

- planned maintenance on August 2nd for emergency diesel generator 1-2;
- emergent control rod drive seal replacement on August 16th for control rods 19 and 29;
- planned maintenance on August 20th for emergency diesel generator 1-1;

- emergent work on August 28th for component cooling water pump P-52A; and
- planned maintenance on September 14-16 for component cooling water pump P-52B.

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

The inspectors also reviewed post maintenance testing criteria to verify that the test criteria and acceptance criteria were appropriate for the scope of work performed; reviewed completed tests and associated procedures to verify that the tests adequately verified system operability; and reviewed documented test data to verify that the data was complete and that the equipment met the prescribed acceptance criteria.

Further, the inspectors reviewed condition reports to verify that post maintenance testing problems were entered into the corrective action program with the appropriate significance characterization. For select condition reports, the inspectors verified that the corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

.1 Maintenance Outage to Repair Control Rod Drive Seals

a. Inspection Scope

During the maintenance outage from August 10 through 17, 2004, to repair two control rod drive seals, the inspectors observed portions of the plant shutdown activities in the control room to verify that plant procedures were utilized appropriately; conducted a containment tour immediately after the plant was in Mode 3, Hot Shutdown, to verify that there was not any evidence of any previously unidentified primary coolant system leakage that adversely impacted other systems, structures, or components; reviewed documentation to verify that appropriate Mode Change Checklists were completed prior to changing plant modes during plant startup; reviewed primary coolant system temperature data on the plant computer and randomly monitored activities in the control room to verify that Technical Specifications cooldown rate and heatup rate limits were adhered to; toured containment prior to reactor startup to verify that no material was left in containment that could adversely impact containment sump design attributes and to verify that there was not any evidence of leaks in the vicinity of the control rod drives that were repaired; observed portions of reactor startup activities in the control room to verify that reactivity manipulations were completed in accordance with plant procedures; and, observed portions of the activities to synchronize the main turbine generator to the grid to verify that plant procedures were implemented appropriately.

In addition, the inspectors reviewed condition reports to verify that problems associated with outage activities were entered into the corrective action program with the appropriate significance characterization. For a select number of condition reports, the inspectors verified that appropriate corrective actions were implemented in a timely manner commensurate with the significance of the issue.

b. Findings

No findings of significance were identified.

.2 Forced Outage Following Fire in Nonsafety-Related Condensate Pump Motor

a. Inspection Scope

A forced outage occurred from August 31 to September 1, 2004, after control room operators manually tripped the plant due to a fire in a nonsafety-related condensate pump motor. The inspectors observed the control room operators respond to the manual trip to verify that Emergency Operating Procedures were adhered to; performed control panel walkdowns to verify that plant equipment operated as designed and that system parameters were stable; reviewed actions taken by the fire brigade to verify that the response to the fire was appropriate and timely; observed portions of reactor startup activities in the control room to verify that reactivity manipulations were completed in accordance with plant procedures; and reviewed documentation to verify that appropriate Mode Change Checklists were completed prior to changing plant modes during plant startup.

In addition, the inspectors reviewed condition reports to verify that problems identified during the outage were entered into the corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

.3 Scheduled Refueling Outage

a. Inspection Scope

The following inspection activities were related to a planned refueling outage that was commenced during the inspection period, but was still in progress at the end of the inspection period. As a result, an inspection sample for these outage activities will not be considered to have occurred (i.e. counted) during this inspection period since the refueling outage had not yet been completed.

Review of Outage Plan and Monitoring Of Shutdown Activities

Prior to the scheduled refueling outage that commenced on September 19th, the inspectors reviewed the results from the Probabilistic Safety Assessment Group's review of the 2004 refueling outage schedule. During the outage, the inspectors reviewed

various 3-day look ahead risk assessments. The assessments were conducted to verify that plant equipment required by General Operating Procedure (GOP) 14, "Shutdown Cooling Operations," was not adversely impacted by the scheduled activities and that plant risk was appropriately considered and minimized during the scheduled outage activities. The inspectors also reviewed the licensee's responses to Generic Letter (GL) 88-17, "Loss of Decay Heat Removal," and plant procedures to verify that previous commitments were in place and adequately addressed the recommendations referenced in GL 88-17.

The inspectors observed portions of new fuel receipt activities to verify that the new fuel bundles were being adequately tracked. The inspectors verified that the new fuel bundles depicted on the tracking status board matched the spent fuel pool location and orientation as documented in Engineering Manual 04-29, Attachment 1, "Fuel Move Sheet." The inspectors also observed portions of the plant shutdown and subsequent cooldown at the start of the refueling outage to verify that the evolutions were completed in accordance with plant procedures. The inspectors reviewed primary coolant system temperature data on the plant computer and monitored activities in the control room to verify that Technical Specifications cooldown rate limits were adhered to. Further, the inspectors reviewed condition reports to verify that identified problems were entered into the licensee's corrective action program with the appropriate significance characterization.

Licensee Control of Outage Activities

The inspectors assessed the following aspects of the licensee's outage activities:

- Equipment Configuration Management: The inspectors verified that equipment designated in GOP-14, "Shutdown Cooling Operations," was maintained available as required to minimize plant risk and that control room operators were kept informed of plant configuration changes;

- Review of Outage Activities: The inspectors reviewed selected risk significant activities, such as mid-loop operations, to verify that appropriate controls were in place to minimize plant risk as specified in the 3-day look ahead risk assessments;

- Reactor Coolant System Temperature and Level Instrumentation: The inspectors verified that reactor coolant system temperature, level and pressure indication were available and being used to accurately monitor plant conditions;

- Electrical Power Availability: The inspectors verified that the configuration of the electrical system was maintained to ensure that Technical Specifications requirements were met and that equipment necessary to minimize plant risk as designated in GOP-14, "Shutdown Cooling Operations," remained available;

- Decay Heat Removal System Monitoring: The inspectors monitored Shutdown Cooling System parameters to verify the system was operating properly;

- Reactor Coolant System Inventory Control: The inspectors verified that plant equipment needed for primary coolant system inventory control was appropriately maintained available in accordance with GOP-14, "Shutdown Cooling Operations," requirements during periods of higher risk such as during mid-loop operations;

- Reactivity Control: The inspectors verified that the licensee identified and implemented the appropriate administrative controls on potential boron dilution paths; and

- Containment Closure Capabilities: The inspectors verified that appropriate provisions were in place to close containment during periods of higher risk such as mid-loop operations and refueling activities. The inspectors also verified that containment penetrations were being controlled in accordance with Technical Specifications.

Reduced Inventory and Mid-Loop Conditions

The inspectors observed portions of control room activities when the primary coolant system was in a reduced inventory condition on September 23-25, 2004, to verify that the operators closely monitored and maintained positive control of primary coolant system level. The inspectors also conducted plant walkdowns to verify to the extent practical that plant equipment required by GOP-14, "Shutdown Cooling Operations," Attachment 14, "Reduced Inventory Checklist," was available and properly aligned to minimize plant risk. In addition, the inspectors verified that the licensee's procedures were appropriate and implemented as prescribed for the following activities:

- containment closure capability was in place for the mitigation of radioactive releases, including appropriate staging of personnel and equipment, and current lists of inoperable containment penetrations and of cables through the equipment hatch were maintained accurate;

- at least two independent, continuous indications of primary coolant system temperature and level were available; and

- at least two additional means of adding inventory to the primary coolant system were available, in addition to the residual heat removal system.

The inspectors reviewed Off-Normal Procedure 17, "Loss of Shutdown Cooling," to verify that guidance was provided to mitigate a loss of primary coolant inventory or a loss of shutdown cooling while in a reduced inventory condition. The inspectors also verified that procedural guidance existed to re-energize vital electrical busses if the primary source of electrical power was lost.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed five surveillance tests which were conducted on the following risk-significant plant equipment:

- 'B' control room ventilation system
- fire detection systems outside containment
- reactor pre-startup activities
- fuel handling area ventilation system
- main steam safety valves

The inspectors observed portions of the testing to verify that appropriate test procedures were utilized. The inspectors also reviewed the documented test data for the Technical Specifications surveillance test procedures and the associated basis documents to verify that testing acceptance criteria were satisfied.

In addition, the inspectors reviewed applicable portions of Technical Specifications, the Updated Final Safety Analysis Report, and design basis documents to verify that the surveillance tests adequately demonstrated that system components could perform required safety functions.

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

b. Findings

Introduction

The inspectors determined that a finding of very low safety significance (Green) was self-revealed when main steam safety valve RV-0709 inadvertently lifted during setpoint testing. A Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was determined to be associated with this finding.

Description

On September 14, 2004, with the plant at power, setpoint testing for main steam safety valve RV-0709 was conducted using hydraulic lift equipment supplied and operated by a vendor. In order to conduct testing, a hydraulic lift rig was attached to the valve spindle and held in place using a pre-load supplied by tightening the apparatus to the spindle. After RV-0709 tested satisfactorily following a setpoint adjustment, a final verification test was required. Before the final verification test, the lift rig required an adjustment, but could not be moved due to residual hydraulic pressure which remained from previous test steps. The residual hydraulic pressure needed to be bled off in order to make the necessary adjustments.

A potentiometer provided the means to adjust the pressure supplied by the hydraulic pump. Test personnel placed the potentiometer in manual mode so that the control valve on the discharge of the hydraulic pump could be manually cycled in order to bleed off the residual hydraulic pressure. However, after the potentiometer was placed in manual and the control valve was cycled, test personnel failed to turn off the hydraulic pump as required by vendor test equipment instructions. Consequently, hydraulic pressure at the lift rig increased and inadvertently lifted main steam safety valve RV-0709 slightly off of its closed seat causing an increase in steam demand and a minor transient. When the valve lifted, test personnel immediately turned the pump off which precluded a more significant transient.

Analysis

The inspectors determined that inadvertently lifting the main steam safety valve was a performance deficiency that warranted a significance evaluation. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because it was related to the procedure quality and human performance attributes of the Initiating Events cornerstone. Also, the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations was affected. Specifically, actions taken during testing activities increased the likelihood of opening a main steam safety valve and upsetting plant stability due to an increased steam demand while at power. The finding also affected the cross-cutting area of human performance since personnel neglected to turn off the hydraulic pump as required.

Using IMC 0609, Appendix A, "SDP Phase 1 Screening Worksheet for IE [Initiating Events], MS [Mitigating Systems], and B [Barrier Integrity] Cornerstones," the inspectors determined that Initiating Events was the only cornerstone affected. The inspectors also determined that this finding was related to the transient initiators in the column for the Initiating Events cornerstone. However, the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Consequently, the finding screened as Green and was considered to be of very low safety significance.

Enforcement

10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances and shall be accomplished in accordance with those instructions. Contrary to this requirement, the testing of main steam safety valve RV-0709, an activity affecting quality, was not accomplished in accordance with the prescribed instructions. Specifically, on September 14, 2004, test personnel failed to turn off the hydraulic pump as required by test equipment instructions before attempting to relieve residual hydraulic pressure on the test rig attached to main steam safety valve RV-0709. Consequently, the valve inadvertently lifted.

However, because this violation was associated with a finding of very low safety significance and because the finding was entered into the licensee’s corrective action

program, this violation is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy (**NCV 05000255/2004010-02**). This issue was entered into the licensee's corrective action program as CAP043516. Corrective actions included a revision to licensee procedures to include steps from the vendor test equipment instructions on securing the hydraulic pump. Also, vendor test equipment instructions were reformatted to meet licensee standards for procedures in order to conduct effective placekeeping and peer-checking.

1REP Equipment Availability, Reliability and Functional Capability (71111.EP)

.1 Quarterly Maintenance Effectiveness Reviews

a. Inspection Scope

The inspectors conducted three maintenance effectiveness reviews for the following structures, systems, and components (SSCs):

- service water traveling screens F-4B and F-4C
- diesel fire pumps P-9 and P-41
- charging pump P-55A

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

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

b. Findings

No findings of significance were identified.

.2 Operability Evaluations

a. Inspection Scope

The inspectors reviewed five operability assessments as documented in the associated corrective action program (CAP) document for the following risk-significant plant equipment:

- 2400 Volt breaker 152-204 for service water pump P-7A;
- nitrogen station 3B;
- emergency diesel generator 1-2;
- reactor pressure vessel; and
- main steam isolation valve CV-0501.

The inspectors interviewed the cognizant engineers and reviewed the supporting documents to assess the adequacy of the operability assessments for the current plant mode or past operability as applicable. The inspectors also reviewed the applicable sections of the Technical Specifications, Updated Final Safety Analysis Report, and design basis documents to verify that the operability assessments were technically adequate and that the components remained available, such that no unrecognized increase in plant risk had occurred.

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

b. Findings

No findings of significance were identified.

.3 Temporary Plant Modifications

.a Inspection Scope

The inspectors reviewed one temporary modification which relocated the power cable to core exit thermocouple 36. The inspectors reviewed the 10 CFR 50.59 safety evaluation to verify that the temporary modification would not adversely impact other safety-related equipment. To the extent possible, the inspectors also verified that the temporary modification was installed as designed.

b. Findings

No findings of significance were identified.

1EP6 Emergency Preparedness Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed portions of activities in the plant simulator, Technical Support Center, Operations Support Center and the Emergency Offsite Facility during an emergency preparedness drill conducted on July 21, 2004. The inspectors verified that the emergency classifications, notifications to offsite agencies, and protective action recommendations were completed in an accurate and timely manner as required by the emergency plan implementing procedures. The inspectors also verified that the drill was conducted in accordance with the prescribed sequence of events and that the drill objectives were met.

The inspectors observed the post-drill critique in the Technical Support Center to verify that licensee personnel and licensee drill evaluators adequately self-identified drill performance problems. The inspectors also reviewed the post-drill critique report to verify that the data regarding the indicator for drill and exercise performance was accurate. Condition reports generated for identified drill performance problems were reviewed to verify that the problems were entered into the corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

### Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Control to Radiologically Significant Areas (71121.01)

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

a. Inspection Scope

The inspectors reviewed the licensee's reporting of occupational exposure control cornerstone performance indicator (PI) occurrences to determine whether or not the conditions surrounding the PI occurrences had been evaluated and identified problems had been entered into the corrective action program for resolution. For the time period of the 3rd Quarter 2003 to the 2nd Quarter 2004, the licensee did not identify any occupational exposure control PI occurrences.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, Licensee Event Reports, and Special Reports (as available) related to the access control program to verify that identified problems were entered into the corrective action program for resolution.

The inspectors reviewed several corrective action reports related to access controls and high radiation area radiological incidents, as available. Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were 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;
- identification and implementation of effective corrective actions;
- resolution of Non-Cited Violations (NCVs) tracked in the corrective action system; and
- implementation/consideration of risk significant operational experience feedback.

The inspectors evaluated the licensee's process for problem identification, characterization, and prioritization and verified that problems were entered into the corrective action program and resolved. For repetitive deficiencies and/or significant individual deficiencies in problem identification and resolution, the inspectors reviewed the licensee's self-assessment activities to verify they were capable of identifying and addressing these deficiencies.

As discussed in Section 2OS1.1, for the time period of the 3rd Quarter 2003 to the 2nd Quarter 2004, the licensee did not identify any occupational exposure control PI occurrences. As such, the inspectors were unable to review licensee documentation packages for PI events to determine which barriers failed and if any unintended exposures constituted regulatory overexposures or substantial potential for overexposures.

These reviews represented four inspection samples.

b. Findings

No findings of significance were identified.

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

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed plant collective exposure history, current exposure trends, and ongoing and planned activities in order to assess current performance and exposure

challenges. This included determining the plant's current 3-year rolling average for collective exposure in order to help establish resource allocations and to provide a perspective of significance for any resulting inspection finding assessment. The station's current (2001 - 2003) 3-year rolling average for collective exposure was determined to be 197 person-rem per unit.

The inspectors also reviewed with the radiation protection staff the work planning activities for the upcoming fall 2004 refueling outage (and associated preliminary work activity exposure estimates). In particular, the inspectors evaluated the licensee's planning for the reactor head inspection and pressurizer inspection work activities which were anticipated to result in some of the highest personnel collective exposures during the outage.

Additionally, the inspectors evaluated site-specific trends in collective exposures and source-term measurements.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.2 Source-Term Reduction and Control

a. Inspection Scope

The inspectors reviewed licensee records to determine the historical trends and current status of tracked plant source terms and to determine if the licensee was making allowances and had developed contingency plans for potential changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry. In particular, the inspectors reviewed the station's 2004 Dose Reduction Plan, which included actions to evaluate and reduce station source term.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Declared Pregnant Workers

a. Inspection Scope

The inspectors reviewed dose records and the licensee's exposure tracking processes for declared pregnant workers in the current assessment period (as available) to verify that the exposure results and monitoring controls employed by the licensee were in compliance with the requirements of 10 CFR 20.1208.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

.1 Self-Contained Breathing Apparatus (SCBA) Maintenance and User Training

a. Inspection Scope

The inspectors reviewed the status and surveillance records of SCBAs staged and ready for use in the plant and evaluated the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center (OSC) during emergency conditions. The inspectors determined if control room operators and other emergency response and radiation protection personnel were trained and qualified in the use of SCBAs (including personal bottle change-out). Specifically, the inspectors reviewed current SCBA/respiratory protection qualification matrices for the Operations, Security, Maintenance, and Chemistry and Radiation Protection Departments to verify that sufficient numbers of individuals required to respond to the control room and the OSC during emergency conditions (as defined by the station's Emergency Plan and procedures) were qualified to use SCBAs.

As the licensee does not itself conduct maintenance of vital components of SCBA units, the inspectors reviewed licensee and vendor maintenance procedures, including those for the low-pressure alarm and pressure-demand air regulator, and the SCBA manufacturer's recommended practices to determine if there were inconsistencies between them. The inspectors also reviewed the vital component maintenance records over the past 5 years for four SCBA units currently designated as "ready for service"; RPO-7, CRVG-25, OCR-50, and T590-13. The inspectors also ensured that the required, periodic air cylinder hydrostatic testing was documented and up to date and that the Department of Transportation-required retest air cylinder markings were in place for these four units.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

.1 Reactor Safety Performance Indicators

a. Inspection Scope

The inspectors used the definitions and guidance contained in Revision 2 of Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify the accuracy of the data submitted for the following two performance indicators (PIs):

- Primary Coolant System Leak Rate
- Auxiliary Feedwater System Unavailability

The inspectors reviewed the data submitted by licensee personnel for Primary Coolant System Leakrate and for Auxiliary Feedwater System Unavailability dated July 2003 through July 2004 to verify that the performance indicators were reported accurately.

b. Findings

No findings of significance were identified.

.2 Radiation Protection Strategic Area

a. Inspection Scope

The inspectors sampled the licensee's submittals for the performance indicator and period listed below. The inspectors used PI definitions and guidance contained in Revision 2 of NEI 99-02 to verify the accuracy of the PI data. The following PI was reviewed:

- Occupational Exposure Control Effectiveness

Since no reportable events were identified by the licensee for the 3rd quarter of calendar year 2003 through the 2nd quarter of calendar year 2004, the inspectors compared the licensee's data with the corrective action program database and the radiological controlled area exit electronic dosimetry transaction records for these time periods, to verify that there were no unaccounted for occurrences in the Occupational Radiation Safety PI. Additionally, the inspectors conducted walkdowns of accessible locked high radiation areas and very high radiation area entrances to verify the adequacy of controls in place for these areas.

b Findings

No findings of significance were identified

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4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that condition reports were being generated and entered into the corrective action program with the

appropriate significance characterization. For select condition reports, the inspectors also verified that identified corrective actions were appropriate and had been implemented or were scheduled to be implemented in a timely manner commensurate with the significance of the identified problem.

b. Findings

No findings of significance were identified.

.2 Selected Issue Follow-up Inspection

a. Inspection Scope

The inspectors reviewed the following two evaluations:

- Root Cause Evaluation RCE000344, "Fire Pump P-9B Diesel Driver K-5 Lubricating Oil Viscosity Degradation"; and
- Apparent Cause Evaluation ACE003341, “Smoke Coming From P-66B, HPSI (High Pressure Safety Injection) Pump, During Test”

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

b. Findings

Introduction

The inspectors determined that a finding of very low safety significance (Green) was self-revealed when the auxiliary packing on high pressure safety injection pump P-66B failed on June 3, 2004, during a quarterly surveillance test. A Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was associated with this finding.

Description

On June 3, 2004, during a quarterly surveillance test, auxiliary operators observed smoke coming from the inboard auxiliary packing area on high pressure safety injection pump P-66B immediately after the pump was started. The pump was subsequently secured and the operators identified through visual inspections that the inboard auxiliary packing had failed.

Subsequent inspections by licensee personnel identified that the failed inboard auxiliary packing was compressed considerably more than the outboard auxiliary packing. Also, site personnel observed that the packing gland follower was not compressed evenly around the circumference of the packing gland. The inspectors noted that in

March 2004, the auxiliary packing was replaced using maintenance procedure ESS-M-7, "High Pressure Safety Injection Pump Maintenance." The maintenance procedure directed the auxiliary packing gland stud nuts to be tightened "hand tight" but did not contain any specific torque values.

The licensee's apparent cause evaluation determined that the procedure provided inadequate guidance on the installation of the auxiliary packing. Consequently, the packing gland stud nuts were over-tightened which compressed the auxiliary packing excessively and unevenly which caused the packing to fail during testing. The auxiliary packing failure did not, in of itself, cause high pressure safety injection pump P-66B to be inoperable since the auxiliary packing was a backup to the mechanical seal. However, high pressure safety injection pump P-66B was required to be taken out of service to replace the auxiliary packing only 3 months after the packing had been previously replaced.

Analysis

The inspectors determined that the improper installation and consequential failure of the auxiliary packing on high pressure safety injection pump P-66B was a performance deficiency that warranted a significance evaluation. The inspectors determined that the finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," because it was related to the procedure quality attribute of the Mitigating Systems cornerstone. Also, the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences was affected since the high pressure safety injection pump had to be removed from service to replace packing only 3 months after it had been replaced previously.

Using IMC 0609, Appendix A, "SDP Phase 1 Screening Worksheet for IE [Initiating Events], MS [Mitigating Systems], and B [Barrier Integrity] Cornerstones," the inspectors determined that Mitigating Systems was the only cornerstone affected. Using the Mitigating Systems column on the Phase 1 SDP worksheet, the inspectors determined that the finding was (1) not a design or qualification deficiency that had been confirmed to result in a loss of function per GL 91-18; (2) did not represent an actual loss of a safety function; and (3) did not screen as potentially risk significant due to a seismic, flooding, or severe weather event. Therefore, the finding screened as Green and was considered to be of very low safety significance.

Enforcement

10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances. Contrary to this requirement, replacing auxiliary packing on high pressure safety injection pump P-66B in March 2004, an activity affecting quality, did not have guidance appropriate to the circumstances. Specifically, procedure ESS-M-7, "High Pressure Safety Injection Pump Maintenance," did not provide specific torque values for the packing gland stud nuts. Consequently, the packing gland stud nuts were over-tightened which excessively compressed the

auxiliary packing and caused the packing to fail only 3 months after it had been replaced.

However, because this violation was associated with a finding of very low safety significance and because the finding was entered into the licensee's corrective action program, this violation is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy (**NCV 05000255/2004010-03**). This issue was entered into the licensee's corrective action program as CAP041835. Corrective actions included a revision to maintenance procedure ESS-M-7 to provide additional guidance on how to install the auxiliary packing in order to preclude excessive compression of the packing. Also, the auxiliary packing was replaced and high pressure safety injection pump P-66B was declared operable on June 4, 2004.

4OA3 Event Follow-up (71153)

a. Inspection Scope

The inspectors responded to the control room following a plant trip on August 31, 2004, and observed control room operator actions to verify that Emergency Operating Procedures were implemented appropriately. The inspectors also verified that safety systems responded as designed during the plant trip and that licensee personnel reported the trip to the NRC in a timely manner as required by 10 CFR 50.72, "Immediate Notification Requirements For Operating Nuclear Power Reactors." The inspectors also reviewed the event notification worksheet that licensee personnel completed for the report to verify that the reasons for the trip and the actuation of safety-related equipment following the trip were accurately described.

b. Findings

No findings of significance were identified.

4OA4 Cross Cutting Aspects of Findings

.1 A finding described in Section 1R14.1 of this report had, as its primary cause, a human performance deficiency, in that, maintenance personnel revised an existing work order to complete testing activities associated with the reactor protection system without notifying operations personnel that changes were needed which was not in accordance with plant administrative procedure guidance. Consequently, the potential impact of the changes on existing plant conditions was not recognized and power operated relief valve 1042B inadvertently lifted while the plant was in a water solid condition.

.2 A finding described in Section 1R22 of this report had, as its primary cause, a human performance deficiency, in that, test personnel failed to turn the hydraulic pump to off per the test instructions prior to attempting to relieve residual hydraulic pressure on the test rig. Consequently, main steam safety valve RV-0709 inadvertently lifted.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. P. Harden and other members of licensee management on October 1, 2004. Licensee personnel acknowledged the findings presented. The inspectors asked licensee personnel whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Occupational Radiation Safety - radiological instrumentation and access control programs inspection with Mr. D. Malone on July 16, 2004.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee
D. Malone, Site Vice President
P. Harden, Site Director
J. Beer, Technical Supervisor, Chemistry and Radiation Protection
M. Carlson, Engineering Director
W. Doolittle, Supervisor/Shipper, Chemistry and Radiation Protection
J. Hagar, Industrial Hygiene Specialist, Chemistry and Radiation Protection
G. Hettel, Plant Manager
L. Lahti, Licensing Manager
R. Margol, Chemistry/Environmental Supervisor, Chemistry and Radiation Protection
D. VandeWalle, Acting Operations Manager
D. Williams, Chemistry and Radiation Safety Manager

Nuclear Regulatory Commission
J. Stang, Project Manager, NRR
S. Burgess, Senior Reactor Analyst, RIII

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|---|---|---|
| 05000255/2004010-01 | NCV | Inadvertent Opening of Pressurizer Power Operated Relief Valve 1042B |
| 05000255/2004010-02 | NCV | Inadvertent Lift of Main Steam Safety Valve RV-0709 |
| 05000255/2004010-03 | NCV | Failure of Auxiliary Packing on High Pressure Safety Injection Pump P-66B |

Closed

| | | |
|---|---|---|
| 05000255/2004010-01 | NCV | Inadvertent Opening of Pressurizer Power Operated Relief Valve 1042B |
| 05000255/2004010-02 | NCV | Inadvertent Lift of Main Steam Safety Valve RV-0709 |
| 05000255/2004010-03 | NCV | Failure of Auxiliary Packing on High Pressure Safety Injection Pump P-66B |

Discussed

None

## LIST OF DOCUMENTS REVIEWED

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

1R04 Equipment Alignment

Plant Procedures and Miscellaneous Documents

M-213; Piping and Instrumentation Diagram for Service Water, Screen Structure and Chlorinator; Revision 84
M-204 sheet A; System Diagram for Safety Injection, Containment Spray, Shutdown Cooling Systems; Revision 6
M-204, sheet 1; Piping and Instrumentation Diagram for Safety Injection, Containment Spray and Shutdown Cooling Systems; Revision 76
M-203, sheet 2; Piping and Instrumentation Diagram for Safety Injection, Containment Spray and Shutdown Cooling Systems; Revision 22
SOP-4, Attachment 1; Test Start Containment Spray Pump P-54A; Revision 22
DBD-1.08; Ultimate Heat Sink; Revision 4
SOP-12; Feedwater System; Revision 44
SOP-30, Attachment 6; Station Power System Checklist; Revision 41
SOP-3, Attachment 12; Containment Integrity Checklist CL 3.3; Revision 58

Condition Reports Reviewed to Assess Corrective Actions

CAP039184; P-8B Auxiliary Feedwater Pump Maintenance Effect on P-8A
CAP039763; OE 17584 - (Fermi) Corrosion on Underwater Service Water Pump Bolts

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP043437; Checklist 3.3 Discrepancies

1R05 Fire Protection

Plant Procedures

ONP25.1; Off-Normal Procedure - Fire Which Threatens Safety-Related Equipment Fire Areas 10; Revision 4
FPSP-RP-11; Fire Barrier Penetration Seal/Conduit Seal Inspection Form for Fire Areas 3, 6, 10; Revision 5
FPSP-RO-9; Fire Sprinkler System Inspection; Revision 0
FPSP-SI-1; Data Sheet for Alarm Bells and Ionization Smoke Detectors for Fire Areas 10; Revision 4

FPSP-SO-2; Inspection and Testing of Palisades Plant Fire Doors Fire Areas 10; Revision 1
FPSP-WP-1; Safety-Related Fire Door Data Sheet Fire Areas 6, 10; Revision 2

Miscellaneous Documents

EA-PSSA-00-001; Palisades Plant Post Fire Safe Shutdown Summary Report; Revision 2
Fire Hazards Analysis Report; Revision 5

Condition Reports to Assess Significance Characterization and Corrective Actions

CAP043195, Combustibles Brought Into Containment Without Transient Material Variance Requests

1R11 Licensed Operator Requalification

Simulator Exercise Guide PL-LOR-04C-003S; Loss of Refueling Water; Revision 1
Off Normal Procedure 23.3; Loss of Refueling Water Accident; Revision 5
Off Normal Procedure 7.1; Loss of Instrument Air; Revision 13
General Operating Procedure 14; Shutdown Cooling Operations; Revision 20

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

Operator's Risk Reports; August 2-4; August 20; August 27-28; August 30-31; September 8; and September 13-16, 2004
Daily Maintenance Work Schedules; August 2-4; August 20; August 27-28; August 30-31; September 8; and September 13-16, 2004
Operations Log entries; August 2-4; August 20; August 27-28; August 30-31; September 8; and September 13-16, 2004

Miscellaneous Documents

SOP-19, Attachment 2; Nitrogen/Air Backup Stations; Revision 36

Condition Reports Reviewed to Assess Significance Characterization for Identified Problems

CAP043271; EOOS Does Not Reflect the Impact of Loss of All CCW on HPSI Pump Subcooling
CAP043361; NOS Finding: Management Made an Operational Decision With Faulted Information

1R14 Operator Performance During Non-Routine Evolutions and Events

Miscellaneous Documents

GOP-8; Power Reduction and Plant Shutdown to Mode 2 or Mode 3 $ 525EF; Revision 19
EOP-2; Reactor Trip Recovery; Revision 12

ONP-18; Pressurizer Pressure Control Malfunctions; Revision 16
Administrative Procedure 5.0; Maintenance Organization, Responsibilities and Conduct of Maintenance; Revision 16
Work Order 24324732; Reactor Protection System A TM/LP Bistable Trip Unit

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP043294; Reactor Trip Due to Fire on P-2B Condensate Pump
CAP042365; Main Feedwater Pump P-1B Outboard Seal Failure
CAP042352; P-1B Main Feed Pump Outboard Pump Seal Degraded
CAP043789; ONP-18 Entry Due to Left Train LTOP Pilot Operated Relief PRV-1042B Opening
CAP043790; Operation of Primary Coolant Pumps P-50B and P-50D Below Minimum Pressure
CAP043791; Pilot Operated Relief Valve PRV-1042B Failed Open

1R19 Post Maintenance Testing

Work Orders

24421927; Emergency Diesel Generator 1-2; August 2, 2004
24421505; Diesel Generator 1-2 Control Pressure Switch PS-1494; August 2, 2004
24421049; Diesel Generator 1-2 Control Pressure Switch PS-1493; August 2, 2004
24420931; PS-1481 Setpoint For Alarm is Too Low, Change Setpoint; August 20, 2004
24421926; Replace Emergency Diesel Generator Fuel Pump Linkage Bolts/Locknuts (18)
24422331; Component Cooling Water Pump P-52A Motor; August 28, 2004
24213101; Component Cooling Water Pump P-52B; September 16, 2004
24213102; Component Cooling Water Pump P-52B; September 16, 2004
24421085; Component Cooling Water Pump P-52B; September 16, 2004
24322924; Pre-Calibration of Differential Pressure Detector-0918A, B, C

Plant Procedures

MO-7A-2; Emergency Diesel Generator 1-2; Revision 57
RO-22; Control Rod Drop Times; Revision 17
MO-7A-1; Emergency Diesel Generator 1-1; Revision 60
QO-15; Inservice Test Procedure - Component Cooling Water Pumps; Revision 20

Condition Reports Reviewed to Assess Corrective Actions

CAP043227; Component Cooling Water P-52A Secured Due to Failure of the Outboard Motor Bearing
CAP043573; Maintenance PMT Could Not Be Performed As Written

1R20 Refueling and Outage Activities

Plant Procedures

SOP-1B; Primary Coolant System Cooldown; Revision 0
GOP-14; Shutdown Cooling Operations; Revision 21
SOP-3; Safety Injection and Shutdown Cooling System; Revision 58
GOP-9; Mode 3 $ 525EF to Mode 4 or Mode 5; Revision 23
GOP-3; Mode 3 $ 525°F to Mode 2; Revision 18
GOP-4; Mode 2 to Mode 1; Revision 15
SOP-1C; Primary Coolant System Heatup; Revision 0
EM-04-29, Attachment 1; Fuel Move Sheet; Revision 1
PO-2; PCS Heatup and Cooldown Operations; Revision 0
ONP-17; Loss of Shutdown Cooling; Revision 32

Condition Reports Reviewed to Assess Significance Characterization and Corrective Actions

CAP042937; Foreign Material Found Inside of Containment
CAP042964; Loss of Control of Items Taken Into Containment for CRD Work
CAP042998; Inconsistent Completion of FME Accountability Logs
CAP042955; Engineering Walk Down Results form August 8th
CAP042916; Dry Boric Acid Found on MV-ES-3003 T-82D SIT Fill and Drain Isolation
CAP042911; Dry Boric Acid on Floor Under MV-PC-1175 Pressurizer Spray Valve
CAP042912; Dry Boric Acid on MV-PC-1095B Reactor Head Flange Leak Isolation
CAP042913; Dry Boric Acid Found on MO-3049 T-82C Safety Injection Tank MOV
CAP042914; Loose Materials Found During Mode 3 Walkdown
CAP043783; Movement of Schedule Activities Results in Near Miss to GOP-14 Violation
CAP043111; Refueling Outage Shutdown Safety Review

Miscellaneous Documents

EOOS Review of REFOUT Schedule for GOP 14 Compliance

1R22 Surveillance Testing

Completed Surveillance Test Procedures

RT-85D; Control Room Emergency Ventilation Filtration Testing; Revision 8
PO-1; Operations Pre-Startup Tests; Revision 10
FPSP-SI-1; Functional Test of Fire Detection Systems Outside Containment; Revision 4
RT-85C; Fuel Handling Area Ventilation System Filter Testing; Revision 7
RM-29; Main Steam Safety Valve Setpoint Testing; Revision19

Miscellaneous Documents

Regulatory Guide 1.52; Design, Inspection and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident ESF Atmosphere Cleanup System in Light-Water-Cooled Nuclear Power Plants; Revision 3

Condition Reports Reviewed to Assess Corrective Actions

CAP033911; Downstream HEPA Filter Not Tested in RT-85D for Control Room Ventilation Filter

CAP033910; Incorrect Interpretation in RT-85C and RT-85D Basis Document
CAP033908; RT-85D Improvement Needed to Check Required Flow Rates
CAP033907; Incomplete Set of Visual Inspections Prescribed by RT-85D and RT-85C on HVAC
CAP042832; Procedure RM-29 Will Not be Issued in Time to Meet T-6 Milestone

Condition Reports Reviewed to Assess Significance Characterization of Corrective Actions

CAP043433; Aborted RT-85C Due to Malfunction of Test Equipment
CAP043460; Leakage Past Charcoal Filter VF-66 in Excess of Technical Specification Surveillance Test RT-85C Allowable Limit
CAP043516; During In-Place Testing, RV-0709 'B' Steam Generator Code Safety was Inadvertently Lifted

1REP Equipment Availability, Reliability and Functional Capability

Maintenance Effectiveness

Plant Procedures

Engineering Manual (EM) 25; Maintenance Rule Program

Miscellaneous Documents

Maintenance Rule Scoping Document and Maintenance Rule Performance Indicators for Ultimate Heat Sink, Service Water Traveling Screens and Diesel Fire Pumps

Work Orders

WO24421038; Service Water Traveling Screen F-4C

Condition Reports Reviewed to Assess Maintenance Rule Evaluations and Corrective Actions

CAP041689; Maintenance Rule Goal Setting For Traveling Screens F-4B and F-4C
CAP039952; F-4B Has a Broken Shear Pin in the Drive Sprocket
CAP040824; Traveling Screen F-4B Shear Pin Found Broken
CAP038846; Grinding Noise From Traveling Screen F-4C
RCE000345; Unexpected EK-0737 Charging Pumps Seal Cooling Low Pressure Alarm Repack Under WO24420387
CAP039955; Fire Pump P-9B Diesel Driver K-5 Lubricating Oil Viscosity Degradation
CAP032600; Fire Protection System Exceeds Maintenance Rule Reliability Performance Criteria
CAP039778; Adverse Trend in Fire Protection System Maintenance Rule Performance Indicators

CAP042999; Smell of Fuel Oil in Lube Oil Reservoir in P-9B, Diesel Driven Fire Pump
CAP039069; Lube Oil for P-9B Fire Pump has a Strong Fuel Oil Odor Present

Operability Evaluations

Condition Reports Associated with Operability Determinations

CAP042185; Crack Identified on X-Phase Current Transformer Casing in 152-204 (P-7A) Cubicle
CAP040862; PCV-2277 (CV-0824/3070 Low Pressure Back-up Nitrogen Station 3B) Setpoint Low Out of Range
CAP024603; Diesel Generator 1-2 Fuel Injector Pump for Cylinder 8R Non-Functional
CAP043309; CV-0501 Main Steam Isolation Valve for "B" Steam Generator Would Not Fully Close
CAP042982; PCS Heatup Rate Exceeded Technical Specification Limits

Plant Procedures

SOP-19; Attachment 2, Nitrogen/Air Back-up Stations; Revision 36
SOP-19; Attachment 3, To Verify Nitrogen Back-up Regulator Setting; Revision 36
RI-17; Main Steam Isolation Valve Circuits Test and Valve Closure Timing; Revision 5
Technical Specification Figure 3.4.3-1; Pressure - Temperature Limits for Heatup; Amendment 189
SOP-1C; Primary Coolant System Heatup; Revision 0
SOP-3; Safety Injection and Shutdown Cooling System; Revision 58

Miscellaneous Documents

Plant computer data for primary coolant system cold legs; August 13, 2004
EA-DOR-03-01; Reactor Pressure Vessel Fluence Calculations for Cycles 14 Through 16 and an Estimate of Cycle 17; Revision 0

Temporary Plant Modifications

TM-2003-014; Relocate Incore Cable for Qualified Core Exit Thermocouple 36

1EP6 Emergency Preparedness Drill Evaluation

Plant Procedures

EI-1; Emergency Classifications and Actions; Revision 44
EI-3; Communications and Notifications; Revision 20
EI-6.0; Offsite Dose Calculations and Protective Action Recommendations; Revision 9

Miscellaneous Documents

PRACTEX2004; Exercise Scope and Objectives; July 21, 2004
PRACTEX2004; Sequence of Events; July 21, 2004

Condition Reports Reviewed to Assess Significance Characterization of Identified Problems

CAP042650; Site Emergency Plan Notification Inaccuracies

CAP042659; Not Met Emergency Exercise Objective on Protective Action Recommendations
CAP042667; EP Exercise Objective (3a) for Site Evacuation Not Met
CAP042668; Accountability During EP Evaluated Exercise
CAP042623, Individual in Protected Area Without Photo ID Badge

Condition Reports Reviewed to Assess Corrective Actions

2OS1 Access Control to Radiologically Significant Areas

CA 020799; Continued Challenge of Controlling Radioactive Material Outside the RCA; dated August 18, 2003
CA 023935; Evaluation of Palisades Locked High Radiation Area Physical Barriers; dated April 27, 2004
CAP 034893/CE 004943; Continued Challenge of Controlling Radioactive Material Outside the RCA; dated April 4, 2003
CAP 040970; Dose Alarm and Dose Rate Alarm Recommendations from 2003 RP Self-Assessment; dated April 6, 2004
CAP 041523/RCE 000350; Personnel Contamination Incidents and Radworker Practices; dated May 14, 2004
CAP 042369; Plant Derate Posting Problem; dated July 7, 2004
CAP 042482; Contaminated Chainfall Testing Work Activity Stopped by Radiation Protection; dated July 13, 2004
FSA No. 30021; Self-assessment: Radiation Protection Programs; dated December 5, 2003
Observation Report No. 2003-003-8-032; Nuclear Oversight Observation Report; dated September 3, 2003
Observation Report No. 2003-003-8-041; Nuclear Oversight Observation Report; dated September 24, 2003
Observation Report No. 2003-004-8-037; Nuclear Oversight Observation Report; dated November 27, 2003
Observation Report No. 2003-004-8-040; Nuclear Oversight Observation Report; dated December 18, 2003
Observation Report No. 2004-001-8-012; Nuclear Oversight Observation Report; dated January 30, 2004
Observation Report No. 2004-001-8-034; Nuclear Oversight Observation Report; dated March 17, 2004
Observation Report No. 2004-002-8-024; Nuclear Oversight Observation Report; dated June 21, 2004

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

2004 Operational Excellence Database: Dose Reduction Plan; dated July 13, 2004
AP 7.04; Radiation Dosimetry - Section 6.2, Fetal Protection Program; Revision 20
CAP 041408; ALARA Planning and Preparation Not Effectively Integrated; dated May 6, 2004
CAP 042219; Apparent Trend in Predictability of Work Week Dose Estimates; dated June 25, 2004
EAR-2004-0055; Dose Reduction Initiative - Reactor Head Engineered Lift; dated

March 25, 2004
OTH 004912; Dose Reduction Plan Initiative - Training; dated April 1, 2004
OTH 005117; Dose Reduction Initiative - Source Term; dated June 2, 2004
OTH 005928; Dose Reduction Initiative - Construction; dated June 11, 2004
OTH 006187; Dose Reduction Initiative - Benchmark Fort Calhoun to Identify Process Improvements for ICI Removal/Re-Installation/Disposal Process; dated June 30, 2004
Palisades Channel Head Dose Rates (Spreadsheet Comparing End-of-Cycle Dose Rates from Cycle 7 Through Cycle 16); dated July 14, 2004
Palisades Nuclear Plant Department Dose Goal Analysis for the Period 2004/01/01 to 2004/07/12; dated July 13, 2004
REFOUT03 Shutdown Chemistry Data (spreadsheets); dated July 14, 2004
REFOUT04 RWP/ALARA Plan Matrix (spreadsheet); dated July 13, 2004
RPA 04-01-00239; Utilize PRC-01 Resin in Chemical Volume Control System During Refueling Outages; dated March 31, 2004

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

AP 1.16; Respiratory Protection Program; Revision 0
CAP 033088; Qualifications for SCBA for Radiation Protection Technicians Expired; dated January 24, 2003
CAP 033199; Incomplete SCBA Training Provided to Radiation Protection Personnel; dated January 31, 2003
CAP 034464; Provide and Maintain Corrective Lenses for Respirator Users; dated March 24, 2003
CAP 035878; Proceduralize Selection Process for Respirator Qualification; dated May 23, 2003
CAP 041381; Operating Experience (Point Beach CAP055527) Supplied Breathing Air Problems; dated May 4, 2004
CAP 042569; Self-Contained Breathing Apparatus Training Material; dated July 16, 2004 [NRC-Identified Issue]
HP 7.4; Cleaning, Storing and Maintenance of Respirators; Revision 8
HP 7.5; Self-Contained Breathing Apparatus (SCBA) SurvivAir Mark-2 Model 9842; Revision 4
HP 7.6; Inspection and Testing of SurvivAir (SCBA) Breathing Air Cylinders; Revision 4
HP 7.7; Pressurizing SCBA Cylinders; Revision 6
HP 7.11; Use of Air-Line Respirators; Revision 7
HP 7.13; Operation of the Portacount Quantitative Fit Testing Equipment (Model 8020); Revision 1
Palisades Emergency Response Organization Rosters; dated July 13, 2004
Palisades Current Respiratory Qualification Matrices (for the C&RP and Maintenance Departments, and the Fire Brigade); dated July 13, 2004
Palisades Nuclear Plant Site Emergency Plan (Sections 5 and 7); Revision 10
Report No. 03-12594; AirCheck Report: Results vs. NFPA 1500-2002 Air Quality Specification; dated September 15, 2003
Report No. 03-17529; AirCheck Report: Results vs NFPA 1500-2002 Air Quality Specification; dated December 19, 2003
SCBA Training Material from the Station Safety Manager (PowerPoint Presentations, Performance Demonstration Checklists, and Mark 2 Exam); dated July 15, 2004
SnapShot Self-Assessment Report: Self-Contained Breathing Apparatus (SCBA)

Maintenance and User Training; dated May 13, 2004
SurvivAir SCBA Maintenance Record File for CVRG-25 (including cylinder hydrostatic test data); dated through August 8, 2003
SurvivAir SCBA Maintenance Record File for OCR-50 (including cylinder hydrostatic test data); dated through August 5, 2003
SurvivAir SCBA Maintenance Record File for RPO-7 (including cylinder hydrostatic test data); dated through August 5, 2003
SurvivAir SCBA Maintenance Record File for T590-13 (including cylinder hydrostatic test data); dated through August 6, 2003

4OA1 Performance Indicator Verification

NRC Indicator Occupational Exposure Control Effectiveness (OR-01) and Supporting Data (TeamTrack Searches and Electronic Dosimetry Records); dated July - December 2003, and January - June 2004
Palisades' NRC PI Data for Auxiliary Feedwater System Unavailability for July 2003 through June 2004
DWO-1, Attachment 8; Primary Coolant System Inventory Form; July 2003 through June 2004
Palisades' NRC PI Data for Primary Coolant System Leakage for July 2003 through June 2004

Miscellaneous Documents

NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 2
Administrative Procedure 3.09, Attachment 6; NRC PI Safety System Unavailability for Auxiliary Feedwater System (MS-03); Revision 9

Condition Reports Reviewed to Assess Corrective Actions

CAP037155; Error Identified in May 2003 Auxiliary Feedwater Performance Indicators

4OA2 Identification and Resolution of Problems

Corrective Action Program Documents

RCE000344; Fire Pump P-9B Diesel Driver K-5 Lubricating Oil Viscosity Degradation
CAP041835; Smoke Coming From P-66B, HPSI Pump, During Testing
CAP032667; HPSI P-66A Declared Inoperable Due to Seal Failure

Miscellaneous Documents

ESS-M-7; High Pressure Safety Injection Pump Maintenance; Revision 17
WO24421565; High Pressure Safety Injection Pump P-66B; June 4, 2004

4OA3 Event Follow-up

Event Notification 41002; August 31, 2004
EI-1, Attachment 1; Site Emergency Plan Classification; Revision 45

## LIST OF ACRONYMS USED

| | |
|---|---|
| ALARA | As-Low-As-Is-Reasonably-Achievable |
| CAP | Corrective Action Program |
| CFR | Code of Federal Regulations |
| GL | Generic Letter |
| IMC | Inspection Manual Chapter |
| NCV | Non-Cited Violation |
| NEI | Nuclear Energy Institute |
| NRC | Nuclear Regulatory Commission |
| OSC | Operations Support Center |
| PI | Performance Indicator |
| psia | pound per square inch absolute |
| SDP | Significance Determination Process |
| SCBA | Self-Contained Breathing Apparatus |