June 1, 2001

Mr. John Paul Cowan
Senior Vice President
Palisades Nuclear Plant
Nuclear Management Company, LLC
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR GENERATING PLANT
NRC INSPECTION REPORT 50-255/01-07(DRP)

Dear Mr. Cowan:

On May 19, 2001, the NRC completed an inspection at your Palisades Nuclear Generating Plant. The enclosed report documents the inspection findings which were discussed on May 18, 2001, with you and members of your staff.

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

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green), which were determined to involve violations of NRC requirements. However, because of the very low safety significance and because the issues were entered into your corrective action program, the NRC is treating the issues as a Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny the non-cited violation, you should provide a response with the basis for your denial, within 30-days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 2055-0001; and the NRC Resident Inspector at the Palisades Nuclear Generating Plant.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

***/RA/***

Anton Vegel, Chief
Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 50-255/01-07(DRP)

cc w/encl: R. Fenech, Senior Vice President, Nuclear
Fossil and Hydro Operations
N. Haskell, Director, Licensing and Performance Assessment
R. Anderson, Chief Nuclear Officer, NMC
A. Udrys, Esquire, Consumers Energy Company
S. Wawro, Nuclear Asset Director, Consumers Energy Company
W. Rendell, Supervisor, Covert Township
Office of the Governor
Michigan Department of Environmental Quality
Department of Attorney General (MI)

DOCUMENT NAME: G:\pali\pal200107 drp.wpd

**To receive a copy of this document, indicate in the box:"C**" = Copy without enclosure "**E**"= Copy with enclosure"**N**"= No copy

| OFFICE | RIII | E | RIII | E | RIII | | | |
|---|---|---|---|---|---|---|---|---|
| NAME | Passehl/trn | | Vegel | | | | | |
| DATE | 05/31/01 | | 06/01/01 | | | | | |

***OFFICIAL RECORD COPY***

ADAMS Distribution:
CMC1
DFT
DSH
GEG
HBC
JAL3
C. Ariano (hard copy)
DRPIII
DRSIII
PLB1
JRK1

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

| | |
|---|---|
| Docket No: | 50-255 |
| License No: | DPR-20 |
| Report No: | 50-255/01-07(DRP) |
| Licensee: | Nuclear Management Company, LLC |
| Facility: | Palisades Nuclear Generating Plant |
| Location: | 27780 Blue Star Memorial Highway<br>Covert, MI 49043-9530 |
| Dates: | April 1 through May 19, 2001 |
| Inspectors: | J. Lennartz, Senior Resident Inspector<br>R. Krsek, Resident Inspector<br>B. Bartlett, Senior Resident Inspector, D. C. Cook<br>R. Walton, Reactor Engineer<br>D. Jones, Reactor Engineer<br>D. Nelson, Radiation Specialist<br>D. Chyu, Reactor Engineer |
| Approved by: | Anton Vegel, Chief<br>Branch 6<br>Division of Reactor Projects |

## SUMMARY OF FINDINGS

IR 05000255-01-07 on 04/01 - 05/19/2001, Consumers Energy Company, Palisades Nuclear Generating Plant. Refueling and Outage Activities, and Surveillance Testing.

This report covers a 6-week routine inspection, a baseline inservice activities inspection, and a baseline radiation protection inspection. The inspection was conducted by resident and specialist inspectors. Two Green findings were identified. The findings involved Non-Cited violations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html. Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violations.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the failure to construct and maintain the containment sump screen system in accordance with the original design and design basis. Gaps were identified between the sump screen frame and ceiling, which could have allowed particles, greater in size than that allowed by the original design of the sump screen system, to bypass the screens into the suction of the emergency core cooling system, following a recirculation actuation signal.

  The finding was determined to be of very low safety significance (Green) by the significance determination process. Although the as-found condition of the sump screen system could have credibly affected the operability, availability or function of components in mitigating systems, the amount of water and potentially debris which could bypass the screens through the identified gaps would be minimal. (Section 1R20.6)

- Green. The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Procedures," for the failure to have a procedure appropriate to the circumstances. Technical Specification Surveillance Procedure QO-38, "Containment Sump Check Valves Inservice Test" did not direct the operators to set the torque wrench display to read the peak value attained when measuring valve break away forces. Also, Procedure QO-38 did not clearly prescribe that the stroke test should be continued if the maximum acceptance criteria for required break away force was approached.

This issue was determined to be of very low safety significance (Green). The inappropriate procedure had a credible impact on safety in that the testing method prescribed and implemented resulted in obtaining inaccurate as-found break away forces required to open the valves. Consequently, the containment sump check valves ability to satisfy the surveillance test acceptance criteria and perform their safety function was questionable. However, this issue did not result in an actual loss of the safety function for the containment sump check valves. (Section 1RO22.2)

B. Licensee Identified Violations

Violations of very low significance which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee appear reasonable. These violations are listed in Section 4OA7 of this report.

## Report Details

A list of documents reviewed within each inspection area is included at the end of the report.

### Summary of Plant Status

At the start of the inspection, the plant had commenced a shutdown for a scheduled refueling outage. The refueling outage ended on May 10, 2001, when the plant was synchronized to the grid and power escalation commenced. On May 15, with plant power at 79 percent, the Heater Drain Pump P-10B mechanical seal failed and control room operators rapidly reduced power to 53 percent to remove the pump from service. Heater Drain Pump P-10B was returned to service on May 19 following repairs to the mechanical seal. Plant power was escalated after the heater drain pumps were returned to service and was at 93 percent when the inspection period ended.

## 1. REACTOR SAFETY

**Cornerstones: Initiating Events, Mitigating Systems and Barrier Integrity**

### 1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors performed tours of the following areas in which a fire could affect safety related equipment:

- Intake Structure (Fire Area 9); and
- Containment (Fire Area 14).

The inspectors observed the control of transient combustibles and ignition sources, and assessed the material condition of the passive fire protection features during the tours. Also, the inspectors verified the availability of the sprinkler fire suppression system, smoke detection system, and manual fire fighting equipment for these areas. The applicable portions of the Final Safety Analysis Report, Section 9.6, “Fire Protection,” were also reviewed during this inspection.

b. Findings

No findings of significance were identified.

### 1R07 Heat Sink Performance (71111.07A)

a. Inspection Scope

The inspectors focused on activities associated with the inspection of Component Cooling Water Heat Exchanger E-54A. Portions of heat exchanger tube performance characteristics testing (referred to as Single Tube Testing Methodology) were observed.

In addition, the inspectors verified that the methods used to inspect and clean the heat exchanger were consistent with expected degradation mechanisms for this system. The inspectors also verified that the eddy current testing performed had established acceptance criteria consistent with industry standards.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08)

a. Inspection Scope

The inspectors evaluated the implementation of the licensee's inservice inspection program for monitoring degradation of the reactor coolant system boundary and the risk significant piping system boundaries. Specifically, the inspector verified through observations that in-process liquid penetrant and ultrasonic inspections of feedwater line welds (FWS-18-FWL-ISI-257, 258, 259, 260) in the containment were conducted in accordance with the 1989 American Society of Mechanical Engineers Boiler and Pressure Vessel Code requirements and that the indications were appropriately dispositioned. The inspector reviewed inservice inspection procedures, personnel certifications, and steam generator eddy current data acquisition.

In addition, the inspectors reviewed condition reports concerning inservice inspection issues to verify that an appropriate threshold for identifying issues had been established. The inspector also evaluated the effectiveness of the corrective actions for identified issues, including the engineering justification for operability, if applicable.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12Q)

a. Inspection Scope

The inspectors reviewed the licensee's Maintenance Rule Scoping Document for the following systems:

- Diesel Fire Pump P-9B
- Containment Air Coolers
- Containment Building

The inspectors also reviewed the licensee's Goal Monitoring and Action Plans associated with returning the Diesel Fire Pump P-9B and Containment Air Cooler Service Water Outlet Check Valves to maintenance rule category a(2) status. In addition, the inspectors toured the diesel fire pump room and discussed various technical issues with the system engineer.

Further, the inspectors reviewed the licensee's corrective actions for selected condition reports to verify that they were appropriately dispositioned in accordance with the licensee's maintenance rule program and corrective action program. The inspectors reviewed condition reports written for Diesel Fire Pump P-9B since March 2000, condition reports written for the Containment Air Cooler System between March 2000 and March 2001, and condition reports written for the Containment Building between January 2000 and January 2001.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the General Operating Procedure - 14, "Shutdown Cooling Operations," compliance reviews that the licensee's risk assessment group conducted to identify work activities that could result in safety related equipment not being available as required. The inspectors also reviewed the GOP-14, "Shutdown Operation Equipment Sheets," and the associated shutdown risk assessments that were actively maintained in the control room to verify that required safety related equipment remained available to minimize plant risk during the following activities:

- Scheduled maintenance while the Primary Coolant System was in reduced inventory from April 5-7, 2001;
- Performance of scheduled tests RT-8C, "Engineered Safeguards Equipment Left Channel," and Test T-218, "Service Water Pump Performance"; and
- Scheduled maintenance on Safeguards Transformer 1-1 in conjunction with emergent work on Emergency Core Cooling System Containment Sump Check Valves CK-ES3166 and CK-ES3181.

The inspectors also discussed the compliance reviews and plant configuration control for the maintenance activities with operations and work control center personnel to verify that necessary contingencies were taken to minimize plant risk.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15Q)

a. Inspection Scope

The inspectors reviewed the operability assessments as documented in the associated condition reports for the following risk significant components:

- Main Station Battery ED-01, Left Channel;
- Safety Injection Refueling Water Tank Outlet Check Valve CK-ES3239; and
- Main Steam Isolation Valve CV-0501.

The inspectors also reviewed the applicable sections of the Technical Specifications and Final Safety Analysis Report, and the Design Basis Documents to verify that the operability assessment was technically adequate and that the components remained available, such that no unrecognized increase in plant risk had occurred.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19Q)

a. Inspection Scope

The inspectors observed portions of post maintenance testing and reviewed documented testing activities following scheduled maintenance to determine whether the tests were performed as written. 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 control room personnel. Post maintenance test activities were reviewed for the following components:

- East and West Engineered Safeguards Room Coolers V-27A and V-27B;
- Main Steam Isolation Valve CV-0501;
- Service Water Pumps P-7A and P-7B; and
- Safeguards Transformer 1-1.

The inspectors reviewed post maintenance testing criteria specified in the applicable preventive and corrective work orders to verify the appropriateness of the test criteria for the scope of work performed and that acceptance criteria were clear.

In addition, the inspectors reviewed the completed tests and procedures to verify the tests adequately verified system operability. Documented test data was reviewed to verify that the data was complete, and that the equipment met the procedure acceptance criteria which demonstrated that the equipment was able to perform the intended safety functions.

Further, the inspectors reviewed condition reports regarding post maintenance testing activities to verify that identified problems were appropriately characterized.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

.1 Monitoring of Shutdown Activities

a. Inspection Scope

The inspectors observed portions of the plant shutdown and subsequent cooldown at the start of the refueling outage. The inspectors verified that the Technical Specification plant cooldown limits were adhered to and that the plant was operated within the limits prescribed in the licensee's procedures.

b. Findings

No findings of significance were identified.

.2 Licensee Control of Outage Activities

a. Inspection Scope

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

- Equipment Configuration Management: The inspectors verified that the licensee maintained defense-in-depth commensurate with the outage risk evaluations which were performed;
- Review of Outage Activities: The inspectors reviewed selected risk significant items and activities, such as safety related electrical bus outages, to verify that appropriate controls were in place to minimize plant risk;
- Reactor Coolant System Temperature and Level Instrumentation: The inspectors verified that reactor coolant system temperature, level and pressure indication were available and actively being used to accurately monitor plant conditions;
- Electrical Power Availability: The inspectors verified that the configuration of the electrical system was maintained to ensure equipment necessary to minimize plant risk remained operable;
- Decay Heat Removal System Monitoring: The inspectors verified Shutdown Cooling System parameters to verify the system was operating properly;
- Spent Fuel Pool Cooling System Operation: The inspectors verified that methods to recover spent fuel pool cooling and inventory existed and that equipment necessary for cooling was available and not obstructed by ongoing outage activities;
- Reactor Coolant System Inventory Control: The inspectors verified that plant equipment needed for primary coolant system inventory control was appropriately maintained 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;

- 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; and
- Containment Cleanliness: The inspectors conducted cleanliness tours through containment during the refueling outage and after the licensee's major work activities were completed in containment.

b. Findings

No findings of significance were identified.

.3 Reduced Inventory and Mid-Loop Conditions

a. Inspection Scope

The inspectors observed the control room operators during the primary coolant system drain down to reduced inventory to verify that the operators maintained positive control of the primary coolant system level. The inspectors also verified during reduced inventory and mid-loop primary coolant system conditions that the configuration of plant equipment was in accordance with the licensee's procedures. 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 an active list of inoperable containment penetrations was maintained in the control room;
- 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 also verified that Off-Normal Procedures were available which addressed reduced inventory operation and that contingency plans existed to re-power vital electrical busses if the primary source of electrical power was lost.

b. Findings

No findings of significance were identified.

.4 Refueling Activities

a. Inspection Scope

The inspectors verified that fuel handling operations, including the removal, inspection, testing for leakage, reconstitution and insertion of fuel bundles were performed in accordance with Technical Specifications and licensee approved procedures. The inspectors also verified that the location of fuel assemblies was tracked, including new fuel, from core offload through core reload activities. A random sample of several fuel

bundles also verified that the correct assemblies were loaded in the correct core locations.

The inspectors observed fuel handling activities on the refueling bridge and verified that licensee personnel appropriately verified fuel movements. The inspectors also verified that there were appropriate foreign material exclusion barriers for the reactor cavity and spent fuel pool areas.

Through reviews of periodic testing and operability verifications the inspectors observed that refueling related equipment (including the reactor cavity seals), systems and interlocks were appropriately tested and operable. In addition, the inspectors reviewed the applicable sections of the Final Safety Analysis Report and Technical Specifications.

b. Findings

No findings of significance were identified.

.5 Monitoring of Heatup and Startup Activities

a. Inspection Scope

The inspectors verified that administrative procedure prerequisites were satisfied to ensure that required plant equipment was operable prior to conducting plant mode changes during heatup. The inspectors also verified that Technical Specification requirements pertaining to plant heatup limits and primary coolant system leakage were adhered to. In addition, the inspectors verified that containment integrity was established as required.

Further, the inspectors observed the reactor startup and turbine generator synchronization to the electrical grid to verify that control room operators conducted plant startup activities in accordance with plant procedures. The inspectors also observed portions of and reviewed the results of low power physics testing to verify that results complied with Technical Specifications.

b. Findings

No findings of significance were identified.

.6 Containment Sump and Screen Inspection

a. Inspection Scope

The inspectors observed the licensee staff perform the containment sump and screen inspection to verify that foreign material was not present which could have adversely affected the function of the Emergency Core Cooling Systems during a recirculation actuation signal. The inspectors also verified that the configuration of the screens around the containment sump outlet piping was in accordance with the assumptions and design criteria contained in the licensee's design basis and engineering analyses for this system.

The inspectors also reviewed the applicable sections of the Technical Specifications and the Final Safety Analysis Report.

b. Findings

A finding of very low safety significance (Green) and an associated non-cited violation were identified by the inspectors for the failure to maintain the configuration of the containment sump outlet screens in accordance with the design.

During the inspection of the containment sump outlet screens, the inspectors identified that gaps existed between the top of the screen frame and the sump ceiling. Subsequently, licensee personnel also identified additional gaps between the screen frame and sump ceiling.

The largest gap identified was approximately 0.375 to 0.5 inches. The inspectors noted that the design basis for the containment sump screens was to prevent debris from affecting the Emergency Core Cooling System and components during the recirculation phase of a loss of coolant accident. Also, the containment sump screens were designed to have nominal 0.125 inch square openings.

The licensee concluded that the components which could be most likely affected by a 0.375 inch particle were the containment spray system nozzles (openings of 0.375 inch) and the high pressure safety injection system motor operated valves (openings of 0.250 inch). Licensee personnel initiated Condition Report CPAL0101667 and repaired the sump screen by seal welding the sump frame to the sump ceiling to eliminate the gaps. The licensee also speculated that this condition has probably existed since the sump screens were constructed.

The inspectors concluded that these issues had a credible impact on safety, in that, if the containment sump screens did require use, the as-found condition of the sump screens could have credibly affected the operability, availability or function of components in the containment spray and emergency core cooling mitigating systems.

The finding was determined to be of very low safety significance (Green) by the significance determination process. Although, the as-found condition of the sump screen system could have credibly affected components in mitigating systems, the surface area of the gaps were small in comparison to the total flow area through the screens; therefore, the amount of water flowing through the identified gaps would be minimal. In addition, the amount of debris which could bypass the screens through the identified frame to ceiling gaps was also be expected to be minimal.

10 CFR 50, Appendix B, Criterion III, “Design Control,” requires that design changes, including field changes, be subject to design control measures commensurate with those applied to the original design and that measures be established to ensure that deviations from such standards, including applicable regulatory requirements and the design bases, are controlled. However, licensee personnel failed to identify that the sump screen system was not controlled, constructed or maintained in accordance with the design basis, which was to ensure that particles larger than a nominal 0.125 inch square would not enter the sump suction piping. Consequently, design control measures were not

commensurate to those applied to the original design and did not ensure that the sump screen system was constructed and maintained in accordance with the design bases.

In accordance, with Section VI.A.1 of the NRC Enforcement Policy, the inspector identified example of a 10 CFR 50, Appendix B, Criterion III violation is being treated as a Non-Cited Violation. This issue was entered into the licensee's corrective action program as Condition Report CPAL0101667. (NCV 50-255/01-07-01)

.7 Identification and Resolution of Problems (71111.20, 71152)

a. Inspection Scope

The inspectors reviewed a sample of condition reports regarding significant problems that were documented in the licensee's corrective action program to verify that corrective actions had been implemented. The inspectors also randomly selected operating experience information to verify that the licensee's corrective action program appropriately evaluated the information and that appropriate corrective actions were implemented as needed. In addition, the inspectors reviewed condition reports to verify that licensee personnel identified problems regarding outage activities at an appropriate threshold and that the identified problems were appropriately characterized with respect to the licensee's corrective action program.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 General Surveillance Testing

a. Inspection Scope

The inspectors observed portions of the following surveillance testing activities conducted on risk-significant plant equipment to verify that testing was conducted in accordance with prescribed procedures:

Safety Injection Refueling Water Tank Level Switch Interlocks;

- Containment High Pressure and Spray Systems Test;
- Safety Injection Tank and Primary Coolant System Loop Check Valves Inservice Test;
- Emergency Diesel Generator 1-1 Test Starting Time;
- Engineered Safeguards System - Right Channel;
- Control Rod Drop Times;
- Service Water Flow Verification;
- Containment Building Integrated Leak Rate;
- Primary Coolant System Class 1 Pressure Boundary Leak Check (including Reactor Vessel); and
- Engineered Safeguards System Pump Suction Piping Pressure Test.

The inspectors also reviewed the documented test data for the Technical Specification Surveillance Test procedures and the associated basis documents for the components listed above to verify that testing acceptance criteria were satisfied.

In addition, the inspectors reviewed applicable portions of Technical Specifications, the Final Safety Analysis Report and Design Basis Documents to verify that the surveillance tests adequately demonstrated that system components could perform designated safety functions.

b. Findings

No findings of significance were identified.

.2 Containment Sump Check Valves Inservice Testing

a. Inspection Scope

The inspectors observed portions of surveillance testing activities conducted on the containment sump check valves to verify that testing was conducted in accordance with prescribed procedures.

The inspectors also reviewed the documented test data, Technical Specification Surveillance Test Procedure QO-38, "Containment Sump Check Valve Inservice Test," and the associated basis documents to verify that testing acceptance criteria were satisfied.

In addition, the inspectors reviewed applicable portions of Technical Specifications, the Final Safety Analysis Report and Design Basis Documents to verify that the surveillance tests adequately demonstrated that system components could perform designated safety functions.

b. Findings

The inspectors identified a finding of very low safety significance (Green) regarding the ability to obtain accurate data and the resultant questionable ability to satisfy the required acceptance criteria during surveillance testing of the containment sump check valves. In addition, the inspectors identified an associated Non-Cited Violation for the failure to prescribe activities affecting quality with a procedure of a type appropriate to the circumstances.

On April 27, 2001, the inspectors observed performance of Technical Specification Surveillance Test QO-38, "Containment Sump Check Valves Inservice Test." The test acceptance criteria specified that the valves should open with a break away torque of 300 to 900-foot pounds.

Auxiliary Operators tested Containment Sump Check Valve CK-ES-3166 and documented the break away torque as 895 foot pounds. However, the inspectors noted that the indication on the wrench utilized to measure the break away torque values was not set to display the peak value reached. Also, the inspectors noted that during testing

the displayed torque value was not stable. Therefore, the accuracy of the documented 895 foot pounds break away torque for CK-ES3166 was questionable. Consequently, the inspectors determined that the valve's ability to satisfy the surveillance test acceptance criteria was also questionable. This questionable data was validated when the valve was tested a second time the next day for data gathering in response to inspectors questions. During the second test the break away torque value was 1266 foot pounds and no maintenance had been conducted on the valve.

In addition, the inspectors noted that the Auxiliary Operator's stopped the test on the second check valve being tested, CK-ES3181, when the break away torque values reached 895 foot pounds. The Auxiliary Operators then attempted to open the valve a second time a few minutes later and the valve opened with a break away torque of 870 foot pounds which was documented in the test results. The inspectors questioned the accuracy of the documented results, in that, when 895 foot pounds of force was attained on the first attempt, Check Valve CK-ES3181 did not open. In response to the inspectors questions, engineering personnel directed the operators to add a note to the documented test results to indicate that during the first attempt, the valve did not open when 895 foot pounds of force was attained.

Based on discussions with engineering personnel, the inspectors determined that the operators were not expected to stop the test if the break away torque acceptance criteria limit of 900 foot pounds was approached. Therefore, the as-found break away torque value for Check Valve CK-ES3181 was questionable in that the valve was potentially pre-conditioned when 895 foot pounds force was attained and the test was stopped when the valve had not opened. Consequently, the accuracy of the documented break away torque value for Check Valve CK-ES3181 was jeopardized and the valve's ability to satisfy the surveillance test acceptance criteria was questionable. This questionable data was validated by the fact that Check Valve CK-ES3181 did not open on the first attempt when 895 foot pounds force was attained but subsequently opened at 870 foot pounds force when the valve was tested a second time a few minutes after the first attempt.

The inspectors concluded that these issues had a credible impact on safety in that the testing method prescribed and implemented for Containment Sump Check Valves CK-ES3166 and CK-ES3181 resulted in obtaining inaccurate as-found break away forces required to open the valves. Consequently, the Containment Sump Check Valves CK-ES3166 and CK-ES3181 ability to satisfy the surveillance test acceptance criteria and perform their safety functions was questionable. Therefore, this issue could credibly affect the valves operability, availability and reliability. This issue was evaluated using the significance determination process and was determined to be a finding of very low safety significance (Green).

The inspectors also determined that Technical Specification Surveillance Test Procedure QO-38, Revision 3, failed to meet regulatory requirements. Specifically, 10 CFR 50 Appendix B, Criterion V, Procedures, requires in part, that activities affecting quality shall be prescribed by documented procedures of a type appropriate to the circumstances. However, Procedure QO-38 was not appropriate to the circumstances in that it did not direct the operators to set the torque wrench display to read the peak value attained when measuring containment sump check valve break away forces. Also,

Procedure QO-38 did not clearly prescribe the operators to continue the stroke test if the maximum acceptance criteria for required break away force was approached.

Consequently, Check Valve CK-ES3166 was tested without the peak value attained being displayed which resulted in potentially inaccurate break away forces being obtained. Also, the operators stopped the initial test for Check Valve CK-ES3188 when the acceptance criteria limit of 900 foot pounds of force was approached which potentially pre-conditioned the valve. Therefore, accurate as-found break away forces required to open the containment sump check valves were not obtained and the valves ability to satisfy the test acceptance criteria was questionable.

In accordance, with Section VI.A.1 of the NRC Enforcement Policy, the inspector identified example of a 10 CFR 50, Appendix B, Criterion V violation is being treated as a Non-Cited Violation. (NCV 50-255/01-07-02)

This issue was appropriately entered into the licensee's corrective action program as Condition Reports CPAL0101710 and CPAL0101705. Subsequently, both containment sump check valves were repaired and tested satisfactorily.

## 2. RADIATION SAFETY

### Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walk Downs and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors conducted walk downs and radiological surveys of radiologically significant areas (radiation and high radiation areas) to verify the adequacy of the licensee's radiological controls (surveys, postings, barricades). Specifically, the inspectors walked down radiologically significant areas located in the Auxiliary Building and Containment to determine whether prescribed radiation work permits (RWP), procedure and engineering controls were in place, and whether licensee surveys and postings were complete and accurate. The inspectors also reviewed RWPs used to access these areas to verify that work instructions and controls had been adequately specified and that electronic pocket dosimeter set points were in conformity with survey indications.

b. Findings

No findings of significance were identified.

.2 Job-In-Progress Reviews

a. Inspection Scope

The inspectors observed the following high exposure or high radiation area work activities performed during Refueling Outage 2001 and evaluated the licensee's use of radiological controls:

- Reactor Head Replacement and Cavity Decontamination;
- Remove/Inspect/Install Control Rod Drive Mechanism (CRDM) Drive Package and Seal Housings; and
- Remove and Replace Primary Coolant Pump P-50B.

The inspectors reviewed all radiological job requirements for each activity and observed job performance with respect to those requirements. The inspectors reviewed required surveys, including system breach radiation, contamination, and airborne surveys; radiation protection job coverage; and contamination controls to verify that appropriate radiological controls were utilized. The inspectors also reviewed surveys and applicable postings and barricades to verify their accuracy. The inspectors observed radiation protection technician and worker performance at work sites to determine if the technicians and workers were aware of the significance of the radiological conditions and the RWP controls/limits. The inspectors observations were also conducted to verify that workers in radiation areas performed adequately given the level of radiological hazards present and the level of their training.

b. Findings

No findings of significance were identified.

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

.1 Exposure Histories

a. Inspection Scope

The inspectors reviewed the station's collective exposure histories for 1998 to the present. The review included collective exposures during the 1999 refueling outage, the year 2000 forced outages, and the 2001 refueling outage. The inspectors performed the reviews to evaluate the licensee's As-Low-As-Is-Reasonably-Achievable program's strengths and weaknesses. The inspectors also reviewed the station's three-year rolling average exposure information and compared it with national pressurized water reactor industry data.

b. Findings

No findings of significance were identified.

.2 Job Site Inspections and ALARA Control

a. Inspection Scope

The inspectors selected the following high exposure or high radiation area activities performed during Refueling Outage 2001 and evaluated the licensee's use of ALARA controls:

- Reactor Head Replacement and Cavity Decon;
- Steam Generator inspections;
- Install Permanent Steam Generator Platforms;
- Remove/Inspect/Install CRDM Drive Package and Seal Housings; and
- Remove and Replace Primary Coolant Pump P-50B.

The inspectors reviewed ALARA plans for each activity and observed work activities associated with the CRDMs, reactor head replacement, cavity decon, and Primary Coolant Pump P-50B. The inspectors evaluated the licensee's use of engineering controls to achieve dose reductions. The inspectors also determined if workers were utilizing the low dose waiting areas for each activity and whether the first-line supervisor for each job ensured that the jobs were conducted in a dose efficient manner. The inspectors also reviewed individual exposures of selected work groups to determine if there were any significant exposure variations which may exist among workers.

b. Findings

No findings of significance were identified.

.3 Source Term Reduction and Control

a. Inspection Scope

The inspectors reviewed the status of the licensee's source term reduction program, focusing on zinc injection into the primary coolant system during Fuel Cycle 15 that began April 24, 2000. The inspectors did the review to determine what results had been achieved and what effects, if any, those results were having on exposures during Refueling Outage 2001.

b. Findings

No findings of significance were identified.

.4 Radiological Work Planning

a. Inspection Scope

The inspectors selected the following Refueling Outage 2001 job activities that were expected to exceed five person-rem to assess the adequacy of the radiological controls and work planning:

- Reactor Head Replacement and Cavity Decontamination;
- Remove/Inspect/Install CRDM Drive Package and Seal Housings; and
- Remove and Replace Primary Coolant Pump P-50B.

For each job activity, the inspectors reviewed ALARA evaluations including initial reviews, in-progress reviews, and associated dose mitigation techniques and evaluated the licensee's exposure estimates and performance. The inspectors also assessed the integration of ALARA requirements into work packages to evaluate the licensee's communication of radiological work controls.

j. Findings

No findings of significance were identified.

.5 Verification of Exposure Goals and Exposure Tracking System

a. Inspection Scope

The inspectors reviewed the methodology and assumptions used for Refueling Outage 2001 exposure estimates and exposure goals and compared job dose rate and man-hour estimates for accuracy. The inspectors examined job dose history files and dose reductions anticipated through lessons learned to verify that the licensee appropriately forecasted outage doses. The inspectors also reviewed the licensee's exposure tracking system to determine if the level of exposure tracking detail, exposure report timeliness and exposure report distribution was sufficient to support control of collective exposures.

b. Findings

No findings of significance were identified.

.6 Identification and Resolution of Problems (71121.01 and 71121.02)

a. Inspection Scope

The inspectors evaluated the effectiveness of the self-assessment process to identify, characterize, and prioritize problems. The inspectors reviewed Refueling Outage 2001 related ALARA and access control issues to determine if they were adequately addressed. The inspectors also reviewed a Nuclear Performance Assessment Department (NPAD) assessment of the early stages (first ten days) of Refueling Outage 2001 and condition reports (CR) to assess the adequacy of the licensee's ability to identify problems.

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors verified that the data submitted by the licensee was accurate and complete for the Unplanned Scrams per 7000 Critical Hours performance indicator. The inspectors reviewed control room logs and the licensee's Incident Analysis System logs for the periods of January 2000 through December 2000 to verify that the licensee had accurately reported this performance indicator for those four quarters.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Closed) LER 50-255/97010: Inadequacy in Appendix R analysis resulting in a condition outside of the design basis of the plant. This item was also discussed in NRC Inspection Report 50-255/97013. The LER identified the omission of a cable from the original Appendix R analysis. The original Appendix R analysis indicated that the simultaneous opening of two main steam line atmospheric steam dump valves (ASDV) required manual actions within 10-minutes. When the additional cable was identified, the revised analysis showed fire-induced spurious opening of all four ASDV and the turbine bypass valve. The new analysis showed that manual actions must be completed within six-minutes to close the ASDV in order to meet the performance goals identified in 10 CFR Part 50, Appendix R, Section III.L. The licensee demonstrated and validated that manual actions to close the ASDV within six minutes were achievable. The Off-Normal Procedure (ONP) for alternate shutdown was revised to reflect this change. The inspectors considered the six-minutes to take necessary manual actions to be acceptable since the regulatory requirements did not require postulating simultaneous spurious actuations of plant equipment. Therefore, this is not a violation of regulatory requirements. This item is closed.

.2 (Closed) LER 50-255-94012: Thermal margin monitor internal ground. This item was the subject of Unresolved Item (URI) 50-255-94011-02 which was closed in NRC Inspection Report 50-255/94014. Enforcement discretion was exercised for this violation. Specific corrective actions taken were reviewed and found acceptable in NRC Inspection Report 50-255/94011. This item is closed.

.3 (Closed) LER 50-255/97008: Fire-induced spurious valve operation resulting in the loss of shutdown cooling capabilities. This item was also discussed in NRC Inspection Report 50-255/97011, Section E1.1. During the licensee's Appendix R enhancement effort that resulted from a Severity Level III violation and a civil penalty issued on August 13, 1996, the licensee identified that three service water cross-tie valves (CV-0879, CV-0880, and CV-0951) could spuriously open during a postulated fire and drain the component cooling water to the service water system. The licensee had revised Engineering Analysis EA-APR-95-006, "10 CFR Part 50 Appendix R functional Requirements Analysis," Revision 1, to reflect that the air supply was isolated to the three air-operated service water cross-tie valves during normal operation such that the valves would not spuriously open. The inspectors considered this item to be another example of a previously identified violation (50-255/96004-01). The corrective action for this item was considered acceptable. This item is closed.

4OA5 Other

.1 (Closed) URI 50-255/98011-04: Redundant Emergency Diesel Generator circuits not separated per Appendix R requirements. This was the subject of LER 50-255/95004 and an escalated enforcement issued on August 13, 1996. The inspectors reviewed EA-FPP-95-047, "Analysis of the Effects of a Fire on the Barriers Between Diesel Generator Room 1-1 and the East Air Plenum Room," Revision 1. The analysis addressed the equivalent fire resistance of the barriers between the 1-1 Emergency Diesel Generator room and the inlet plenum (at least one-hour rating), the combustible loading within the rooms (less than one-hour fire severity), the existing fire detection and suppression systems, and the ability of the barriers to withstand the hazards associated with the areas. The inspectors considered the fire area boundary analysis to be consistent with the guidelines in Generic Letter 86-10, "Implementation of Fire Protection Requirements," which stated that the licensee must perform an evaluation to assess the adequacy of the fire boundaries to determine if the boundaries will withstand the hazards associated with the area. This item is closed.

4OA6 Meeting

Exit Meetings

The inspectors presented the inspection results to Mr. Cooper and other members of licensee management at the conclusion of the inspection on May 18, 2001. The licensee acknowledged the findings presented. Additionally, the inspection results regarding the Biennial Inservice Inspection and the Occupational Radiation Safety Program were presented to members of licensee management on April 19, 2001, and April 20, 2001, respectively. No proprietary information was identified at any of the exit meetings.

4OA7 Licensee Identified Violations

The following findings of very low safety significance were identified by licensee personnel and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as Non-Cited Violations.

| NCV Tracking Number | Requirement Licensee Failed To Meet |
|---|---|
| (1) NCV 50-255/01-07-03 | 10 CFR 50, Appendix B, Criterion V, requires in part that activities affecting quality shall be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with the procedures. On April 28, 2001, a valve lineup was not performed in the order prescribed in Technical Specification Surveillance Test Procedure RT-36, "Containment Integrated Leak Rate Test," Revision 16, as described in the licensee's corrective action program Condition Report CPAL0101717. This is being treated as a Non-Cited Violation. |

| | |
|---|---|
| (2) NCV 50-255/01-07-04 | Technical Specification 5.4.1.c, Amendment 189, required in part that written procedures shall be implemented covering the Site Fire Protection Program. Fire Protection Program Implementing Procedure FPIP-7, "Fire Prevention Activities," Revision 11, Section 9.2.2 required in part that hot work in the Turbine Building shall be accomplished only after receiving an authorized Hot Work Permit. Also, FPIP-7, Section 9.2.4.i, required in part that a trained fire watch be assigned. On April 22, 2001, hot work was performed in the Turbine Building without obtaining a Hot Work Permit and with no fire watch present as described in the licensee's corrective action program Condition Report CPAL0101605. This is being treated as a Non-Cited Violation. |

KEY POINTS OF CONTACT

Licensee

T. Brown, Manager, Chemical and Radiological Services
D. E. Cooper, Plant General Manager
J. P. Cowan, Senior Vice President Nuclear Management Company / Site Vice President
J. K. Ford, Manager, Engineering Programs
T. H. Fouty, Engineering Programs
N. L. Haskell, Director, Licensing and Performance Assessment
D. W. Rogers, Licensing
D. J. Malone, Engineering Director
H. E. Nixon, Component Engineering Supervisor
G. C. Packard, Operations Superintendent
K. Smith, Operations Manager

NRC

D. Hood, Project Manager, NRR

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|---|---|---|
| 50-255/01-07-01 | NCV | 10 CFR 50, Appendix B, Criterion III, “Design Control,” violation regarding inadequate design control for the failure to construct and maintain the containment sump screen system in accordance with the original design and design basis |
| 50-255/01-07-02 | NCV | 10 CFR 50, Appendix B, Criterion V, “Procedures,” violation regarding inadequate Technical Specification Surveillance Procedure QO-38, “Containment Sump Check Valves Inservice Test” |
| 50-255/07-01-03 | NCV | Licensee identified failure to follow procedures while conducting a valve lineup for Technical Specification Surveillance Test RT-36, “Integrated Leak Rate Test” |
| 50-255/07-01-04 | NCV | Licensee identified failure to follow Fire Protection Program procedures pertaining to hot work requirements |

Closed

| | | |
|---|---|---|
| 50-255/97010 | LER | Inadequacy in Appendix R Analysis Resulting in a Condition Outside of the Design Basis of the Plant |
| 50-255/94012 | LER | Thermal Margin Monitor Internal Ground |
| 50-255/9708 | LER | Fire-induced Spurious Valve Operations Resulting in the Loss of Shutdown Cooling Capabilities |
| 50-255/98011-04 | URI | Redundant EDG Circuits Not Separated Per Appendix R Requirements |
| 50-255/01-07-01 | NCV | 10 CFR 50, Appendix B, Criterion III, “Design Control,” violation regarding inadequate design control for the failure to construct and maintain the containment sump screen system in accordance with the original design and design basis |
| 50-255/01-07-02 | NCV | 10 CFR 50, Appendix B, Criterion V, “Procedures,” violation regarding inadequate Technical Specification Surveillance Procedure QO-38, “Containment Sump Check Valves Inservice Test” |
| 50-255/01-07-03 | NCV | Licensee identified failure to follow procedures while conducting a valve lineup for Technical Specification Surveillance Test RT-36, “Integrated Leak Rate Test” |
| 50-255/01-07-04 | NCV | Licensee identified failure to follow Fire Protection Program procedures pertaining to hot work requirements |

LIST OF ACRONYMS USED

| | |
|---|---|
| ALARA | As Low As Is Reasonably Achievable |
| ASDV | Atmospheric Steam Dump Valve |
| C&RS | Chemistry and Radiological Services |
| CFR | Code of Federal Regulations |
| CR | Condition Report |
| CRDM | Control Rod Drive Mechanism |
| DRS | Division of Reactor Safety |
| EA | Engineering Analysis |
| EDG | Emergency Diesel Generator |
| FSAR | Final Safety Analysis Report |
| LER | Licensee Event Report |
| NCV | Non-Cited Violation |
| NPAD | Nuclear Performance Assessment Department |
| NRC | Nuclear Regulatory Commission |
| OA | Other Activities |
| ONP | Off Normal Procedure |
| OS | Occupational Radiation Safety |
| Radwaste | Radioactive Waste |
| RWP | Radiation Work Permit |
| SDP | Significance Determination Process |
| URI | Unresolved Item |

LIST OF DOCUMENTS REVIEWED

1R05 Fire Protection

| | | |
|---|---|---|
| EA-PSSA-00-001 | Palisades Plant Post Fire Safe Shutdown Analyses | Revision 0 |
| | Palisades Plant Fire Hazards Analysis Report | Revision 4 |
| FPIP-7 | Fire Protection Implementing Procedure - Fire Prevention Activities | Revision 11 |
| RO-52 | Fire Suppression Water System Functional Test and Fire Pump Capacity Test | March 5, 2001 |
| FSAR | Change Request 2001 | |
| FSAR | Section 9.6, Fire Protection | Revision 22 |
| NUMARC 93-01 | Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants | Revision 0 |

1R07 Heat Sink Performance

| | | |
|---|---|---|
| EA-GAK-98-003 | Engineering Analysis - Component Cooling Water Heat Exchangers E-54A E-54B Testing Maintenance and Operation Basis Issued for Record | Revision 1 |
| EA-T300-98-03 | Engineering Analysis - Methodology for Analyzing Single Tube Test Data on the Component Cooling Water Heat Exchangers | Revision 1 |
| SOP-16 | System Operating Procedure - Component Cooling Water System | Revision 22 |
| WO24012538 | Work Order - Clean Component Cooling Water Heat Exchanger Tubes | |
| TR-103047 | Heat Exchanger In-Situ Single Tube Test Device | October 1993 |
| GL 89-13 | Generic Letter - Service Water System Problems Affecting Safety-Related Equipment and Supplement 1 | |
| | Final Report for the Application of the Single Tube Testing Device (STTD) at Consumers Energy's Palisades Nuclear Plant | May 18, 1998 |
| CPAL0100414 | Condition Report - Spent Fuel Pool Heat Exchanger (E-53A) Plugged/Restricted By RTV Silicon Material | |

| | | |
|---|---|---|
| CPAL0101449 | Condition Report - Sulfate Reducing Bacteria Test Yielded Positive Results for Component Cooling Water Heat Exchanger, E-54A, Endbells | |
| CPAL0101551 | Condition Report - NRC Inspector Identified Inadequate Review of Vendor Procedure | |

1RO8 Inservice Inspection

| | | |
|---|---|---|
| DMAP 14 | Steam Generator Reliability Action Plan | January 10, 2001 |
| NDT-PT-01 | Liquid Penetrant Examination | January 9, 1998 |
| NDT-UT-32 | Ultrasonic Examination of Ferritic Piping and Branch Connection Welds | June 5, 2000 |

Condition Reports Reviewed For Problem Identification Characterization

| | |
|---|---|
| CPAL0101284 | Steam Generator NDE Analyst Found With Lapsed Certification Prior To Data Review |
| CPAL0101256 | Steam Generator E-50B Eddy Current Bobbin Analysis Identifies Defective Tube Due To Wear |
| CPAL0101226 | Steam Generator E-50A Eddy Current Bobbin Analysis Identifies Defective Tube Due To Wear |
| CPAL0101209 | Moisture Separator Reheater Debris Found In Plant Components |
| CPAL0101445 | Incomplete NDE Performed Based On Qualification Of Inspector |

1R12 Maintenance Rule Implementation

| | | |
|---|---|---|
| EM - 25 | Maintenance Rule Program | Revision 3 |
| EAR-99-0337 | Remove Service Water Check Valve Internals From Containment Air Cooler Piping Return | |
| ARP - 8 | Safeguards Safety Injection and Isolation Scheme | Revision 60 |
| SOP-5 | Containment Air Cooling and Hydrogen Recombining System | Revision 18 |
| M-208, Sheet A | Piping and Instrument Diagram, Service Water System | Revision 15 |
| M-208, Sheet 1b | Piping and Instrument Diagram, Service Water System | Revision 27 |

| | | |
|---|---|---|
| M-232, Sheet 1 | Containment Penetrations | Revision 38 |

Condition Reports Reviewed For Problem Identification Characterization

| | |
|---|---|
| CPAL0002509 | Failure of B Starter Solenoid on Fire Pump P-9B |
| CPAL0002662 | P-41 Is Inoperable Due To Failure To Meet Acceptance Criteria |
| CPAL0002674 | Fuel Oil Leak on Fire Pump P-9B Diesel Driver K-5 |
| CPAL0003496 | P-9B Unavailability Exceeded Maintenance Rule Performance |
| CPAL0100241 | Pin Hole Leaks on P-13 Jockey Pump |
| CPAL0100703 | Fire Pump P-9B Diesel K-5 Has Engine Coolant Leak |
| CPAL0100703 | P-9B Failed To Meet RO-52 Acceptance Criteria |
| CPAL0002034 | Adverse Trend on Containment Dome Temperature |
| CPAL0100206 | Discovery of Non-Conservative Number of Tubes Plugged in Containment Air Coolers |

1R15 Operability Evaluations

| | | |
|---|---|---|
| CPAL0101081 | Condition Report and Associated Operability Determination / Engineering Analysis - Battery ED-01 Failed to Complete 80% of Required Run Time | |
| CPAL0101957 | Condition Report - Documentation Weakness In Engineering Analysis Performed For Station Battery Modified Performance Test | |
| IEEE 450-1995 | IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications | |
| RE-083A | Technical Specification Surveillance Test - Service Test Battery ED-01 | Revision 11 |
| CPAL0101050 | Condition Report and Associated Operability Determination / Inconclusive Nonintrusive Data Test Data Obtained on Safety Injection Refueling Water Tank Outlet Check Valve CK-ES3239 Per QO-43 | |

| | | |
|---|---|---|
| CPAL0101883 | Condition Report and Associated Operability Determination / Main Steam Isolation Valve CV-0501 Slow To Close | |

1R19 Post Maintenance Testing

Work Orders

| | | |
|---|---|---|
| WO24012317 | Repair/Testing of Safeguards Transformer 1-1 (Including Doble Test, Bushing Test, Excitation Current Test, Hot Collar Test, Ratio Test) | |
| WO24012319 | Perform Test on Feeder Cables Between Safeguards Transformer 1-1 and Breaker 152-401 | |
| WO24911743 | Safeguards Transformer Tap Changer Operation Counter was Replaced and Not Advancing - Troubleshoot and Repair | |
| WO24012372<br>WO24011263 | Engineered Safeguards Room Cooler V-27B | |
| WO24811824 | Engineered Safeguards Room Cooling Coil VHX-27B | |
| WO24012371<br>WO24011262 | Engineered Safeguards Room Cooler V-27A | |
| WO24811841 | Engineered Safeguards Room Cooling Coil VHX-27A | |
| WO24911738 | Steam Generator E-50B Main Steam Isolation Valve CV-0501, Perform Modification | |
| WO24811823 | Completed Work Order - Replace Service Water Pump P-7B With Johnston Pump Assembly | |

Other Documents

| | | |
|---|---|---|
| QO-37 | Technical Specification Surveillance Test, Main Steam Isolation and Bypass Valve Testing | Revision 6 |
| T-218 | Special Test Procedure - Service Water Pumps P-7A, P-7B, and P-7C Performance Test By Flow To Containment | |
| FSAR | Table 9-2, Service Water System Design Ratings and Construction of Components | Revision 22 |

| | | |
|---|---|---|
| CPAL0101213 | Condition Report - New Johnston Pump For Service Water Pump P-7B Has Shaft Length Which Is Too Long | |

1R20 Refueling and Outage Activities

1R20.1 Monitoring of Shutdown Activities

| | | |
|---|---|---|
| PO-2 | Technical Specification Surveillance Test - Primary Coolant System Heatup/Cooldown Operations | Revision 0 |
| SOP-3 | System Operating Procedure - Safety Injection and Shutdown Cooling System | Revision 45 |
| SOP-1 | System Operating Procedure - Primary Coolant System | Revision 49 |
| Figure 3.4.3 | Technical Specification Pressure - Temperature Limits for Cooldown | Amendment 189 |
| | Plant Computer Primary Coolant System Cooldown Rate Data, March 31 to April 2, 2001 | |
| GOP-9 | General Operating Procedure - Mode 3 To Mode 4 or Mode 5 | Revision 21 |
| Attendance Sheet | Just In Time Training Attendance for Plant Shutdown To Mode 2 or 3 and for Stopping the Last 2 Primary Coolant Pumps on Shutdown Cooling | |

1R20.2 Licensee Control of Outage Activities

| | | |
|---|---|---|
| GOP-14 | General Operating Procedure - Refueling Operations and Fuel Handling | Revision 32 |
| SOP-27 | System Operating Procedure - Fuel Pool System | Revision 40 |
| ONP-17 | Off Normal Procedure - Loss of Shutdown Cooling | Revision 26 |
| ONP-23.3 | Off Normal Procedure - Loss of Refueling Water Accident | Revision 4 |

Condition Reports Reviewed For Problem Identification Characterization

| | |
|---|---|
| CPAL0101343 | Tygon Tube Routed Through Flood Door 196A in Violation of Administrative Procedure 4.02 Requirements |

| | | |
|---|---|---|
| CPAL0101384 | Retainer Lugs on Flood Door 196A Blowout Panel are Not Effective | |
| CPAL0101745 | Flood Door-58 Found not Fully Latched | |
| CPAL0101124 | Isolation of West Engineered Safeguards Room Coolers | |
| CPAL0101530 | Incorrect Interpretation of Technical Specification 3.8 | |
| CPAL0101608 | Switching and Tagging Restore Order Authorized Without Clearance Being Released By the Person In Charge | |
| CPAL0101685 | Primary Coolant System Vent Path Blocked | |
| CPAL0101629 | Engineered Safeguards Fan Removal / Installation Work Instruction Adherence | |
| CPAL0101404 | Suspect Data Obtained Using Temporary Ultrasonic Flow Equipment | |
| CPAL0101459 | Technical Specification Surveillance Test RO-65 Dat Indicates High Pressure Safety Injection Train 2 Cold Leg Flow Splits Different Than Assumed In Small Break LOCA Analysis | |

1R20.3 Reduced Inventory and Mid-Loop Conditions

| | | |
|---|---|---|
| GOP-14 | General Operating Procedure - Refueling Operations and Fuel Handling | Revision 32 |
| LP-N00536 | Training Lesson Plan - Emergency Hatch Closure, Containment | Revision 1 |
| CPAL-RFM-005 | Refueling Manual Procedure - Equipment Hatch Emergency Closure | Revision 0 |

1R20.4 Refueling Activities

| | | |
|---|---|---|
| GOP-14 | General Operating Procedure - Refueling Operations and Fuel Handling | Revision 32 |
| T-94 | Completed Technical Specification Surveillance Test Procedure for Visual Verification of Core Loading | Revision 12 |
| CPAL-RFM-005 | Completed Procedure Section 9.3 for Fuel Movement Activities | Revision 0 |

| | | |
|---|---|---|
| FHSO-2 | Completed Procedure for Reactor Core Reconfiguration Sequence | April 3, 2001 |
| CPAL0101341 | Condition Report - Delay in Fuel Shuffle | |

1R20.5 Monitoring of Heatup and Startup Activities

| | | |
|---|---|---|
| | Plant Computer Data for Primary Coolant System Heatup, May 4 to May 6, 2001 | |
| Figure 3.4.3-1 | Technical Specification Temperature Pressure Limits for Heatups | Amendment 189 |
| Attendance Sheet | Just In Time Training for Starting First Primary Coolant Pump; Critical Approach By Dilution; Low Power Physics Test Program; and Turbine Generator Startup and Power Escalation | |
| GOP-2 | General Operating Procedure - Mode 5 to Mode 3 | Revision 23 |
| GOP-3 | General Operating Procedure - Mode 3 to Mode 2 | Revision 17 |
| GOP-4 | General Operating Procedure - Mode 2 to Mode 1 | Revision 15 |
| GOP-5 | General Operating Procedure - Power Escalation | Revision 27 |
| CL 1.4 | Checklist - Containment Closeout Walk-Through | Revision 49 |
| RT-191 | Refueling Test - Startup Physics Test Program | |
| VEN-M1RA, Sheet 858 | Drawing - Neutron Flux Monitoring System, Power Range Channels | Revision G |

Condition Reports Reviewed For Problem Identification Characterization

| | |
|---|---|
| CPAL0101896 | Failure of MOD 26H5 to Close Electrically During Startup |
| CPAL0101887 | Unusual Noise From Turbine Generator Shaft During Startup Activities |
| CPAL0101861 | Control Rod 38 Secondary Position Indicator Did Not Agree With Primary Position Indicator Within 8 Inches |
| CPAL0101867 | Delay In Critical Approach Due To Questions About NI-5 Being Inoperable |
| CPAL0101770 | More Information Needed on Operations Mode Change Valve Line Up Checklists (ALARA Reasons) |

| | | |
|---|---|---|
| CPAL0101904 | Digital Electrohydraulic Control System Presents Unnecessary Challenges To Operators | |
| CPAL0101851 | Swaglock Leak Downstream of MV-PC1045C Primary Coolant System Pressurizer Vapor Sample Line | |
| CPAL0101954 | Remedial Corrective Action Not Tracked On Corrective Action Sheet | |

1R20.6 Containment Sump Screen Inspection

| | | |
|---|---|---|
| RT-92 | Technical Specification Surveillance Test - Inspection of Emergency Core Cooling System Train Containment Sump Suction Inlets | Revision 0 |
| EAR-98-008 | Engineering Assistance Request - Containment Sump Vent Screen | Revision 0 |
| EA-C-PAL-94-0016A-01 | Engineering Analysis - Containment Flood Analysis | Revision 0 |
| EA-PAL-94-041 | Engineering Analysis - Assessment of Potential Sump Blockage due to Failed Plastic Equipment | Revision 2 |
| CPAL0101667 | Condition Report - Gap Identified Between Containment Sump Debris Screen Frame and Sump Ceiling and Operability Determination | |

1R20.7 Identification and Resolution of Problems

| | |
|---|---|
| CIED0003454 | Operating Experience - SEN 216, Leakage From Reactor Vessel Nozzle To Hot Leg Weld |
| CIED0003460 | Operating Experience - Technical Note 2000-02, RCS Piping Minimum Wall Thickness |
| CIED0002943 | Operating Experience - IN 00-013, Review of Refueling Outage Risk |
| CIED0001182 | Operating Experience - SEN 213 Steam Generator Tube Rupture |

Condition Reports Reviewed For Corrective Action Implementation

| | |
|---|---|
| CPAL9902561 | Control Rod Drive Mechanism Cooling Ductwork Louvers Found 90% Closed |
| CPAL0101079 | Stopped Modification To Control Rod Drive Ventilation Following Questions On the Design |

| | |
|---|---|
| CPAL0101178 | Service Water System Sand Issue Poses Potential Challenge to Entire System |
| CPAL9901817 | Control Rod Failure To Trip |
| CPAL0101017 | Suspected Primary Coolant System Leakage On Control Rod 22 Seal Housing |

1R22 Surveillance Testing

1R22.1 General Surveillance Testing

Technical Specification Surveillance Test Procedures and Documented Test Results

| | | |
|---|---|---|
| RI-14 | Safety Injection Refueling Water Tank Level Switch Interlocks Test and Associated Test Procedure Basis Document | Revision 13 |
| RO-12 | Containment High Pressure and Spray System Tests and Associated Test Procedure Basis Document | Revision 26 |
| RO-105 | Full Flow Test for Safety Injection Tank Check Valves and Primary Coolant System Loop Check Valves and Associated Test Procedure Basis Document | Revision 6 |
| RT-36 | Containment Integrated Leak Rate Test and Associated Test Procedure Basis Document | Revision 16 |
| RT-71A | Primary Coolant System Class 1 System Leakage Test and associated Test Procedure Basis Document | Revision 8 |
| RT-71A-2 | Primary Coolant System, Class 1 Reactor Vessel Visual Examination and Associated Test Procedure Basis Document | Revision 2 |
| RT-71L | Admin. 5.5.2 Pressure Test of Engineered Safeguards System Pump Suction Piping and Associated Test Procedure Basis Document | Revision 9 |
| RO-22 | Control Rod Drop Times | Revision 17 |
| RO-216 | Service Water Flow Verification | Revision 0 |
| RE-139-1 | Test Starting Time Of Diesel Generator 1-1 and Associated Basis Document | Revision 1 |
| RT-8D | Engineered Safeguards System - Right Channel and Associated Basis Document | Revision 5 |

Other Documents Reviewed

| | | |
|---|---|---|
| TS 3.8.1 | Technical Specification 3.8.1 - AC Sources and Associated Surveillance Requirements | Amendment 189 |
| TS 3.3.4 | Technical Specification - Engineered Safeguards Logic and Manual Initiation and Associated Surveillance Requirements | Amendment 189 |
| FSAR | Table 9-1, Service Water System Flow Requirements | Revision 22 |
| FSAR | Section 14.1, Safety Analysis | Revision 22 |
| M-398, Sheet 18 | Piping and Instrumentation Diagram - Level Settings Diagram for Safety Injection and Refueling Water Tank T-58 | Revision 5 |
| DBD-2.03 | Design Basis Document - Containment Spray System | Revision 5 |
| FSAR | Section 7.3.5 - Engineered Safeguards Testing | Revision 22 |
| FSAR | Appendix 7A - Engineered Safeguard Testing | Revision 22 |

Condition Reports Reviewed For Problem Identification Characterization

| | |
|---|---|
| CPAL0101731 | Service Water To Containment Air Cooler VHX-4 (FI-1773) Out Of Tolerance During RO-216 |
| CPAL0101933 | Technical Specification Surveillance Requirement 3.8.1.9 Not Listed As Acceptance Criteria In RT-8D |
| CPAL0101254 | Tank-82A Safety Injection Tank Low Level Switch LS-0340B Failed to Actuate when Tank was Drained |
| CPAL0101259 | Discontinuity Observed in Primary Plant Computer Plot for Safety Injection Tank T-82D Level Transmitter |
| CPAL0101737 | Evidence of Reactor Cavity Seal Leakage During RT-71A-2 |
| CPAL0101717 | Valve Lineup Performed Out of Order in RT-36, Containment Integrated Leak Rate Test |
| CPAL0101725 | During RT-36 Containment Pressurization, Indicated Level of Clean Waste Receiver Tank T-64B Rose with Containment Pressure |

| | | |
|---|---|---|
| CPAL0101751 | Broken Light Bulbs After RT-36 Integrated Leak Rate Test | |
| CPAL0101349 | Required Test Pressure Not Maintained During RT-71L | |
| CPAL0101550 | Incorrect Step Reference in RT-71-L Acceptance Criteria | |
| CPAL9902624 | Unable to Maintain Test Pressure During Step 5.2.3.E of RT-71L, This Condition Requires Initiation of CR per this Step, the Associated Operability Determination and Completed Condition Report Evaluation | |

1R22.2 Containment Sump Check Valves Inservice Testing

| | | |
|---|---|---|
| QO-38 | Completed Technical Specification Surveillance Tests dated April 26 and 27, May 1 and 3, 2001 - Containment Sump Check Valves Inservice Test | Revision 3 |

Condition Reports Reviewed For Problem Identification Characterization

| | |
|---|---|
| CPAL0100764 | Performance Of Containment Sump Check Valves During Post Design Basis Accident Recirculation Mode May Not Be Acceptable |
| CPAL0101684 | Technical Specification Surveillance Test QO-38 Procedures Lacking Basis Document |
| CPAL0101704 | During QO-38, The Breakaway Torque for Check Valve CK-ES3166 Approached the Upper Acceptance Band and Would Not Close from Full Open by Its Own Weight |
| CPAL0101705 | During QO-38, The Breakaway Torque for Check Valve CK-ES3181 Approached the Upper Acceptance Band and the Initial Attempt was Terminated, the Second Attempt was Acceptable |
| CPAL0101710 | During QO-38, The Breakaway Torque for Check Valve CK-ES3166 Exceeded Its Upper Acceptance Band |
| CPAL0101796 | Boundary Isolation Leakage Through Control Valve CV-3057 Caused a Delay in Repack of Check Valve CK-ES3181 |

2OS1 Access Control To Radiologically Significant Areas

| | | |
|---|---|---|
| HP6.25 | Radioactive Source Control | July 14, 2000 |
| HP 11.6 | Evaluating Control of Airborne Radioactivity and Respiratory Protection | January 12, 2001 |

RWPs With Associated ALARA Reviews

| | | |
|---|---|---|
| 015008 | Remove Install CRDM Drive PKG and Seal Housings | Revision 1 |
| 015107 | Decon Activities In RX Cavity | Revision 0 |
| 015108 | Reassemble Reactor Head and Refueling Close-Out Activities | Revision 0 |
| 015150 | A & B Steam Generators | Revision 0 |
| 015401 | Remove and Replace P-50B Primary Coolant Pump Motor | Revision 1 |
| 015402 | Remove/Replace Primary Coolant Pump Driver Mount and Pump Assembly | Revision 1 |

Condition Reports

| | |
|---|---|
| CPAL0101208 | Personnel Contamination Incidents During Primary Coolant Pump Seal Detaching Activities |
| CPAL0101467 | Installation and/or Removal of Lead Shielding Performed Without Prior Notification/Approval |
| CPAL0101355 | Training Conducted in a Radiation Area for Primary Coolant Pump Disassembly |
| CPAL0100452 | Source Inventory Identified Problem |

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

RWPs With Associated ALARA Reviews

| | | |
|---|---|---|
| 015008 | Remove/Install CRDM Drive PKG and Seal Housings | Revision 1 |
| 015107 | Decon Activity in RX Cavity | Revision 0 |
| 015108 | Reassemble Reactor Head and Refueling Close-out Activities | Revision 0 |
| 015150 | A & B Steam Generators | Revision 0 |
| 015160 | Install Permanent Steam Generators Platform | Revision 1 |

| | | |
|---|---|---|
| 015401 | Remove and Replace P-50B Primary Coolant Pump Motor | Revision 1 |
| 015402 | Remove/Replace Primary Coolant Pump Driver Mount and Pump Assembly | Revision 1 |

Nuclear Performance Assessment Department Assessment

| | | |
|---|---|---|
| | 2001 Refueling Outage Ten-day NPAD Snapshot Report | April 18, 2001 |
| | ALARA & Work Supporting Long Term Dose Reduction | February 22, 2001 |
| | REFOUT2001 Radiation Dose Performance | April 16, 17, 18, 19, 20, 2001 |
| | Outage ALARA Committee Meeting Report | April 12, 2001 |

4OA3 Event Follow-up

| | | |
|---|---|---|
| EA-APR-95-006 | 10 CFR Part 50, Appendix R Functional Requirements Analysis | Revision 1 |

4OA5 Other

| | | |
|---|---|---|
| EA-FPP-95-47 | Analysis of the Effects of a Fire on the Barriers Between Diesel Generator Room 1-1 and the East Air Plenum Room | Revision 1 |

4OA7 Licensee Identified Violations

| | | |
|---|---|---|
| CPAL0101605 | Condition Report - Work Performed Without Hot Work Permit / Fire Watch Present | |
| CPAL0101717 | Condition Report - Valve Lineup Performed Out of Order in RT-36, Containment Integrated Leak Rate Test | |
| FPIP-7 | Fire Protection Implementing Procedure - Fire Prevention Activities | Revision 11 |
| ONP-25.1, Attachment 23 | Off-Normal Procedure - Fire Which Threatens Safety Related Equipment, Attachment 23 - Turbine Building | Revision 10 |
| RT-36 | Refueling Test - Containment Integrated Leak Rate | Revision 16 |