UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE RD. SUITE 210
LISLE, IL 60532-4352

April 30, 2015

Mr. Anthony Vitale
Vice President, Operations
Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR PLANT NRC INTEGRATED INSPECTION REPORT 05000255/2015001

Dear Mr. Vitale:

On March 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Palisades Nuclear Plant. The enclosed report documents the results of this inspection, which were discussed on April 9, 2015, with you and other members of your staff.

Based on the results of this inspection, three NRC-identified and two self-revealed findings of very low safety significance were identified. All of the findings involved violations of NRC requirements. One of these issues was also determined to be a Severity Level IV violation using the traditional enforcement process. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the violations as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

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

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, “Public Inspections, Exemptions, Requests for Withholding,” of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC’s Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Eric Duncan, Chief
Branch 3
Division of Reactor Projects

Docket No. 50–255
License No. DPR–20

Enclosure:
Inspection Report 05000255/2015001;
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50–255
License No:	DPR–20
Report No:	05000255/2015001
Licensee:	Entergy Nuclear Operations, Inc.
Facility:	Palisades Nuclear Plant
Location:	Covert, MI
Dates:	January 1 through March 31, 2015
Inspectors:	A. Garmoe, Senior Resident Inspector A. Scarbeary, Resident Inspector R. Elliott, Acting Resident Inspector J. Lennartz, Project Engineer J. Cassidy, Senior Health Physicist M. Phalen, Senior Health Physicist R. K. Walton, Senior Operator Licensing Inspector
Approved by:	E. Duncan, Chief Branch 3 Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS

Inspection Report (IR) 05000255/2015001, 01/01/2015–03/31/2015; Palisades Nuclear Plant; Maintenance Effectiveness; Maintenance Risk Assessments and Emergent Work Control; Plant Modifications; Identification and Resolution of Problems.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Five Green findings were identified by the inspectors. The findings were considered non-cited violations (NCVs) of NRC regulations. One of these issues was determined to be a Severity Level IV violation using the traditional enforcement process. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG–1649, "Reactor Oversight Process," Revision 5, dated February 2014.

Cornerstone: Initiating Events

Green. A finding of very low safety significance and an associated NCV of Technical Specification (TS) 5.4.1(a) was self-revealed when the 'C' primary coolant pump (PCP) seal degraded as a result of an inadequate maintenance procedure. Specifically, maintenance procedure PCS–M–54, "N–9000 Primary Coolant Pump Shaft Seal Assembly," did not identify critical steps in the assembly of the PCP seal and, as a result, the work activity was not adequately controlled. This issue was entered into the licensee's Corrective Action Program (CAP) as CR–PLP–2014–03495, Planned Outage Required Due to Two Stages of the Primary Coolant Pump P-50C Seal Not Performing as Expected, dated June 21, 2014.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the 'C' PCP seal was not correctly assembled or installed during refueling outage (RFO) 1R23, which resulted in premature seal degradation. Based on a detailed risk evaluation performed by a Region III Senior Reactor Analyst (SRA) using SAPHIRE Version 8.20 and the Events and Conditions Assessment Feature of the Palisades Standardized Plant Analysis Risk (SPAR) model (Version 8.1.2), the inspectors determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the Work Management component of the Human Performance cross-cutting area. Specifically, the licensee did not effectively screen the PCP seal assembly through the work management process to identify that it should have been classified as a critical maintenance activity. In addition, insufficient emphasis was placed on in-field vendor oversight during work execution. (H.5) (Section 4OA2)

Cornerstone: Mitigating Systems

Green. A finding of very low safety significance and an associated NCV of TS 5.4.1(a) was self-revealed on January 6, 2015, after the licensee identified smoke coming from the 'C' component cooling water (CCW) pump (P–52C) as a result of incorrect assembly of the inboard pump bearing in December 2014, due to an inadequate maintenance procedure. This issue was entered into the licensee's CAP as CR–PLP–2015–00063, Workers Reported Smoke Coming from Shaft of P–52C, dated January 6, 2015.

The performance deficiency was determined to be more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Based on a detailed risk evaluation performed by a Region III SRA using SAPHIRE Version 8.20 and the Events and Conditions Assessment Feature of the SPAR model (Version 8.1.2), the inspectors determined the finding was of very low safety significance. This finding had a cross-cutting aspect in the Avoid Complacency component of the Human Performance cross-cutting area. Specifically, plant staff accepted the practice of bending the 'C' CCW pump oiler nipple to achieve proper level when the oiler could not be properly aligned which compensated for, rather than corrected, an underlying issue of improper alignment when tightening the alignment pin. (H.12) (Section 1R12)

Green. A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors when licensee personnel failed to assure that leakage out of the 'B' safety injection tank (SIT), a condition adverse to quality, was corrected in a timely manner. Specifically, although minor water leakage out of the 'B' SIT had been occurring since at least 2010, the licensee had not corrected the leakage despite several plant outages that provided an opportunity to address the issue. This issue was entered into the licensee's CAP as CR–PLP–2014–04861, B SIT Declared Inoperable Due to Reaching Technical Specification Low Level Setpoint, dated October 7, 2014.

The performance deficiency was determined to be more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the leakage out of the 'B' SIT resulted in unexpected inoperability of the tank on October 7, 2014. The finding was determined to be of very low safety significance based on answering "No" to the screening questions in Exhibit 2.A, Mitigating Systems Screening Questions. This finding had a cross-cutting aspect in the Avoid Complacency component of the Human Performance cross-cutting area. Specifically, over time the licensee became confident that the long-term leakage out of the 'B' SIT was minor and could be managed without an impact to equipment operability, which proved to be incorrect when the minor leakage resulted in 'B' SIT inoperability on October 7, 2014. (H.12) (Section 1R12)

Green. A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors when the licensee credited fire doors for High Energy Line Break (HELB) protection without a supporting test or evaluation. Specifically, Procedure 4.02 credited fire doors with

protection of safety-related equipment against a HELB when the primary HELB barrier was disabled without a test or evaluation to demonstrate the doors could withstand the HELB environment. This issue was entered into the licensee's CAP as CR–PLP–2015–00371, NRC Concerns with Calculation EA–PSA–CCW–HELB–02–17, dated January 22, 2015.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not have an evaluation to demonstrate that barriers relied upon to protect mitigating systems from a HELB initiating event could perform the credited protection function. The inspectors answered "No" to the questions in Exhibit 2.A, Mitigating Systems Screening Questions, and as a result determined the issue was of very low safety significance. This finding was not associated with a cross-cutting aspect since the calculation in question was created in 2003 and therefore did not represent current performance. (Section 1R13)

Severity Level IV. A Severity Level IV NCV of 10 CFR 50.59(d)(1), "Changes, Tests, and Experiments," and an associated finding of very low safety significance was identified by the inspectors when licensee personnel failed to maintain a written safety evaluation that provided a basis that the use of temporary alligator clip jumpers to maintain emergency diesel generator (EDG) operability during certain maintenance activities did not require a license amendment. Specifically, the licensee did not address the adverse effects of the use of alligator jumpers on the design and qualification of the diesel generator (DG) circuit breaker used per Engineering Change 50310 and changes to procedure SPS–E–1, "2400 Volt and 4160 Volt Allis Chalmers and Siemens Vacuum Circuit Breaker Auxiliary Switch Adjustments," Revision 34. This issue was entered into the licensee's CAP as CR–PLP–2014–04859, NRC Identified 50.59 Issue, dated October 7, 2014.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the change that was implemented adversely affected the seismic qualification of the electrical circuit that was relied upon to ensure safety bus 1C would be loaded by the 1–1 DG upon a loss of offsite power. The inspectors evaluated the underlying technical issue and determined the finding was of very low safety significance. In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the finding associated with this violation was determined to be of very low safety significance. This finding had a cross-cutting aspect in the Conservative Bias component of the Human Performance cross-cutting area. Specifically, the licensee did not use all available information and relevant guidance, such as Nuclear Energy Institute 96–07, to demonstrate that the proposed activity was safe and did not require a license amendment prior to implementation. (H.14) (Section 1R18)

REPORT DETAILS

Summary of Plant Status

The plant operated at or near full power for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- 1–1 EDG during 1–2 EDG work window;
- 'A' containment spray (CS) with 'B' CS out of service for maintenance;
- chemical and volume control system; and
- 'C' auxiliary feedwater (AFW) during 'B' AFW maintenance window.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), TS requirements, outstanding work orders (WOs), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted four partial system walkdown samples as defined in Inspection Procedure (IP) 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on the availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Area 23: Turbine Building North and South 590'/607'/612' Elevations;
- Areas 3 and 21: 1D switchgear and Electrical Equipment Rooms;
- Areas 5 and 7: EDG 1–1 and Fuel Oil Day Tank Rooms;
- Area 13A: Auxiliary Building Main Corridor–South/590' Elevation;
- Area 28: West Engineered Safeguards Room; and
- Area 26: Southwest Cable Penetration Room.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan.
The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event.
Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP.

These activities constituted six quarterly fire protection inspection samples as defined in IP 71111.05–05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On January 20, 2015, the inspectors observed fire brigade activation for a fire in a Bullet Resistant Enclosure. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner, and took appropriate corrective actions. Specific attributes evaluated included the following:

- proper wearing of turnout gear and self-contained breathing apparatus;

- proper use and layout of fire hoses;
- employment of appropriate firefighting techniques;
- sufficient firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations; and
- utilization of pre-planned strategies.

Documents reviewed are listed in the Attachment to this report.

These activities constituted one annual fire protection inspection sample as defined in IP 71111.05–05.

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

a. Inspection Scope

The inspectors reviewed selected risk-important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Basis for AFW Pump Room, 570' Elevation, Turbine Building Flood Door Closure Time Requirement.

Documents reviewed during this inspection are listed in the Attachment to this report.

These activities constituted one internal flooding sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

On January 28, 2015, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program simulator sample as defined in IP 71111.11 and satisfied the inspection program requirement for the resident inspectors to observe a portion of an in-progress annual requalification operating test during a training cycle in which it was not observed by the NRC during the biennial portion of this IP.

b. Findings

No findings were identified.

.2 Biennial Written and Annual Operating Test Results (71111.11A)

a. Inspection Scope

On March 23, 2015, the inspectors reviewed the overall pass/fail results of the Biennial Written Exam and Operating Test administered by the licensee from January 12, 2015, to February 20, 2015, as required by Title of the *Code of Federal Regulations,* 10 (CFR) 55.59(a). The results for both parts of the exam were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process," to assess the overall adequacy of the licensee's Licensed Operator Requalification Training Program to meet the requirements of 10 CFR 55.59. (02.02).

This inspection constituted one annual licensed operator requalification examination results sample as defined in IP 71111.11–05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- 'C' CCW train;
- Turbine-driven AFW pump; and
- 'B' safety injection tank (SIT).

The inspectors reviewed events including those where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted three quarterly maintenance effectiveness samples as defined in IP 71111.12–05.

b. Findings

(1) Inadequate Procedure Results in Failure of Component Cooling Water Pump

Introduction: A finding of very low safety significance (Green) and an associated NCV of TS 5.4.1(a) was self-revealed on January 6, 2015, after the licensee identified smoke coming from the 'C' CCW pump (P–52C) as a result of incorrect assembly of the inboard pump bearing in December 2014, due to an inadequate maintenance procedure.

Description: On January 6, 2015, workers in the CCW room performing an unrelated task identified smoke coming from the shaft of CCW Pump P-52C near the inboard pump bearing. The control room was notified and the pump was removed from service.

The pump was subsequently disassembled and the licensee noted 14 of the 24 inboard pump bearing balls were fused to the inner race of the bearing, heat discoloration of the pump shaft in the vicinity of the inboard pump bearing, the presence of carbon soot, and a small bend in the inboard pump bearing oiler nipple. The licensee also noted during inboard pump bearing disassembly that the pump bearing oiler failed to drain oil into the bearing as designed. The licensee completed maintenance to replace the pump shaft and the affected inboard pump bearing components and the pump was returned to service on January 11, 2015.

A review of the work history for CCW Pump P–52C revealed a maintenance activity that had been conducted from December 8–11, 2014. During that maintenance activity, the licensee replaced mechanical seals and bearings, including the inboard pump bearing. Post-maintenance testing was satisfactorily completed and the pump was returned to service.

The licensee performed an equipment apparent cause evaluation (ACE) to determine why the inboard pump bearing failed. The apparent cause for the failure was determined to be vague procedural guidance for installation of the pump bearing alignment set screw. The purpose of the alignment set screw was to properly align the bearing housing with the bearing cap, which also allowed for proper alignment of the bearing oiler. Procedure CCS–M–5, "Component Cooling Water Pump Disassembly, Inspection, and Reassembly, P–52C, P–52A," Revision 15, Step 5.13.20, stated: "**INITIATE** Peer Check AND **INSTALL** AND **ALTERNATELY TIGHTEN** coupling end bearing cap nuts and setscrews, along with bearing end cover," [emphasis in original]. This step directed the tightening of the alignment set screw, but the procedure did not direct the verification of proper alignment with the bearing housing hole. As a result, the alignment set screw was tightened against the bearing housing rather than into the bearing housing hole, which prevented the alignment set screw from maintaining proper alignment. Due to the misaligned bearing cap and bearing housing, the bearing oiler rotated, prevented adequate flow of oil into the bearing, and ultimately led to catastrophic overheating of the bearing. In addition, the plant staff instituted a practice of bending the oil nipple to achieve proper level when the oiler could not be properly aligned.

The licensee documented the inboard pump bearing failure in their CAP as CR–PLP–2015–00063, Workers Reported Smoke Coming from Shaft of P–52C, dated January 6, 2015. Immediate corrective actions taken by the licensee following the inboard pump bearing failure included starting the 'A' CCW pump to allow for maintenance repairs of P–52C. Additional planned corrective actions included revising procedure CCS–M–5 to ensure proper alignment and extent of condition reviews of other pumps on site.

Analysis: The inspectors determined the inadequate procedure for CCW pump bearing assembly, which led to the failure of the P–52C inboard pump bearing was an issue of concern, and the inspectors evaluated it in accordance with IMC 0612, Appendix B, Issue Screening, dated September 7, 2012. The issue of concern was determined to not involve willful or traditional enforcement aspects. The inspectors determined that the issue of concern was within the licensee's ability to foresee and correct and represented the failure to meet a standard in that the licensee did not maintain appropriate maintenance procedures as recommended in Regulatory Guide 1.33, Revision 2,

Section 9.a, which the licensee committed to in TS 5.4.1(a). Therefore, the issue of concern represented a performance deficiency.

The performance deficiency was determined to be more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, P–52C had a documented licensing basis function to automatically start on a safety injection signal (SIS) or start on CCW low pressure in the event of an SIS with a loss of offsite power, as described in Section 9.3 of the Palisades UFSAR.

The inspectors evaluated the significance of the finding in accordance with IMC 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012. All of the questions in Table 3 were answered "No" and the inspectors continued screening the finding in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," dated June 19, 2012. The inspectors reviewed the Mitigating Systems questions in Exhibit 2, Section A, and answered "No" to questions 1, 2, and 3. The inspectors answered "Yes" to question 4 since the issue represented the actual loss of function of a non-TS train (the 'C' CCW train) designated as high safety significant in the Maintenance Rule program for greater than 24 hours. As a result, a detailed risk evaluation was performed.

The risk evaluation was performed by a Region III SRA using SAPHIRE Version 8.20 and the Events and Conditions Assessment Feature of the Palisades SPAR model (Version 8.1.2). The increase in differential core damage frequency (ΔCDF) was calculated by setting the basic event representing P–52C failure to run to "True." The SRAs also adjusted the test and maintenance failure mode to reflect that the pump was unavailable. The exposure period assumed was 128 hours.

After solving the model, the resultant total ΔCDF was 7.04E–09/year. The dominant sequence involved a small break loss-of-coolant accident initiating event, successful reactor trip, successful feedwater injection, successful high pressure injection, failure of secondary side reactor coolant system cooldown, successful containment cooling, and failure of long-term cooling through high pressure recirculation. Based on this detailed analysis, the inspectors determined that the finding was of very low safety significance (Green).

This finding had a cross-cutting aspect in the Avoid Complacency component of the Human Performance cross-cutting area. Specifically, plant staff accepted the practice of bending the oiler nipple to achieve proper level when the oiler could not be properly aligned, which compensated for, rather than corrected, the underlying issue of not verifying proper alignment when tightening the alignment pin. (H.12)

Enforcement: Technical Specification 5.4.1(a), requires, in part, that written procedures shall be established, implemented, and maintained as recommended in Regulatory Guide 1.33, Revision 2, dated February 1978. Section 9.a, "Procedures for Performing Maintenance," states in part, "Maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances." Procedure CCS–M–5, "Component Cooling Water Pump Disassembly,

Inspection, and Reassembly, P–52C, P–52A," Revision 15, contained instructions for assembly of CCW pump bearings.

Contrary to the above, procedure CCS–M–5, a procedure for performing maintenance required by TS 5.4.1(a) failed to contain appropriate instructions for assembly of CCW pump bearings. In particular CCS–M–5 did not require verification of proper alignment of the set screw prior to tightening the set screw to align the CCW bearing cap with the bearing housing. As a result, in December 2014, the licensee assembled the P–52C inboard pump bearing with a tightened, but misaligned set screw, which resulted in a bearing failure of P–52C on January 6, 2015. Immediate corrective actions included replacement of damaged bearing components. Because the finding was of very low safety significance and the licensee entered the issue into the CAP as CR–PLP–2015–00063, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000255/2015001–01, Inadequate Procedure Results in Failure of Component Cooling Water Pump)**

(2) Inoperability of Safety Injection Tank Due to Long-Term Leakage

Introduction: A finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors when licensee personnel failed to ensure that leakage out of the 'B' SIT, a condition adverse to quality, was corrected in a timely manner. Specifically, although minor water leakage out of the 'B' SIT had been occurring since at least 2010, the licensee failed to adequately address the leakage despite several plant outages that provided an opportunity to perform maintenance.

Description: At 5:02 p.m. on October 7, 2014, the licensee entered TS 3.5.1 Action B.1 when main control room annunciator EK–1321, "SIT T–82B Lo Level," unexpectedly alarmed. Action Statement B.1 of TS 3.5.1 required the licensee to restore T–82B to an operable status within 24 hours, and if not completed to place the plant in Mode 3 within 6 hours. The licensee initiated actions to add water to T–82B and exited the limiting condition for operation (LCO) at 5:47 p.m. This issue was entered into the licensee's CAP as CR–PLP–2014–04861, B SIT Declared Inoperable Due to Reaching Technical Specification Low Level Setpoint, dated October 7, 2014.

There are two types of level indication for T–82B. The first are high and low float-type level switches that activate main control room annunciators EK–1320, "SIT T–82B Hi Level," and EK-1321, "SIT T–82B Lo Level," which represented the high and low level limits for TS operability. The second level indication for each SIT is a differential pressure transmitter that displays tank level (in percent) in the main control room. The differential pressure transmitters activate main control room annunciator EK–1319, "SIT T–82B Hi/Lo Level," which is set to a narrower band to provide an early warning to operators that tank level is approaching the high or low operability limit. Each of the four SITs had the two types of level indication and associated main control room annunciators described above.

Prior to the October 7, 2014 event, the inspectors noted that annunciator EK–1319 had been in alarm since September 30, 2014. The licensee explained that annunciator EK–1319 was in alarm due to long-term minor water leakage out of the 'B' SIT. The licensee had been performing TS Surveillance Requirement (TSSR) 3.5.1.4 to verify SIT boron concentration as required every 31 days, and during that surveillance routinely

added water to T–82B. Often, the leakage from T–82B would result in actuation of annunciator EK–1319 between performances of TSSR 3.5.1.4, at which point Operations would determine whether the rate of leakage would result in TS inoperability prior to the next scheduled TSSR 3.5.1.4 and associated T–82B fill. Complicating this was a known adverse impact of the containment environment on the calibration of the "early warning" differential pressure transmitter.

The inspectors performed CAP and work order searches and interviewed licensee personnel to develop the following history of leakage from T–82B:

- On September 21, 2010, the licensee initiated CR–PLP–2010–04029 to document that valve MO–3066, one of the high pressure safety injection (HPSI) system loop injection valves, was showing signs of leak-by since T–82B pressure was equivalent to the HPSI pump P–66A discharge pressure (1250 psig).

- The licensee performed an Equipment Failure Evaluation which stated that valve MO–3066 is allowing leakage out from T–82B and that has been an on-going issue "for some time now."

- An existing work order, WO 51637614, was already in-place and scheduled to inspect and repair valve MO–3066 during refueling outage (RFO) 1R22 in spring 2012.

- The Evaluation also stated that prior efforts to move WO 51637614, which had been created in November 2007, into earlier outages had been unsuccessful since the leakage was considered minor.

- The inspectors reviewed WO 51637614 and noted that it had been cancelled on July 16, 2014, and had not been completed. This implied that the WO was not performed during 1R22 in spring 2012, 1R23 in winter 2014, or during several other prior maintenance outages.

- A review of main control room annunciator logs revealed that annunciator EK–1319 was routinely alarming between performances of TSSR 3.5.1.4 throughout 2012, 2013, and 2014, and continued to do so after the October 7, 2014 event.

Subsequent to the October 7, 2014, event, the licensee generated CR-PLP-2014-05549 on November 19, 2014, to document that nitrogen, which was used to pressurize the SITs, was leaking out of T–82B with the water leakage, which resulted in a gas void in the HPSI system. The gas void expanded into an area of HPSI piping that was not accessible to be monitored during power operations and, as a result, the licensee performed an Operability Evaluation to bound the maximum possible void size. Corrective actions planned by the licensee included scoping inspection and repair of valve MO-3066 during the next RFO, 1R24.

Analysis: The inspectors determined that the failure to correct leakage out of T–82B was an issue of concern, and the inspectors evaluated it in accordance with IMC 0612, Appendix B. The issue was determined to not be associated with willful or traditional enforcement aspects. Because the issue represented the failure to meet a standard (correction of conditions adverse to quality in accordance with 10 CFR 50, Appendix B,

Criterion XVI) and was within the ability of the licensee to foresee and correct (WO 51637614 was created, deferred, and cancelled), the inspectors determined the issue was a performance deficiency.

The inspectors determined that the performance deficiency was more than minor because it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the leakage out of T–82B resulted in the unexpected inoperability of T–82B on October 7, 2014. The inspectors evaluated the performance deficiency in accordance with IMC 0609, Attachment 4. The questions in Table 3 were answered "No" and the inspectors continued the significance evaluation in accordance with IMC 0609, Appendix A. The inspectors reviewed the Mitigating Systems questions in Exhibit 2, Section A, answered "No" to all the questions, and as a result the finding was determined to be of very low safety significance (Green).

This finding had a cross-cutting aspect in the Avoid Complacency component of the Human Performance cross-cutting area. Specifically, over time the licensee became confident that the long-term leakage out of the 'B' SIT was minor and could be managed without an impact to equipment operability, which proved to be incorrect when the minor leakage resulted in 'B' SIT inoperability on October 7, 2014. (H.12)

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires that measures be established to assure that conditions adverse to quality, such as defective equipment, are corrected.

Contrary to this requirement, from at least September 21, 2010, through at least April 9, 2014, the licensee had not corrected a condition adverse to quality. Specifically, although water leakage out of the 'B' SIT had been occurring over a long period of time, the licensee had not corrected the leakage, despite several plant outages that provided an opportunity to address the issue. Because the licensee entered this issue into the CAP as CR–PLP–2014–04861 and because the finding was of very low safety significance, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000255/2015001–02, Inoperability of Safety Injection Tank Due to Long-Term Leakage)**

(3) (Unresolved Item) Turbine-Driven Auxiliary Feedwater Pump Trip During Surveillance Testing

Introduction: The inspectors identified an unresolved item (URI) associated with an overspeed trip of the turbine-driven auxiliary feedwater (AFW) pump during surveillance testing. Specifically, a definitive cause had not been identified following a turbine-driven AFW pump overspeed trip during performance of surveillance procedure RO–127, "Auxiliary Feedwater System 18-month Test Procedure," Revision 13, on November 14, 2014. At the end of the inspection period, the licensee was continuing to assess additional information that was gathered during a system maintenance outage in March 2015 to determine the cause of the trip.

Description: On November 14, 2014, during performance of surveillance procedure RO-127, the turbine-driven AFW pump overspeed trip mechanism actuated and tripped the pump, which resulted in entry into 72-hour TS LCO 3.7.5 Condition A. Personnel

performing the test reported no abnormalities prior to the trip. The pump had been operated satisfactorily on November 13, 2014, during performance of quarterly surveillance procedure QO-21, Inservice Test Procedure–Auxiliary Feedwater Pumps, Revision 43. Following the November 14 pump trip, the licensee performed a sequence of testing in an attempt to replicate the overspeed trip to assist in cause identification, or to demonstrate operability if the trip could not be replicated. This sequence included test runs in accordance with procedure SOP–12, "Feedwater System," Revision 72; procedure RO–145, "Comprehensive Pump Test Procedure, Auxiliary Feedwater Pumps P–8A, P–8B and P–8C," Revision 13; and a modified test run in accordance with procedure T–186, "Auxiliary Feedwater Turbine K–8 Overspeed Trip Test and Governor Setting," Revision 18. Since all acceptance criteria were met, the licensee declared the turbine-driven AFW pump operable on November 16, 2014, and LCO 3.7.5 was exited.

The licensee subsequently conducted an ACE that identified three possible causes: 1) excess condensate in the moisture removal system, 2) decreased margin between the as-found operating speed and the overspeed trip setpoint, and 3) inherent design conditions of the steam supply and steam control system affecting the speed of the turbine. The evaluation also identified discrepancies in the Maintenance Rule classification of the steam traps and the frequency of preventive maintenance activities that were conducted on the equipment. Corrective actions were generated to evaluate each of the possible causes during the next pump maintenance outage, which occurred from March 2–6, 2015. The licensee conducted procedure T–186 to verify the overspeed trip mechanism would trip within its required band and that the governor was functioning properly to changes in steam supply and pump speed. Procedure RO–145 was conducted to observe steam trap operation and any oscillations in the steam supply system. Finally, the overspeed trip setpoint was revised based on the vendor's recommendation for the operating conditions of this particular pump. At the end of the inspection period, all of the data from these tests were under review by the licensee, with vendor support, to aid in determining the cause of the November 2014 pump trip. Pending inspector review of the licensee's data, conclusions, and any revisions made to the ACE, this issue is unresolved. **(URI 05000255/2015001–03, Turbine-Driven AFW Pump Trip During Surveillance Testing)**

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Increased fire risk during 1–2 EDG rebuild;
- High Integrated Risk Activity: Fuel Sipping for Dry Fuel Storage Campaign;
- High Integrated Risk Activity: Replacement of a Power Supply in the Main Turbine Vibration Monitoring Panel;
- Yellow PRA Risk for 'A' Service Water Pump maintenance;
- Local Leak Rate Test Failure of Containment Inner Air Lock Door;
- Increased PRA Risk Due to Geomagnetic Storm Warning during 1–2 EDG Maintenance;

- Failure of Valve CV–0864, Hi Capacity Service Water Outlet from Containment Air Cooler #2, to Stroke; and
- HELB Protection during Emergent 'C' CCW Pump Maintenance.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Documents reviewed during this inspection are listed in the Attachment to this report.

These maintenance risk assessments and emergent work control activities constituted eight samples as defined in IP 71111.13–05.

b. Findings

Failure to Verify the Adequacy of Credited High Energy Line Break Barriers

Introduction: A finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion III, was identified by the inspectors when the licensee credited fire doors for HELB protection without a test or evaluation to demonstrate the doors could withstand the HELB environment.

Description: The inspectors observed an emergent P–52C maintenance activity following field reports on January 6 of a smoking inboard pump bearing, which was documented in CR–PLP–2015–00063. During the maintenance, the inspectors noted that the licensee blocked open the CCW room door to the Auxiliary Building hallway, Door 167, several times to support the movement of equipment in and out of the room. Door 167 was a flood and HELB barrier. Licensee Procedure 4.02, "Control of Equipment," allowed for the blocking open of flood or HELB doors provided the doors could be closed within certain closure time requirements, which for Door 167 was 3 minutes. Section 11 of Procedure 4.02 described the minimum controls that were required to be established prior to blocking or leaving open Door 167. These controls included controlling nine other doors in the closed position with the exception of normal ingress and egress and ensuring several floor plugs were in place.

The inspectors noted that the doors being controlled closed with Door 167 open were not identified as HELB doors. Since the nine other doors were acting as HELB barriers, the inspectors asked whether they were physically able to withstand the HELB conditions that they could be exposed to. In particular, the inspectors were concerned about Door 168, which is just outside Door 167 and led into the 1C 2.4 kilovolt (kV) safety bus room. In response to the inspectors' questions, the licensee provided calculation EA–PSA–CCW–HELB–02–17, "Evaluation of the Impact of a High Energy Line Break in CCW Room with Either Door 167 to 590 Corridor Auxiliary Building or

167B to the West Engineered Safeguards Room Open," Revision 0. Upon reviewing the calculation, the inspectors noted assumption 4.1.9, which stated the following.

> *This evaluation is of the impact of doors to the CCW Room (123) being open and extending the impact of the steam/feedwater line break into adjacent areas through the doors. This analysis is based on the assumption that closing the doors to other adjacent areas is adequate protection for those components or cables from the harsh environment created outside the door. Other ways steam could impact adjacent areas was not considered (i.e., HVAC ductwork).*

The inspectors questioned how the licensee could demonstrate operability of safety-related equipment with barrier doors that were assumed, rather than evaluated, to protect against a HELB. The licensee entered the issue into the CAP as CR–PLP–2015–00371, NRC Concerns with Calculation EA–PSA–CCW–HELB–02–17, dated January 22, 2015, and issued an Operations Standing Order to prohibit blocking open Doors 167 and 167A until final dispositioning of CR–PLP–2015–00371.

The licensee subsequently performed Engineering Change (EC) 55129 to evaluate and document the basis behind assumption 4.1.9. The evaluation used a finite element analysis to evaluate the ability of a standard hollow metal fire door to withstand hydrodynamic loads and concluded that the fire doors credited in Procedure 4.02 when Door 167 was open were capable of withstanding the postulated HELB environment.

Analysis: The inspectors determined that crediting fire doors for HELB protection based on an assumption rather than a test or evaluation was an issue of concern, and the inspectors evaluated it in accordance with IMC 0612, Appendix B. The issue was determined to not be associated with willful or traditional enforcement aspects. The inspectors determined the issue was reasonably within the licensee's ability to foresee and correct since they had previously accepted the unverified assumption in a calculation and it represented the failure to meet a standard in that 10 CFR 50, Appendix B, Criterion III, "Design Control," requires that adequacy of design be verified or checked by calculational methods or a testing program. As a result, the inspectors determined that the issue represented a performance deficiency.

The performance deficiency was determined to be more than minor since it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not have an evaluation to demonstrate that barriers relied upon to protect mitigating systems from a HELB initiating event could perform the credited protection function.

The performance deficiency was evaluated for significance in accordance with IMC 0609, Attachment 4. The inspectors answered "No" to the questions in Table 3 and proceeded with the significance evaluation in accordance with IMC 0609, Appendix A. The inspectors answered "No" to the questions in Exhibit 2, Section A, and as a result determined the issue was of very low safety significance (Green).

This finding was not associated with a cross-cutting aspect since the calculation in question was created in 2003 and did not represent current performance.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

Contrary to the above, since initial plant operation in 1971, Section 11.10 of Procedure 4.02, Revision 73 credited barrier doors for protection against a HELB event without an evaluation or test that verified the adequacy of the design. Because this issue was of very low safety significance and because the issue was entered into the CAP as CR–PLP–2015–00371, this violation is being treated as a NCV in accordance with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000255/2015001–04, Failure to Verify the Adequacy of Credited High Energy Line Break Barriers)**

1R15 Operability Determinations and Functional Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- EDG 1–2 Turbocharger fastener torqueing;
- 'A' HPSI pump discharge check valve, CK–ES3411, bonnet retainer cap screws torqueing;
- Valve CV–3001, Containment Spray Header Isolation, boric acid leakage; and
- HELB barrier effectiveness.

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

This operability inspection constituted four samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modification(s):

- low pressure safety injection system alternate injection modification (permanent); and
- feedwater heater level control valve modification (temporary).

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one temporary modification sample and one permanent plant modification sample as defined in IP 71111.18–05.

b. Findings

(Closed) (Unresolved Item) Failure to Evaluate the Adverse Effects of the Use of Non-Seismic Temporary Jumpers

Introduction: A Severity Level IV NCV of 10 CFR 50.59(d)(1) “Changes, Tests, and Experiments,” and an associated finding of very low safety significance (Green) was identified by the inspectors when licensee personnel failed to maintain a written safety evaluation that provided a basis that the use of temporary alligator clip jumpers to maintain EDG operability during certain maintenance activities did not require a license amendment. Specifically, the licensee did not address the adverse effects of the use of alligator clip jumpers on the design and qualification of the EDG circuit breaker used per EC 50310 and changes to procedure SPS–E–1, “2400 Volt and 4160 Volt Allis Chalmers and Siemens Vacuum Circuit Breaker Auxiliary Switch Adjustments,” Revision 34.

Description: On September 10, 2014, the inspectors observed a preventive maintenance activity on 2.4kV breaker 152–106, which supplied power from startup transformer 1–2 to the 1C safety bus, conducted in accordance with procedure SPS–E–1. During the activity, the inspectors noted that the licensee installed a temporary alligator clip jumper to maintain operability of the 1–1 EDG. There was a normally closed b-contact on the breaker 152–106 auxiliary switch that was part of the 1–1 EDG auto-start circuit, which allowed the 1–1 EDG to automatically close onto the 1C safety bus when both offsite power feeder breakers were open. During the preventive maintenance activity, the spring-return auxiliary switch was manipulated and repositioned several times, which prevented the 1–1 EDG from automatically closing onto the 1C safety bus, rendering the 1–1 EDG inoperable until the switch was returned to its normal position. With breaker 152–106 removed and an inoperable 1–1 EDG, Technical Specification Action Statement 3.8.1 Condition D applied, which required restoring either the inoperable EDG or offsite circuit to an operable status within

12 hours, and if not completed the plant must be in Mode 3 within 6 hours and Mode 5 within 36 hours.

The licensee previously evaluated and approved a temporary modification, documented in EC 50310, for the use of temporary jumpers to maintain EDG auto-start circuit continuity and DG operability, during preventive maintenance activities that manipulated the auxiliary switch for breaker 152–106 as well as several other breakers (six in total) associated with the 1C and 1D safety buses. The evaluation acknowledged that the jumpers were being installed in seismically-qualified equipment and the jumpers should be installed using safety-related wire and ring tongue terminals. However, the evaluation concluded that, due to the design of each breaker, breakers 152–105 and 152–106 required the use of alligator clip jumpers. The licensee determined that the installation of the alligator jumpers was acceptable because it was allowed by fleet procedure EN–DC–136, "Temporary Modifications," Revision 10, provided the alligator clip jumpers were not left unattended, though the licensee could not provide the basis for this allowance. The licensee determined that with breaker 152–106 removed from service and the 1–1 EDG operable, TS Action Statement 3.8.1 Condition A applied, which required restoration of the offsite circuit to operable status within 72 hours, and if not completed the plant must be in Mode 3 within 6 hours and Mode 5 within 36 hours.

The inspectors reviewed the process applicability determination (PAD) for the temporary modification documented in EC 50310. The licensee's PAD concluded that, while some aspects of the activity were covered under maintenance risk regulations in 10 CFR 50.65, the use of temporary jumpers to maintain EDG operability was covered under 10 CFR 50.59. The 10 CFR 50.59 screening was documented in the PAD and the licensee determined that there were no adverse effects from the change. Section VI.B of the PAD referred to Nuclear Energy Institute (NEI) 96–07, "Guidelines for 10 CFR 50.59 Implementation," Section 4.2, for guidance in screening issues through the 10 CFR 50.59 criteria.

The inspectors reviewed NEI 96–07, Section 4.2, and identified items that were not addressed by the licensee. Section 4.2.1, "Is the Activity a Change to the Facility or Procedures as Described in the UFSAR," of NEI 96–07 contained a list of questions that illustrate the range of effects that may stem from a proposed activity. Two of the questions were:

- Does the activity decrease the reliability of a Structure, System, and Component (SSC) design function, including either functions whose failure would initiate a transient/accident or functions that are relied upon for mitigation?

- Does the activity degrade the seismic or environmental qualification of the SSC?

Table 5.2–4 of the Palisades UFSAR described the component classification for electrical systems and listed the 1C safety bus and 1–1 EDG as Seismic Category 1 components. The PAD did not address either of the above questions despite the knowledge that alligator clip jumpers were not seismically-qualified, needed constant attention per site procedures for that reason, and were being installed in seismically-qualified equipment (the 1C 2.4kV safety bus). Specifically, the PAD concluded that the proposed activity did not have the potential to affect, invalidate, or render incorrect, information contained in the UFSAR. The licensee entered the inspectors' concerns into the CAP as CR–PLP–2014–04859, NRC Identified 50.59

Issue, dated October 7, 2014. Initial corrective actions included removal of the procedure steps associated with the temporary modification evaluated in EC 50310 and inclusion of notes in procedure SPS–E–1 stating that performance of the procedure for bus 1C and 1D feeder breakers would render the associated EDG inoperable when the auxiliary switch was manipulated.

Subsequently, the licensee completed an evaluation through Assignment 1 of CR–PLP–2014–04859, which did not provide a justification for operability of the EDG circuit while the alligator clip jumper was installed. The use of an alligator clip jumper was not a qualified design that maintained the seismic qualification of the circuit as documented in the current licensing basis.

To address this issue, the licensee revised procedure SPS–E–1 to declare the EDG inoperable with the alligator clips installed.

Analysis: The inspectors determined that the failure to perform and maintain a written safety evaluation for the changes documented in EC 50310 and incorporated in procedure SPS–E–1 was contrary to the requirements of 10 CFR 50.59(d)(1) and represented an issue of concern, and the inspectors evaluated it in accordance with IMC 0612, Appendix B. The inspectors determined that the issue did not involve any willful aspects, but did involve traditional enforcement aspects since the failure to perform a 10 CFR 50.59 analysis was considered to be a violation that impacted the regulatory process. Because the issue was within the licensee's ability to foresee and correct (applicable guidance for conducting 10 CFR 50.59 evaluations is widely available) and represented the failure to meet a standard (NEI 96–07 guidance for 10 CFR 50.59 evaluations), the inspectors determined the issue was also a performance deficiency.

The performance deficiency was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the change that was implemented adversely affected the seismic qualification of the electrical circuit that was relied upon to ensure safety bus 1C would be loaded by the 1–1 EDG upon a loss of offsite power.

Since violations of 10 CFR 50.59 are dispositioned using the traditional enforcement process, the underlying technical issue is evaluated using the Significance Determination Process, if possible, to determine the severity of the violation. The inspectors evaluated the underlying technical issue in accordance with IMC 0609, Attachment 4. The questions in Table 3 were answered "No" and the inspectors continued the significance evaluation in accordance with IMC 0609, Appendix A. The inspectors reviewed the Mitigating Systems questions in Exhibit 2, Section A, answered "No" to all the questions, and determined the finding was of very low safety significance (Green).

In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, the violation was categorized as Severity Level IV because the finding associated with this violation was determined to be of very low safety significance (Green).

This finding had a cross-cutting aspect in the Conservative Bias component of the Human Performance cross-cutting area. Specifically, the licensee did not use all available information and relevant guidance, such as NEI 96–07, to demonstrate that the proposed activity was safe and did not require a license amendment prior to implementation. (H.14)

Enforcement: Title 10 CFR 50.59(d)(1) requires, in part, that the licensee maintain records of changes in the facility, of changes in procedures, and of tests and experiments made pursuant 10 CFR 50.59(c) and that these records must include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment pursuant to paragraph (c)(2) of this section. Title 10 CFR 50.59(c)(2)(ii) states, in part, that a licensee shall obtain a licensee amendment pursuant to 10 CFR 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would result in a more than minimal increase in the likelihood of occurrence of a malfunction of a SSC important to safety previously evaluated in the UFSAR.

Contrary to the above, on April 24, 2014, the licensee failed to perform and maintain a written 10 CFR 50.59 evaluation to demonstrate that a change to procedure SPS–E–1 did not require a license amendment as required by 10 CFR 50.59(d)(1) and 10 CFR 50.59(c) or request a license amendment. As part of their corrective actions, the licensee revised procedure SPS–E–1 to declare the EDG inoperable with the alligator clips installed. Because this violation was of very low safety significance and was entered into the CAP as CR–PLP–2014–04859, this violation is being treated as a NCV in accordance with Section 2.3.2 of the NRC's Enforcement Policy. **(NCV 05000255/2015001–05, Failure to Evaluate the Adverse Effects of the Use of Non-Seismic Temporary Jumpers)**

The associated finding for this issue was evaluated separately from the traditional enforcement violation and therefore the finding was assigned a separate Tracking Number. **(FIN 05000255/2015001–06, Failure to Evaluate the Adverse Effects of the Use of Non-Seismic Temporary Jumpers)**

Unresolved Item 05000255/2014004–03 is closed.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- MO–7A–2 following 1-2 EDG maintenance;
- QO–14 following 'A' Service Water Pump maintenance window; and
- 'B' AFW Pump testing following maintenance.

These activities were selected based upon the SSC's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance

performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted three post-maintenance testing samples as defined in IP 71111.19–05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- QO-21, 'C' AFW Surveillance (Inservice Test);
- QI–5, Containment High Pressure Test (Routine);
- RE–131, EDG 1–1 Load Reject Testing (Routine); and
- QO–1, Safety Injection System Testing (Routine).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, sufficient to demonstrate operational readiness, and consistent with the system design basis;
- was plant equipment calibration correct, accurate, and properly documented;
- were as-left setpoints within required ranges and was the calibration frequency in accordance with TSs, the UFSAR, plant procedures, and applicable commitments;
- was measuring and test equipment calibration current;

- was the test equipment used within the required range and accuracy and were applicable prerequisites described in the test procedures satisfied;
- did test frequencies meet TS requirements to demonstrate operability and reliability;
- were tests performed in accordance with the test procedures and other applicable procedures;
- were jumpers and lifted leads controlled and restored where used;
- were test data and results accurate, complete, within limits, and valid;
- was test equipment removed following testing;
- where applicable for IST activities, was testing performed in accordance with the applicable version of Section XI of the American Society of Mechanical Engineers (ASME) Code, and were reference values consistent with the system design basis;
- was the unavailability of the tested equipment appropriately considered in the performance indicator data;
- where applicable, were test results not meeting acceptance criteria addressed with an adequate operability evaluation, or was the system or component declared inoperable;
- where applicable for safety-related instrument control surveillance tests, was the reference setting data accurately incorporated into the test procedure;
- was equipment returned to a position or status required to support the performance of its safety function following testing;
- were all problems identified during the testing appropriately documented and dispositioned in the licensee's CAP;
- where applicable, were annunciators and other alarms demonstrated to be functional and were annunciator and alarm setpoints consistent with design documents; and
- where applicable, were alarm response procedure entry points and actions consistent with the plant design and licensing documents.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted three routine surveillance testing samples and one inservice testing sample as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on March 11, 2015, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Technical Support Center, Operations Support Center, and Control Room Simulator to determine whether the event classifications, notifications, and protective action recommendations were performed in

accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06–06.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls (71124.02)

The inspection activities supplement those documented in IR 05000255/2014002, and constitute a partial sample as defined in IP 71124.02–05.

.1 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors selected the following work activities of the highest exposure significance:

- Radwaste Operators Containment Activities;
- Refuel Project: CRD Upper Housing Inspection;
- Refuel Project: Reactor (Rx) Cavity Decontamination Activities;
- Refuel Project: Rx Vessel Disassembly;
- Refuel Project: Rx Vessel Reassembly;
- Rx Head Examination: Volumetric Exam;
- Alloy 600 Weld Mitigation;
- CRD Repair Project–Removal; and
- CRD Repair Project–Installation.

The inspectors reviewed the as-low-as-reasonably-achievable (ALARA) work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors determined whether the licensee reasonably grouped the radiological work into work activities based on historical precedence, industry norms, and/or special circumstances.

The inspectors assessed whether the licensee's planning identified appropriate dose mitigation features, considered alternate mitigation features, and defined reasonable dose goals. The inspectors evaluated whether the licensee's ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment (e.g., ice vests). The inspectors determined whether the licensee's work planning considered the use of remote technologies (e.g., teledosimetry, remote visual monitoring, and robotics) as a means to reduce dose, and the use of dose reduction insights from industry operating experience

and plant-specific lessons learned. The inspectors assessed the integration of ALARA requirements into work procedure and radiation work permit documents.

The inspectors compared the results achieved (dose rate reductions and person-rem used) with the intended dose established in the licensee's ALARA planning for these work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements and evaluated the accuracy of these time estimates. The inspectors assessed the reasons (e.g., failure to adequately plan the activity and failure to provide sufficient work controls) for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted, and if identified problems were entered into the licensee's CAP.

b. Findings

No findings were identified.

.2 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors evaluated whether the licensee established measures to track, trend, and, if necessary, to reduce occupational doses for ongoing work activities. The inspectors assessed whether trigger points or criteria were established to prompt additional reviews and/or additional ALARA planning and controls.

The inspectors evaluated the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates (intended dose) were based on sound radiation protection, and ALARA principles or if they were only adjusted to account for failures to control the work. The inspectors evaluated whether the frequency of these adjustments called into question the adequacy of the original ALARA planning process.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams Per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams Per 7000 Critical Hours (IE01) performance indicator (PI) for the period from the second quarter 2014 through the fourth quarter 2014. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99–02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, CRs, event reports, and NRC Integrated IRs for the period of April 2014 through December 2014 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams per 7000 critical hours sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI (IE04) for the period from the first quarter 2014 through the fourth quarter 2014. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99–02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, CRs, event reports, and NRC Integrated IRs for the period of January 2014 through December 2014 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams with complications sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index—Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index–Heat Removal System PI (MS08) for the period from the first quarter 2014 through the fourth quarter 2014. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99–02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, CRs, event reports, MSPI derivation reports, and NRC Integrated IRs for the period of January 2014 through December 2014 to validate the accuracy of the submittals. The inspectors reviewed the Mitigating Systems Performance Index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, whether the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one Mitigating Systems Performance Index heat removal system sample as defined in IP 71151–05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

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

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an

integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Selected Issue Follow-up Inspection: Primary Coolant Pumps

a. Inspection Scope

The inspectors have documented several issues related to PCPs at Palisades over the past several years. The inspectors documented completion of an Operability Determination inspection sample that reviewed increased vibrations on the 'C' PCP in IR 05000255/2011005. A Green finding and associated NCV was documented in Section 1R15.b of IR 05000255/2012003 for the operation of PCPs outside their design operating criteria. Another Operability Determination inspection sample was documented in IR 05000255/2013002, which reviewed an oversized PCP impeller. The inspectors documented completion of a post-maintenance testing inspection sample following replacement of the 'C' PCP impeller in Section 1R19 of IR 05000255/2014002. Section 1R20 of that same IR documented a comprehensive review of the history of PCP issues at Palisades and the review of a piece of PCP impeller that was unable to be removed from the reactor vessel. The inspectors documented completion of another Operability Determination inspection sample that reviewed degradation of the 'C' PCP seal in IR 05000255/2014003. Section 1R20 of that same IR documented that the licensee performed a maintenance outage to replace the degraded 'C' PCP seal and Section 4OA2.4 documented a review of the licensee's planned actions to address the NCV documented in 2012.

During this inspection period, the inspectors continued their collective and ongoing review of the numerous PCP issues at Palisades. Of particular focus was a review of the licensee's root cause evaluation for degradation of the 'C' PCP seal that was initially installed during refueling outage 1R23 in spring 2014 and replaced during a summer 2014 maintenance outage. The inspectors also remained aware of the licensee's plans

and progress in resolving the NCV issued in 2012, and planned to continue to assess the timeliness of corrective action implementation.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152–05.

b. Findings

Inadequate Procedure Leads to Primary Coolant Pump Seal Degradation

Introduction: A finding of very low safety significance (Green) and an associated NCV of TS 5.4.1(a) was self-revealed when the 'C' PCP seal degraded as a result of an inadequate maintenance procedure. Specifically, maintenance procedure PCS–M–54, "N–9000 Primary Coolant Pump Shaft Seal Assembly," did not identify critical steps in the assembly of the PCP seal and, as a result, the work activity was not adequately controlled.

Description: During RFO 1R23, from January through March 2014, the 'C' PCP seal was replaced as a planned maintenance activity. Prior to the RFO, the vendor provided training to plant maintenance personnel on seal disassembly, assembly, and installation. The seal package was assembled by site personnel using procedure PCS-M-54, "N–9000 Primary Coolant Pump Shaft Seal Assembly," Revision 6, on the spent fuel pool floor with oversight from the vendor. This activity also included pre-installation testing and cleaning. The seal was then lifted into containment and installed in the pump.

On March 16, 2014, a few days after plant startup from RFO 1R23, the licensee identified that the 'C' PCP seal package breakdown pressures for the middle and lower stages were not trending as expected. An operational decision-making instruction (ODMI) was written to provide guidance to the operators on steps to take if the pressures increased, the pressure breakdowns between the seals decreased, or the controlled bleed-off flow increased. On May 13, 2014, following safety injection system surveillance testing, the control room received an alarm for 'C' PCP seal abnormal pressure and entered the abnormal operating procedure (AOP). This also exceeded trigger points in the ODMI. The middle seal stage was declared failed and an engineering evaluation was performed to determine the condition of the remaining seals and if the pump could continue to operate safely. The pump was deemed safe for continued operation and the ODMI trigger point criteria were revised based on the most recent data.

Based on continued slow but steady seal degradation, the licensee decided to shut down the plant on June 21, 2014, to replace the seal. The transient of shutting down the unit caused the lower stage of the seal to fail, as well as the previously declared failed middle stage. The upper and vapor stages of the seal remained fully functional. After the seal package was replaced, the unit was re-started from the maintenance outage on June 26, 2014. The licensee entered this issue into the CAP as CR–PLP–2014–03495, PCP P–50C Seal Cartridge Exceeded ODMI Minimum Pressure Drop for Two Stages, on June 24, 2014.

A root cause evaluation was conducted to determine the cause of the seal stage failures. The removed seal was sent to the vendor for analysis after it was removed. The vendor

was able to rule out many potential causes including the seal being dropped, inappropriately pressurizing the seal, increased or abnormal pump vibrations, and foreign material intrusion. Interviews with maintenance personnel were also conducted. The direct cause was determined to be the stationary faces for the middle and lower stages of the seal not being sufficiently seated to allow the o-ring to seal and thus allowing leakage through the stages past the o-rings. No definitive root cause was determined. However, a probable root cause of not classifying the seal assembly as a critical maintenance activity, which would have provided additional training, oversight, and critical step identification, was identified. There was also a misunderstanding of the pre-installation testing; the licensee believed this testing would identify any assembly issues, when in fact it would only detect gross leakage or major assembly errors.

Analysis: The inspectors determined that not maintaining an adequate procedure to assemble and install the 'C' PCP seal was an issue of concern and evaluated the issue in accordance with IMC 0612, Appendix B. The issue of concern was not associated with any willful or traditional enforcement aspects. The inspectors determined that the issue of concern was within the licensee's ability to foresee and correct and represented the failure to meet a standard in that the licensee did not maintain appropriate maintenance procedures as recommended in Regulatory Guide 1.33, Revision 2, Section 9.a, which the licensee was committed to in TS 5.4.1(a). Therefore the issue of concern represented a performance deficiency.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations.

The inspectors evaluated the issue in accordance with IMC 0609, Attachment 4. The questions in Table 3 were answered "No" and the inspectors continued the significance evaluation in accordance with IMC 0609, Appendix A. The inspectors reviewed the Initiating Events questions in Exhibit 1 and answered "Yes" to the Loss of Cooling Accident (LOCA) Initiators screening question, "After a reasonable assessment of degradation, could the finding result in exceeding the reactor coolant system leak rate for a small LOCA," because the first two seal stages ultimately failed and if the 3rd stage had failed, a PCP seal LOCA may have occurred resulting in a small break LOCA. Therefore, a detailed risk evaluation was performed by a Region III SRA.

The change in risk for this performance deficiency was best characterized by the risk associated with the manual reactor shutdown that occurred. The SRAs performed the analysis using the Palisades SPAR Model Version 8.20, SAPHIRE Version 8.1.2.0. A "Transient" initiating event analysis was run using the SPAR model. The result was an estimated conditional core damage probability (CCDP) of 4.17E–07. The CCDP result included risk due to Anticipated Transient Without Scram (ATWS) scenarios. The SRAs reviewed the results that did not contain reactor protection system failures, and obtained a revised CCDP for non-ATWS transients of 1.81E–08. Given this result, the SRAs concluded that the change in risk for the performance deficiency was less than 1E–07/year (i.e., ΔCDF < 1E–07/year). The dominant sequence involved a transient with failure of safety valves to reclose after opening, failure of shutdown cooling, and failure of high pressure recirculation.

Based on the detailed risk evaluation, the inspectors determined that the finding was of very low safety significance (Green).

This finding had a cross-cutting aspect in the Work Management component of the Human Performance cross-cutting area. Specifically, the licensee did not effectively screen the PCP seal assembly through the work management process to identify that it should have been classified as a critical maintenance activity. In addition, insufficient emphasis was placed on in-field vendor oversight during work execution. (H.5)

Enforcement: Technical Specification 5.4.1(a), states, in part, that written procedures shall be established, implemented, and maintained as recommended in Regulatory Guide 1.33, Revision 2, dated February 1978. Section 9.a, "Procedures for Performing Maintenance," states in part, "Maintenance that can affect the performance of safety related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances." Procedure PCS–M–54, "N 9000 Primary Coolant Pump Shaft Seal Assembly," Revision 6, contained instructions for assembly of safety-related PCP seals.

Contrary to the above, during RFO 1R23, maintenance personnel completed assembly of the 'C' PCP seal using procedure PCS–M–54, which did not include critical steps to validate that the seal was assembled correctly prior to operation. As a result, the 'C' PCP seal stages degraded during plant operation such that a subsequent plant outage was necessary to replace the seal. Because this issue was of very low safety significance and because it was entered into the CAP as CR–PLP–2014–03495, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000255/2015001–07, Inadequate Procedure Leads to Primary Coolant Pump Seal Degradation)**

.4 Selected Issue Follow-up Inspection: Implementation of New Corrective Action Program Procedures

a. Inspection Scope

In the fall of 2014, the licensee implemented a significant change to their CAP procedures. At a high level, the newly implemented procedures revised the screening process for issues entered into the CAP. Under the previous program procedures, each issue entered into the CAP would be screened and evaluated under a common process, designed to meet the requirements of 10 CFR 50, Appendix B. The updated program procedures changed the way issues were screened and evaluated such that an issue entered into the CAP would be initially screened as an adverse condition or a non-adverse condition. Adverse conditions would continue to be evaluated under a process designed to meet the requirements of 10 CFR 50, Appendix B, whereas non-adverse conditions could now be screened into processes for resolution that were not intended to meet the requirements of 10 CFR 50, Appendix B. Issues screened into the non-adverse portion of the new program were not required by procedure to be corrected, though the licensee may choose to do so anyway.

Because issues screened into the non-adverse portion of the new program may not be evaluated with the timeliness and effectiveness required by 10 CFR 50, Appendix B, the inspectors reviewed a sample of CRs to determine whether the licensee was appropriately screening issues between the adverse and non-adverse portions of the

CAP. The inspectors subsequently questioned the licensee's screening of several CRs and the licensee initiated CR–PLP–2015–00507, NRC Provided List of CRs Screened as Non-Adverse that Appear to Meet Criteria for Adverse, dated January 30, 2015. The inspectors discussed the examples with licensee personnel, who acknowledged that aspects of the issue could warrant screening in either the adverse or non-adverse portion of the CAP. Some specific examples included:

- CR–PLP–2014–05096, which documented lowering oil level for the 'A' PCP;
- CR–PLP–2015–00334, which documented that the UFSAR change process was not initiated as required for an updated evaluation;
- CR–PLP–2015–00371, which documented NRC concerns about plant protection from certain HELB events; and
- CR–PLP–2015–0093, which documented the need to generate a work request to implement actions recommended in an ACE for a Turbine Driven AFW pump trip.

While the inspectors observed that some CRs screened into the non-adverse portion of CAP could have been screened into the adverse portion of CAP, they did not identify any conditions adverse to quality that were not ultimately being appropriately evaluated. However, the new process relied heavily on the conservative bias of individuals performing issue screening to ensure adverse conditions were properly screened into the adverse portion of the new CAP.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152–05.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 9, 2015, the inspectors presented the inspection results to Mr. A. Vitale, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The inspection results for the ALARA area with Mr. A. Vitale, Site Vice President, on March 13, 2015.

- The inspectors reviewed the requalification written examination results with Mr. A. Vitale, Site Vice President, on March 23, 2015.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

A. Vitale, Site Vice President
A. Williams, General Manager, Plant Operations
D. Corbin, Operations Manager
P. Russell, Engineering Director
O. Gustafson, Director of Regulatory and Performance Improvement
D. Watkins, Radiation Protection Manager
J. Miller, Chemistry Manager
D. Watkins, Radiation Protection Manager
B. White, Operations Training Superintendent

Nuclear Regulatory Commission

Eric Duncan, Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000255/2015001–01	NCV	Inadequate Procedure Results in Failure of Component Cooling Water Pump (Section 1R12(1))
05000255/2015001–02	NCV	Inoperability of Safety Injection Tank Due to Long-Term Leakage (Section 1R12(2))
05000255/2015001–03	URI	Turbine-Driven AFW Pump Trip During Surveillance Testing (Section 1R12(3))
05000255/2015001–04	NCV	Failure to Verify the Adequacy of Credited High Energy Line Break Barriers (Section 1R13)
05000255/2015001–05	SL IV	Failure to Evaluate the Adverse Effects of the Use of Non-Seismic Temporary Jumpers (Section 1R18)
05000255/2015001–06	FIN	Failure to Evaluate the Adverse Effects of the Use of Non-Seismic Temporary Jumpers (Section 1R18)
05000255/2015001–07	NCV	Inadequate Procedure Leads to Primary Coolant Pump Seal Degradation (Section 4OA2)

Closed

05000255/2015001–01	NCV	Inadequate Procedure Results in Failure of Component Cooling Water Pump (Section 1R12(1))
05000255/2015001–02	NCV	Inoperability of Safety Injection Tank Due to Long Term Leakage (Section 1R12(2))
05000255/2015001–04	NCV	Failure to Verify the Adequacy of Credited High Energy Line Break Barriers (Section 1R13)
05000255/2015001–05	SL IV	Failure to Evaluate the Adverse Effects of the Use of Non-Seismic Temporary Jumpers (Section 1R18)
05000255/2015001–06	FIN	Failure to Evaluate the Adverse Effects of the Use of Non-Seismic Temporary Jumpers (Section 1R18)
05000255/2014004–03	URI	Failure to Evaluate the Adverse Effects of the Use of Non-Seismic Temporary Jumpers (Section 1R18)
05000255/2015001–07	NCV	Inadequate Procedure Leads to Primary Coolant Pump Seal Degradation (Section 4OA2)

Discussed

None.

LIST OF DOCUMENTS REVIEWED

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

1R04 Equipment Alignment

- M-201, Piping & Instrument Diagram, Primary Coolant System, Sheet 1, Revision 87
- M-202, Piping & Instrument Diagram, Chemical and Volume Control System, Sheet 1A, Revision 64
- M-202, Piping & Instrument Diagram, Chemical and Volume Control System, Sheet 1B, Revision 59
- M202, Piping & Instrument Diagram, Chemical and Volume Control System, Sheet 1, Revision 76
- M-204, Sheet 1A, Piping & Instrument Diagram Safety Injection Containment Spray and Shutdown Cooling System, Revision 43
- M-204, Sheet A, System Diagram Safety Injection, Containment Spray and Shutdown Cooling System, Revision 8
- SOP-12, Auxiliary Feedwater System Checklist (Except K-8 Steam Supply,) Revision 72
- SOP-22, Diesel Generators System Checklist, Revision 65
- SOP-2A, Chemical and Volume Control system, Revision 83
- SOP-2B, CVC System Checklist, Revision 49
- SOP-3, Safety Injection and Shutdown Cooling Systems, Revision 96

1R05 Fire Protection

- CR-PLP-2014-04968, MV-FP119 has a 6 Drop Per Minute Packing Leak, October 13, 2014
- CR-PLP-2015-00324, Call from Security Reporting Fire in BRE, January 20, 2015
- CR-PLP-2015-00330, Fire in BRE, January 20, 2015
- CR-PLP-2015-00433, ELU-126 Needs Indicating Bulb Changed, January 27, 2015
- CR-PLP-2015-00437, ELU-5 has “Fast Charge” Light Lit and Electrolyte Level is Low, January 27, 2015
- EA-PSSA-00-001, Palisades Plant Post Fire Safe Shutdown Summary Report, Revision 2
- EN-DC-127, Control of Hot Work and Ignition Sources, Revision 15
- EN-DC-161, Control of Combustibles, Revision 11
- FPIP-2, Fire Emergency Responsibility and Response, Revision 19
- FPIP-3, Plant Fire Brigade, Revision 19
- FPIP-4, Fire Protection Systems and Fire Protection Equipment, Revision 33
- Palisades Nuclear Plant Fire Hazards Analysis, Revision 7
- Pre-Fire Plan for 1-D Switchgear Room & North Cableway/Elevation 607’-6”, Fire Area 3
- Pre-Fire Plan for Auxiliary Building Main Corridor – South/590’ Elevation, Fire Area 13A
- Pre-Fire Plan for Diesel Generator 1-1 and Fuel Oil Day Tank Rooms, Fire Areas 5 and 7
- Pre-Fire Plan for Electrical Equipment Room/Elevation 607’-6”, Fire Area 21
- Pre-Fire Plan for Southwest Cable Penetration Room / Elevation 590’ and 607’, Fire Area 26
- Pre-Fire Plan for Turbine Building – North/Elevation 590’, Fire Area 23
- Pre-Fire Plan for Turbine Building – South/Elevation 590’, Fire Area 23
- Pre-Fire Plan for Turbine Building/Elevation 607’ to 612’, Fire Area 23
- Pre-Fire Plan for West Engineered Safeguards/Elevation 570’, Fire Area 28

- TQF-201-IM01, Training Attendance Roster, Revision 7
- WO 374185, Fukushima; EC-47348 (EC16) Install FLEX Connection in EB-20, February 2, 2015
- WT-WTPLP-2015-00005, BRE Fire on January 20, 2015

1R06 Flood Protection Measures

- EC-55759, Risk Assessment of the Acceptable Duration to Block Open Door-1 (AFW Room) for Maintenance Activities per LCO 3.0.9, February 23, 2015
- NEI 04-08, Figure 1, Process for Assessing the Acceptability of Using the Degraded Barrier Allowance, March 2006
- Procedure 9.28, Door-170 (Watertight Door in Vestibule Between DGs), Revision 1

1R11 Licensed Operator Requalification Program

- AOP-1, Loss of Load, Revision 0
- AOP-3, Main Feedwater Transients, Revision 0
- AOP-9, Loss of Bus 1D, Revision 0
- AOP-24, Steam Generator Tube Leak, Revision 0
- ARP-1, Turbine Condenser and Feedwater Scheme EK-01 (C-01), Revision 73
- EOP Supplement 1, Pressure Temperature Limit Curves, Revision 5
- EOP Supplement 12, 'A' Steam Generator SGTR Isolation Checklist, Revision 8
- EOP Supplement 29, Restore Buses 1C, 1D, 1E Power from Offsite Source, Revision 9
- EOP Supplement 4, HSPI and LPSI Flow Curves, Revision 6
- EOP-1.0, Standard Post-Trip Actions, Revision 15
- EOP-9.0, Functional Recovery Procedure, Revision 22
- Simulator Exam Scenario-213, Revision 0
- Site Emergency Plan Supplement 1 Wall Chart
- SOP-30, Station Power, Revision 75

1R12 Maintenance Effectiveness

- CR-PLP-2010-04029, MO-3066 HPSI Train 2 Loop 1B was Exhibiting Leakby, September 21, 2010
- CR-PLP-2014-04861, Declared Safety Injection Tank T-82B Inoperable, October 7, 2014
- CR-PLP-2014-05477, Auxiliary Feedwater Pump Overspeed Trip Mechanism Tripped, November 14, 2014
- CR-PLP-2014-05483, Shaft Speed Outside of the Expected Range, November 15, 2014
- CR-PLP-2014-05549, Nitrogen Gas Coming Out of Solution from Safety Injection Tank T-82B Out-leakage, November 19, 2014
- CR-PLP-2014-05750, Impeller Anomalies Noted During Visual Inspection, December 9, 2014
- CR-PLP-2015-00063, Smoke Coming from the Shaft of P-52C Component Cooling Water Pump, January 6, 2015
- CR-PLP-2015-00165, Procedure CCS-M-5 Does Not Contain Instructions to Ensure that Bearing Shell is Marked Upon Disassembly To Ensure It is Returned to the Correct Location, January 11, 2015
- CR-PLP-2015-00170, Non-conforming Parts Removed from Component Cooling Water Pump P-52C, January 11, 2015
- CR-PLP-2015-00180, Oil Leak on Inboard Bearing of P-52C Component Cooling Water Pump, January 12, 2015

- CR-PLP-2015-00180, Oil Leak on the Inboard Bearing on P-52C Component Cooling Water Pump, January 12, 2015
- CR-PLP-2015-00199, Worker(s) Reluctance to Identify an Issue Which May Have Resulted in a Latent Equipment/Component Failure Following Work Execution, January 13, 2015
- CR-PLP-2015-00393, Perform Monitoring Activities for Auxiliary Feed Pump P-8B During Full Flow Operation, January 23, 2015
- CR-PLP-2015-00575, Inspect Steam Trap ST-0520 and Associated Piping, February 3, 2015
- CR-PLP-2015-00964, Suspect FME Was Introduced During Maintenance of ST-0523, March 3, 2015
- CR-PLP-2015-00965, Replacement Steam Trap Bucket Is Not Physically the Same as Installed Bucket,
- CR-PLP-2015-00971, Facility Change (FC-966) Was Not Adequately Incorporated into WO 404535-01, March 4, 2015
- CR-PLP-2015-00977, K-8 Steam Supply Line Drain Has a 50 DPM Leak, March 4, 2015
- CR-PLP-2-15-00969, Evaluate Stem and Disc of ST-0522B, March 3, 2015
- DBD-1.03, Auxiliary Feedwater System, Revision 8
- EC 55520, Overspeed Trip Setting Increase and Trip Pin to Plunger Clearance Adjustment of Steam Driven Auxiliary Feedwater Pump (P-8B) Turbine Driver K-8 in Accordance with Manufacturer Recommended Values, Revision 0
- EC 55759, Risk Assessment of the Acceptable Duration to Block Open Door-1 (AFW Room) for Maintenance Activities per LCO 3.0.9, Revision 0
- EN-DC-115. Engineering Change Process. Revision 16
- EN-DC-205, Functional Failure Determination Form, Revision 5
- EN-LI-102, Corrective Action Process, Revision 10, June 7, 2007
- EN-LI-102, Corrective Action Process, Revision 11, October 31, 2007
- EN-LI-118, Bearing Failure on P-52C Component Cooling Water Pump, Revision 21, March 3, 2015
- SEP-PDM-PLP-001, Palisades Ultrasonic Monitoring Program Section, Revision 0
- SOP-12, Feedwater System, Revision 72
- WO 401961-01, ST-0512, Inspect Trap Internals and Piping for Blockage, March 3, 2015
- WO 401963-01, ST-0513, Inspect Trap Internals and Piping for Blockage, March 3, 2015
- WO 401964-01, ST-0522B, Inspect Trap Internals & Piping for Blockage, March 2, 2015
- WO 401965-01, ST-0523, Inspect Trap Internals and Piping for Blockage, March 3, 2015
- WO 404535-01, ST-0520, Inspect Steam Trap and In/Out Piping for Blocakage, March 3, 2015
- WO 51631175, CK-ES3251 Valve Leakby Inspect and Repair, February 28, 2013
- WO 51637614, MO-3066 Valve Leakby Inspect and Repair, July 16, 2014

1R13 Maintenance Risk Assessments and Emergent Work Control

- AOP-32, Loss of Containment Integrity, Revision 0
- AOP-38, Acts of Nature, Revision 3
- CIS-M-6, Personnel Air Lock Seal Contact Adjustment, Revision 0
- Control Room Logs, February 22 through 25
- CR-PLP-2015-00526, Received Alarm EK-0105, Turbine Hi Vibration, Unexpectedly, February 1, 2015
- CR-PLP-2015-00565, Foreign Material Found During Vacuum Sipping for Dry Fuel Storage, February 3, 2015
- CR-PLP-2015-00570, During Fuel Sipping, A Suspect Fuel Leak was Identified on Fuel Assembly T-17, February 3, 2015
- CR-PLP-2015-00597, Non-Conforming Item – Power Supply P/S-0516A, February 5, 2015

- CR-PLP-2015-00598, Unexpected Alarms Received During WO # 404179 P/S-0516A, February 5, 2015
- CR-PLP-2015-00599, Unnecessary Distractions During Main Turbine Vibration Monitor Power Supply Replacement, February 5, 2015
- CR-PLP-2015-00600, Schedule Delay with the Fuel Sipping Project, February 5, 2015
- CR-PLP-2015-00620, V-70B Fuel Handling Area Exhaust Fan Cycled Off and On During Securing of V-69 Fuel Handling Area Supply Fan, February 9, 2015
- CR-PLP-2015-00633, Suspect Fuel leak on Fuel Assembly C12, February 9, 2015
- CR-PLP-2015-00650, Unable to Move Assembly A37 During Vacuum Sipping, February 9, 2015
- CR-PLP-2015-00716, Potential Piece of Debris on Top of Assembly T-18, February 13, 2015
- CR-PLP-2015-00858, Operability Evaluation for CV-0864, February 24, 2015
- CR-PLP-2015-00861, Small Air Leak on Air Fitting Supplying CV-0864, February 25, 2015
- CR-PLP-2015-00911, Inner Air Lock Door Failure of Local Leak Rate Test, February 27, 2015
- CR-PLP-2015-01139, Entered AOP-38, Acts of Nature, Following Notification of Predicted Geomagnetic Storm, March 17, 2015
- CR-PLP-2015-01140, Notification of Predicted Geomagnetic Storm Provided by ITC After Window for Disturbance Began, March 17, 2015
- CR-PLP-2015-01142, Following AOP-38 Entry a Qualitative Risk Assessment was Perfomed that Produced Non-Conservative Results, March 17, 2015
- DBD-07.03, HELB Barrier Controls, Revision 2
- DWO-13, LLRT – Local Leak Rate Tests for Inner and Outer Personnel Air Lock Door Seals, Revision 26
- EN-FAP-WM-002, Critical Evolutions, Replacement of P/S-0516A Should Restore EC-23A Normal Operation Indications, Revision 1
- EN-MA-118, Foreign Material Exclusion, Revision 10
- EN-MA-125, Troubleshooting Control of Maintenance Activities, Revision 17
- EN-MA-143, Use of Viper or Votes Infinity Air Operator Valve Diagnostics, Revision 3
- EN-OP-104, Operability Determination Process, Revision 7
- EN-WM-104, Online Risk Assessment, Revision 10
- EOP Supplement 28, Supplementary Actions for Loss of Power, Revision 10
- FHS-M-23, Movement of Heavy Loads in the Spent Fuel Pool Area, Revision 35
- GOP-11, Refueling Operations and Fuel Handling, Revision 48
- M-208, Piping & Instrumentation Diagram, Service Water System, Sheet 1B, Revision 38
- M-208, Piping & Instrumentation Diagram, Service Water System, Sheet 1B, Revision 38
- Planned Work Activities for Work Week 1508
- Procedure 4.02, Control of Equipment, Revision 73
- QO-5, Valve Test Procedure, Revision 91
- SEP-PLP-IST-101, Inservice Test of Plant Valves, Revision 1
- SEP-PLP-IST-101, Inservice Testing of Plant Valves, Revision 1
- SOP-22, Emergency Diesel Generators, Revision 65
- SOP-28, Fuel Handling System, Revision 52
- WO #404179-01, EC-23A; Middle Rack Green OK Lights Were Not Illuminated, February 5, 2015
- WO 394605, Perform Fuel Sipping to Support DFS, February 2, 2015
- WO 406925, Investigate/Repair CV-0864, February 25, 2015
- WO 407323, MZ-19, Inner Door Leakage was Excessive, Repair Seal, February 27, 2015

1R15 Operability Determinations and Functionality Assessments

- CR-PLP-2014-02490, Emergency Diesel Generator 1-1 Turbocharger Replacement, April 9, 2014
- CR-PLP-2012-02548, Boric Acid Identified Around Packing Gland on CV-3001, April 13, 2012
- CR-PLP-2014-04749, Boric Acid Residue on HPSI discharge Piping Downstream of CV-3036, September 30, 2014
- CR-PLP-2015-00371, High Energy Line Break Concerns With Door 167 Open, January 22, 2015
- CR-PLP-2015-00469, Active Boric Acid Leak Identified on CV-3001, January 28, 2015
- CR-PLP-2015-00639, Emergency Diesel Generator 1-2 Turbocharger Fastener Torqueing, February 9, 2015
- CR-PLP-2015-01276, Given Torque in Work Order for Hot Torque of CK-ES3411, High Pressure Safety Injection Pump P-66A Discharge Check Valve, Bonnet Retainer Cap Screws was Inaccurate, March 26, 2015
- CR-PLP-2015-01287, CK-ES3411 Had Dry Boric Acid with No Signs of Active Leakage, March 26, 2015
- DBD-7.03, Design Basis Document for Plant Protection Against High Energy Line Breaks, Revision 2
- EN-DC-126, Engineering Calculation Cover Page, Revision 005
- EN-DC-319, Boric Acid Corrosion Control Program, Revision 10
- EN-MA-145, Maintenance Standard for Torque Applications, Revision 5
- EN-OP-104, Operability Determination Process, Revision 7
- M-203, Piping & Instrument Diagram, Safety Injection, Containment Spray and Shutdown Cooling System, Sheet 2, Revision 27
- M-204, P&ID Safety Injection, Containment Spray, and Shutdown Cooling, Sheet 1A, Revision 43
- M-204, Piping & Instrument Diagram, Safety Injection Containment Spray and Shutdown Cooling System, Sheet 1, Revision 84
- M-204, Piping & Instrument Diagram, Safety Injection Containment Spray and Shutdown Cooling System, Sheet 1A, Revision 43
- MSM-M-39, Disassembly, Inspection, and Overhaul of Anchor/Darling Swing Check Valves, Revision 5
- Procedure 4.02, Control of Equipment, Revision 73
- QO-6, Cold Shutdown Valve Test Procedure, Revision 47
- VEN-M-130A(Q), 3”-1500# Swing Check Anchor/Darling Valve, Sheet 37, Revision B
- WO 395625, CV-3036, Clean Boric Acid on HPSI Discharge Piping, March 26, 2015
- WO 403997, CV-3001, Boric Acid Leak at Valve – Repair Valve, January 30, 2015
- WO 52204183, K-6B Emergency Diesel Generator 1-2 Turbocharger Replacement, January 22, 2015

1R18 Plant Modifications

- CR-PLP-2014-05383, CV-0601 Feedwater Heater E-6A Level Control Full Open During Review of PPC Data, November 9, 2014
- CR-PLP-2014-05787, Received EK-0168 Feedwater Heaters High Level Unexpectedly, December 10, 2014
- CR-PLP-2014-05801, Track the Installation of an “Emergency Temporary Modification” for CV-0601 “Feedwater Heater E-6A Level Control” Valve, December 11, 2014
- CR-PLP-2014-05854, Pre-established Abort Criteria Met During Evolution to Isolate Feedwater Heater E-6A, December 11, 2014

- CR-PLP-2014-05855, Examine POC-0601, Feedwater Heater E6A Drain to HTR E-5A Position for Evidence of Motion, December 16, 2014
- CR-PLP-2015-00573, LPSI Pipe Tie In Did Not Complete as Scheduled, February 3, 2015
- CR-PLP-2015-00730, As-Found Gap for LPSI Pipe Support Out of Tolerance Per Design Drawing, February 15, 2015
- CR-PLP-2015-00751, Drawing Revision Needed for LPSI Support HC4-H105, February 17, 2015
- CR-PLP-2015-00803, E-6A Heater Level is Higher than the Normal Water Level, February 20, 2015
- CR-PLP-2015-00803, Feedwater Heater E-6A Heater Level is Higher than the Normal Water Level, February 20, 2015
- CR-PLP-2015-00862, Remove the Temporary Modification of the Valve Stop Block from CV-0601, Feedwater Heater E-6A Level Control, February 25, 2015
- CR-PLP-2015-00863, Install/Remove a Temporary Valve Stop Block on CV-0605, February 25, 2015
- CV-0601, Port Stuck and Bent in POC Repaired, February 19, 2015
- EA-AOVSYS-MISC-01, Supersedes Revision 0, System Level Design Basis Review for Air Operated Valves (AOV) in Miscellaneous Systems, Revision 1
- EA-EC-17956-01, Entergy Palisades Nuclear Plant ASME B31,1 Heater Drain Pumps 10A & 10B Discharge Piping Report, Revision 0
- EC 17956, Replacement of Moisture Separator Drain Tank (T-5) Level Control Valve CV-0608 & Associated Piping, Revision 1
- EC 47343 (FLEX EC #9) LPSI Connection, Revision 0
- EC 47343-SK-01, Layout for LPSI System Tie-In Plan and Elevation, Revision B
- ECN 55138, Stress Evaluation for Interim Configuration, Revision 0
- ECN 54640, Engineering Change Notice Summary, Revision 0
- EN-DC-115, Engineering Change Process, Revision 16
- EN-DC-136, Temporary Modifications, Revision 11
- EN-LI-100, Process Applicability Determination, Revision 13
- EN-RPT-10-00044, Evaluation of the System Impact of Replacement Moisture Separator Reheaters, Revision 0
- M-107, Isometric Drawing for LPSI System Tie-In, Sheet 5112, Revision B
- M-206, P&ID, Extractions, Heater Vents and Drain systems, Sheet 1, Revision 52
- M-207, P&ID, Feedwater and Condensate system, Sheet 1C, Revision 52
- M-207, P&ID, Feedwater and Condensate System, Sheet 1C, Revision 47
- M-344, Air Operated Vonctrol Valve Data Sheet, Sheet 1, Revision 10
- MSM-M-45, Removal, Installation and Repair of Pipe Supports
- MSM-M-57, Universal Diagnostic System Operating Procedures, Revision 9
- MSM-M-57, Universal Diagnostic, Separator Operating Procedure, Revision 9
- PAD 15-0022, FLEX Basis EC and Mechanical, Electrical and Civil/Structural Child EC Modifications, Revision 2
- SOP-27, Fuel Pool System, Revision 68
- TMOD 54472, Document Acceptability of Manually Gagging CV-0601, Feedwater Heater E6A Level Control, In the Open Position to Eliminate Spurious Valve Operation Until Replacement of Its Positioner, Revision 0
- TMOD 55839, CV-0601 (Feedwater Heater E-6A Level Control) Install Temporary Valve Block to Prohibit the Valve from Going Less than 50% Open
- WO 212816, CV-0608, Replace with 10” Valve, 1R21 MSR Project, EC-17956, January 30, 2015

- WO 397820-01, LC-0601; Valve Wide Open with Level at One Inch Lower Than Normal, February 17, 2015
- WO 397820-03, LC-0601; Install Block to Keep Valve In Open Position, December 11, 2014

1R19 Post-Maintenance Testing

- CR-PLP-2015-00381, Nut Missing Off of North West Corner Fastener for Heat Shield Noted During Diesel Generator 1-2 Surveillance Test, January 22, 2015
- CR-PLP-2015-00767, Pump 7A Piping Support Hanger Not Secure, February 18, 2015
- CR-PLP-2015-00851, Galled threads on Motor and Packing Shaft Coupling, February 24, 2015
- CR-PLP-2015-00855, Two Separate Vibration Analyzer CSI-2130s Used on QO-14, February 24, 2015
- CR-PLP-2015-00979, Shaft RPM for P-8B Steam Driven AFW Pump is Out of Expected Range, March 4, 2015
- CR-PLP-2015-00982, Governor Droop Value Out of Range During Auxiliary Feedwater Turbine K-8 Overspeed Trip Test and Governor Setting, March 4, 2015
- EC 55818, Packing Shaft Galling Damage and Subsequent Use
- MO-7A-2, Emergency Diesel Generator 1-2, Revision 87
- QO-14, Inservice Test Procedure – Service Water Pumps, Revision 38
- RO-127, Auxiliary Feedwater System, 18-Month Test Procedure, Revision 14
- RO-145, Comprehensive Pump Test Procedure Auxiliary Feedwater Pumps P-8A, P-8B and P-8C, Revision 13
- T-186, Auxiliary Feedwater Turbine K-8 Overspeed Trip Test and Governor Setting, Revision 19
- WO 403582-01, P-8B/K-8, Monitor Parameters During Full Flow Operation, March 4, 2015
- WO 52581617-01, MO-7A-2 Emergency Diesel Generator 1-2, January 6, 2015

1R22 Surveillance Testing

- CR-PLP-2014-04679, Current Range Doesn't Bound Largest Calculated Load for Diesel Generator 1-1 Load Reject Test, September 24, 2014
- CR-PLP-2015-00500, Level 3 Air Leak on CV-0736 P-8C Flow Control to E-50B Bypass Controller, January 30, 2105
- CR-PLP-2015-00502, Oil Leak from Drain Line on P-8C MDAFW, January 30, 2015
- CR-PLP-2015-00998, HS-0944A Open Position Indication Failed to Light During QO-1 Safety Injection Actuation Test, March 6, 2015
- CR-PLP-2015-01004, P-50C Primary Coolant Pump Seal Performance During QO-1 Safety Injection System, March 8, 2015
- EA-ELEC-LDTAB-005, EDG 1-1 & 1-2 Steady State Loadings, Revision 9
- QI-5, Containment High Pressure Test, Revision 8
- QO-1, Safety Injection System, Revision 64
- QO-21, Inservice Test Procedure – Auxiliary Feedwater Pumps, Revision 43
- RE-131, Diesel Generator 1-1 Load Reject, Revision 7

1EP6 Drill Evaluation

- CR-PLP-2015-01064, Radio Communication with EOF Difficult During EP Drill Due to Static, March 11, 2015
- CR-PLP-2015-01085, Administration and Logic Group Did Not Observe Contamination Monitoring required by Procedure, March 13, 2015

- CR-PLP-2015-01086, Drill Preparations Failed to Include Everbridge Notification Instructions, March 13, 2015
- CR-PLP-2015-01088, Simulator Plant Data System Required Multiple Reboots, March 13, 2015
- CR-PLP-2015-01095, Emergency Facilities Difficulties Using WEB EOC During Drill, March 13, 2015
- CR-PLP-2015-01130, Radiation Work Permits Posted in OSC for Drills Out of Date, March 16, 2015
- Palisades Emergency Planning First Quarter EP Drill Scenario Package, March 11, 2015

2RS2 Occupational ALARA Planning and Controls (71124.02)

- EN-RP-105, Radiological Work Permits, Revision 14
- EN-RP-110, ALARA Program, Revision 12
- LO-PLPLO-2014-00035, Occupational ALARA Planning and Controls/Occupational Exposure Control Effectiveness, January 28, 2014
- Palisades Nuclear Plant 1R23 Post Refuel Outage Report, February 15, 2015
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0402, Radwaste Operators Containment Activities
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0425, Refuel Project: CRD Upper Housing Inspection
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0432, Refuel Project: Rx Cavity Decontamination Activities
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0433, Refuel Project: Rx Vessel Disassembly
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0434, Refuel Project: Rx Vessel Reassembly
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0449, Rx Head Examination: Volumetric Exam
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0474, Alloy 600 Weld Mitigation
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0701, CRD Repair Project – Removal
- Radiation Work Permit and Associated ALARA Files, RWP 2014-0702, CRD Repair Project – Installation

4OA1 Performance Indicator Verification

- NRC Performance Indicator Technique/Data Sheet, NRC Indicator Heat Removal System (Auxiliary Feedwater) (MS08), 1st Quarter 2014 through 4th Quarter 2014
- NRC Performance Indicator Technique/Data Sheet, NRC Indicator Unplanned Scrams with Complications (IE04),1st Quarter 2014 through 4th Quarter 2014
- NRC Performance Indicator Technique/Data Sheet, NRC Indicator Unplanned Scrams Per 7000 Critical Hours (IE01), 2nd Quarter 2014 through 4th Quarter 2014

4OA2 Problem Identification and Resolution

- CR-PLP-2014-03495, Planned Outage for Two Stages of Primary Coolant Pump P-50C Seal Not Performing As Expected, June 21, 2014
- CR-PLP-2014-05096, Declining Trend in the Lower Oil Level for Primary Coolant Pump P50A, October 22, 2014

- CR-PLP-2015-00291, Multiple Broken Tabs on 1-2 Emergency Diesel Generator Heat Shield, January 19, 2015
- CR-PLP-2015-00295, Storm Drain Cover #22 was Discovered to Have Broken Welds, January 19, 2015
- CR-PLP-2015-00298, Alarm Point Cards for the 1-2 Diesel Generator are Degraded, January 19, 2015
- CR-PLP-2015-00303, Air Sample Station 4JS Air Pump Not Working, January 19, 2015
- CR-PLP-2015-00327, Two Safety-Related Relief Valves Could Render Shutdown Cooling Heat Exchanger Inoperable, January 20, 2015
- CR-PLP-2015-00328, Latent Organizational Weakness Identified in Application of Critical Maintenance Process to Pre-Outage Activities, January 20, 2015
- CR-PLP-2015-00331, Repair Parts Were Defective, January 20, 2015
- CR-PLP-2015-00334, Licensing Basis Document Change Request Form Was Not Initiated as Required to Update the Final Safety Analysis Report, January 20, 2015
- CR-PLP-2015-00364, MO-7A-2, Monthly Testing of 1-2 Emergency Diesel Generator Has Expired, January 22, 2015
- CR-PLP-2015-00371, Doors 167 and 167A Should Not Be Blocked Open, January 22, 2015
- CR-PLP-2015-00376, CR-15-324 Should Be Considered Adverse and the Investigation Should be Documented, January 22, 2015
- CR-PLP-2015-00377, HPA System Has 8 Functional Failures in the Last 24 Months, January 22, 2015
- CR-PLP-2015-00383, Several Containers had Missing or Covered Radioactive Material Tags, January 20, 2015
- CR-PLP-2015-00393, Performa Monitoring Activities for Aux Feed Pump P-8B During Full Flow Operation, January 23, 2015
- CR-PLP-2014-03495 Does Not Match the CAPR in the Root Cause Evaluation Approved January 22, 2015, January 27, 2015
- CR-PLP-2015-00507, Condition Reports Classified as Non-Adverse Appear to Meet Criteria for Adverse Conditions, January 30, 2015
- EN-LI-102, Corrective Action Program, Revision 24
- PCS-M-52A, Testing the N-9000 Series PCP Shaft Seal Cartridge with the Stainless Steel Flow Test Fixture, Revision 0
- PCS-M-53, Removal and Installation of N-9000 Series Primary Coolant Pump Shaft Seal Cartridge, Revision 22
- WO 243779, P-50D Decontamination, Disassemble and Inspect Removed Seal, January 16, 2014
- WO 332375, P-50C; Remove N-9000 Seal Assembly, March 31, 2014
- WO 378455, PCP P-50C Middle Seal Degrading Pressure Trend, June 25, 2014

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Reasonably-Achievable
AOP	Abnormal Operating Procedure
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient Without Scram
CAP	Corrective Action Program
CCDP	Conditional Core Damage Probability
CCW	Component Cooling Water
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
CR	Condition Report
CS	Containment Spray
EC	Engineering Change
EDG	Emergency Diesel Generator
DG	Diesel Generator
HELB	High Energy Line Break
HPSI	High Pressure Safety Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
kV	Kilovolt
LCO	Limiting Condition for Operation
LOCA	Loss of Cooling Accident
NEI	Nuclear Energy Institute
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
ODMI	Operational Decision-Making Instruction
PAD	Process Applicability Determination
PARS	Publicly Available Records System
PCP	Primary Coolant Pump
PI	Performance Indicator
RFO	Refueling Outage
SIS	Safety Injection Signal
SIT	Safety Injection Tank
SPAR	Standardized Plant Analysis Risk
SRA	Senior Reactor Analyst
SSCs	Structures, Systems, and Components
TS	Technical Specification
TSSR	Technical Specification Surveillance Requirement
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order

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Sincerely,

/RA/

Eric Duncan, Chief
Branch 3
Division of Reactor Projects

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