



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE RD. SUITE 210  
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August 8, 2017

EA-17-115

Mr. Charles Arnone  
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  
AND EXERCISE OF ENFORCEMENT DISCRETION 05000255/2017002**

Dear Mr. Arnone:

On June 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Palisades Nuclear Plant. On July 27, 2017, the NRC inspectors discussed the results of this inspection with yourself and other members of your staff. The enclosed report represents the results of this inspection.

A finding and associated violation of the licensee's current site-specific licensing basis for tornado-generated missile protection was identified. Because this violation was identified during the discretionary period discussed in Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado Missile Protection Noncompliance," Revision 1, and because the licensee implemented interim compensatory measures and has planned final corrective actions, the NRC is exercising enforcement discretion by not issuing an enforcement action for the underlying 10 CFR Part 50, Appendix B, Criterion III, "Design Control," violation.

The NRC inspectors did not identify any additional findings or violations of more than minor significance.

This letter, its enclosure, and your response, (if any), will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Eric Duncan, Chief  
Branch 3  
Division of Reactor Projects

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

Enclosure:  
Inspection Report 05000255/2017002

cc: Distribution via LISTSERV®

Letter to Charles Arnone from Eric Duncan dated August 8, 2017

SUBJECT: PALISADES NUCLEAR PLANT—NRC INTEGRATED INSPECTION REPORT  
AND EXERCISE OF ENFORCEMENT DISCRETION 05000255/2017002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000255/2017002

Licensee: Entergy Nuclear Operations, Inc.

Facility: Palisades Nuclear Plant

Location: Covert, MI

Dates: April 1 through June 30, 2017

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Division of Reactor Projects

Enclosure

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## **SUMMARY**

Inspection Report (IR) 05000255/2027002, 04/01/2017 – 06/30/2017; Palisades Nuclear Plant; Routine Integrated Inspection Report

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. The Nuclear Regulatory Commission's (NRC's) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6, dated July 2016.

### **NRC-Identified and Self-Revealed Findings**

None.

### **Licensee-Identified Violations**

A violation of the licensee's current site-specific licensing basis for tornado-generated missile protection was identified. Because this violation was identified during the discretionary period discussed in Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado Missile Protection Noncompliance," Revision 1, and because the licensee implemented interim compensatory measures and has planned final corrective actions, the NRC is exercising enforcement discretion by not issuing an enforcement action for the underlying 10 CFR Part 50, Appendix B, Criterion III, "Design Control," violation. This violation is discussed in Section 4OA3.1.

## REPORT DETAILS

### Summary of Plant Status

The plant operated at or near approximately 70 percent power until April 10, 2017, when the unit was reduced to approximately 55 percent power to remove the B cooling tower from service in preparation for refueling outage (RFO) 1R25. On April 11, 2017, power was raised to at or near 65 percent power. On April 18, 2017, the operators entered a coast down period in preparation for RFO 1R25. On April 23, 2017, the unit was taken offline to start RFO 1R25. On May 17, 2017, the reactor was taken critical. Due to a leaking seal identified on control rod drive (CRD) mechanism 40, the reactor was shut down on the same day. On May 20, 2017, the reactor was taken critical and the plant was synchronized to the grid. The reactor achieved full power on May 26, 2017, and remained at or near full power for the remainder of the inspection period.

### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 Readiness of Offsite and Alternate AC Power Systems

##### a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems during adverse weather were appropriate. The inspectors reviewed the licensee's procedures affecting these areas and the communications protocols between the transmission system operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Examples of aspects considered in the inspectors' review included:

- coordination between the TSO and the plant during off-normal or emergency events;
- explanations for the events;
- estimates of when the offsite power system would be returned to a normal state; and
- notifications from the TSO to the plant when the offsite power system was returned to normal.

The inspectors also verified that plant procedures addressed measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system prior to or during adverse weather conditions. Specifically, the inspectors verified that the procedures addressed the following:

- actions to be taken when notified by the TSO that the post-trip voltage of the offsite power system at the plant would not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply;

- compensatory actions identified to be performed if it would not be possible to predict the post-trip voltage at the plant for the current grid conditions;
- re-assessment of plant risk based on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide offsite power; and
- communications between the plant and the TSO when changes at the plant could impact the transmission system, or when the capability of the transmission system to provide adequate offsite power was challenged.

Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures.

This inspection constituted one readiness of offsite and alternate AC power systems sample as defined in Inspection Procedure (IP) 71111.01–05.

b. Findings

No findings were identified.

.2 Summer Seasonal Readiness Preparations

a. Inspection Scope

The inspectors performed a review of the licensee’s preparations for summer weather for selected systems, including conditions that could lead to an extended drought.

During the inspection, the inspectors focused on plant specific design features and the licensee’s procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors’ reviews focused specifically on the following plant systems:

- AC power systems; and
- Ultimate heat sink.

This inspection constituted one seasonal adverse weather sample as defined in IP 71111.01–05.

b. Findings

No findings were identified.



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:

- Shutdown Cooling System;
- Boric Acid Addition Pathway; and
- Electrical Distribution.

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, UFSAR, Technical Specification (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 three partial system walkdown samples as defined in 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 availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Fire Area #16: Component Cooling Water (CCW) pump room;
- Walkdowns of risk significant areas during RFO 1R25 higher risk plant operating state (HRPOS) #1;
- Fire Area #14: Containment, 590' elevation; and
- Fire Area #14: Containment, 607', 611', 625', and 649' elevations.

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

These activities constituted four quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's testing of shutdown cooling heat exchangers to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors compared the licensee's observations with acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. The inspectors also verified that test acceptance criteria considered differences between test conditions and design conditions. Documents reviewed for this inspection are listed in the Attachment to this report.

This annual heat sink performance inspection constituted one sample as defined in IP 71111.07-05.

b. Findings

No findings were identified.

## 1R08 Inservice Inspection Activities (71111.08)

From April 24, 2017, through May 6, 2017, the inspectors conducted a review of the implementation of the licensee's Inservice Inspection (ISI) Program for monitoring degradation of the primary coolant system (PCS), steam generator (SG) tubes, emergency feedwater systems, risk-significant piping and components and containment systems.

The inspections described in Sections 1R08.1, 1R08.2, 1R08.3, 1R08.4 and 1R08.5 below constituted one ISI sample as defined in Inspection Procedure 71111.08-05.

### .1 Piping Systems Inservice Inspection

#### a. Inspection Scope

The inspectors observed or reviewed records of the following non-destructive examinations (NDE) mandated by the American Society of Mechanical Engineers (ASME) Section XI Code to evaluate compliance with the ASME Code Section XI and Section V requirements and if any indications and defects were detected, to determine if these were dispositioned in accordance with the ASME Code or an NRC approved alternative requirement:

- Encoded phased array ultrasonic testing (PAUT) of PCS weld: 1A cold leg branch connection weld PCS-30-RCL-1A-5/2 (WO 429824);
- Encoded PAUT of PCS weld: 1B cold leg branch connection weld PCS-30 RCL-1B-5/2 (WO 429825);
- Encoded PAUT of pressurizer weld: dissimilar metal weld PCS-6-PRS-1A1-1 (RV-1039) (WO 438006);
- Encoded PAUT of pressurizer weld: dissimilar metal weld PCS-4-PRS-1P1-1 (WO 437974);
- Ultrasonic testing (UT) for examination of the reactor vessel head penetrations; and
- Eddy current testing (ECT) of the reactor vessel head vent line and associated j-weld.

The inspectors reviewed the following examination records with recordable indications accepted for continued service to determine if acceptance was in accordance with the ASME Code Section XI or an NRC-approved alternative.

- UT of welds PCS-12-RCL-1A-11/2 in the PCS system; and
- UT of welds PCS-12-RCL-2A-11/3 in the PCS system.

The inspectors reviewed the following pressure boundary welds completed for risk-significant systems during the last refueling outage) to determine if the licensee applied the pre-service NDE and acceptance criteria required by ASME Code Section XI. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to determine if the weld procedure was qualified in accordance with the requirements of the Construction Code and the ASME Code Section IX:

- ASME Code Category Class 2: Install new vent on high pressure safety injection Train 2 pump P-66A discharge vent root, MV-ES561 (WO 418130).

b. Findings

No findings were identified.

.2 Reactor Pressure Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

For the reactor vessel head, a non-visual examination of the head penetration nozzles was required pursuant to Title 10 of the *Code of Federal Regulations* (CFR), Part 50.55a(g)(6)(ii)(D).

The inspectors observed the non-visual examinations conducted on a sample of the reactor vessel head penetration nozzles to determine if the activities were conducted in accordance with the requirements of ASME Code Case N-729 and 10 CFR 50.55a(g)(6)(ii)(D). In particular, the inspectors confirmed that:

- the required examination scope (volumetric and surface coverage) was achieved and limitations (if applicable were recorded) in accordance with the licensee procedures;
- the required examination for (wetted surface coverage) was achieved and limitations (if applicable were recorded) in accordance with the licensee procedures;
- the ultrasonic examination equipment and procedures used were demonstrated by blind demonstration testing;
- if indications or defects were identified, the licensee documented the conditions in examination reports and/or entered this condition into the corrective action system and implemented appropriate corrective actions;
- if indications were accepted for continued service the licensee evaluation and acceptance criteria were in accordance with the ASME Section XI Code; and
- 10 CFR 50.55a(g)(6)(ii)(D) or an NRC approved alternative.

The licensee did not perform any welded repairs to vessel head penetration nozzles since the beginning of the preceding outage. Therefore, no NRC review was completed for this inspection procedure attribute.

b. Findings

No findings were identified.

.3 Boric Acid Corrosion Control

a. Inspection Scope

On April 23, 2017, the inspectors observed the licensee staff performing visual examinations on portions of the of the PCS and connected systems within containment to determine if these visual examinations emphasized locations where boric acid leaks can cause degradation of safety significant components.

The inspectors reviewed the following licensee evaluations of PCS components with boric acid deposits to determine if degraded components were documented in the corrective action system and for degraded components that the planned or

completed corrective actions met the Construction Code, ASME Section XI Code, and/or NRC-approved alternative.

- Boric acid evaluation for CR-PLP-2017-01001, Dry Boric Acid on SIT [Safety Injection Tank] T-82C Outlet Isolation Valve.

The inspectors reviewed the following corrective actions related to evidence of boric acid leakage to determine if the corrective actions completed were consistent with the requirements of the ASME Code Section XI and 10 CFR Part 50, Appendix B, Criterion XVI:

- CR-PLP-2017-00996, Control Rod Drive CRD-12 with Dry Boric Acid; and
- CR-PLP-2017-01695, Shutdown Cooling SDC Relief Valve RV-0401 with Dry Boric Acid.

b. Findings

No findings were identified.

4. Steam Generator Tube Inspection Activities

a. Inspection Scope

The NRC inspectors observed acquisition of ET data observed ET data analysis, observed in-situ pressure test of SG B, tube 62-101, reviewed SG tube plugging and reviewed procedures implementing the SG ISI Program to determine if:

- in-situ SG tube pressure testing screening criteria used were consistent with those identified in the Electric Power Research Institute (EPRI) TR-107620, "SG In-Situ Pressure Test Guidelines," and whether these criteria were properly applied to screen degraded SG tubes for in-situ pressure testing;
- in-situ pressure test records demonstrated the correct tube was selected and that pressure and hold times were consistent with EPRI TR-107620;
- in-situ pressure test results were properly applied to SG tube integrity performance criteria identified in TSs and EPRI 3002007571 – SG Integrity Assessment Guidelines;
- the numbers and sizes of SG tube flaws/degradation identified were bound by the licensee's previous outage Operational Assessment predictions;
- the SG tube ET examination scope and expansion criteria were sufficient to meet the TSs, and EPRI 1003138, "Pressurized Water Reactor SG Examination Guidelines;"
- the SG tube ET examination scope included potential areas of tube degradation identified in prior outage SG tube inspections and/or as identified in NRC generic industry operating experience applicable to these SG tubes;
- the licensee identified new tube degradation mechanisms and implemented adequate extent of condition inspection scope and repairs for the new tube degradation mechanism;
- the licensee implemented repair methods which were consistent with the repair processes allowed in the plant TS requirements and implemented at appropriate tube locations;

- qualified depth sizing methods were applied to degraded tubes accepted for continued service;
- the licensee implemented an inappropriate “plug on detection” tube repair threshold (e.g., no attempt at sizing of flaws to confirm tube integrity);
- the primary-to-secondary leakage (e.g., SG tube leakage) was below three gallons-per-day or the detection threshold during the previous operating cycle;
- the ET probes and equipment configurations as documented on the Examination TS Sheets used to acquire/analyze data from the SG tubes were qualified to detect and/or size the known/expected types of SG tube degradation in accordance with Appendix H and I, “Performance Demonstration for ET Examination,” of EPRI 1003138;
- the licensee performed secondary side SG inspections for location and removal of foreign materials;
- the licensee implemented repairs or appropriately evaluated SG tubes damaged by foreign material; and
- inaccessible foreign objects were left within the secondary side of the SGs, and if so, whether the licensee implemented evaluations which included the effects of foreign object migration and/or tube fretting damage.

b. Findings

No findings were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI/SG related problems entered into the licensee’s CAP and conducted interviews with licensee staff to determine if:

- the licensee had established an appropriate threshold for identifying ISI/SG–related problems;
- the licensee had identified issues related to excessive deposit buildup on the SG tube bundle and/or excessive SG tube wear indicative of fluid-elastic instability within the SG tube bundle;
- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions; and
- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment to this report.

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 June 20, 2017, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that 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 71111.11-05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation During Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On April 23, 2017, the inspectors observed reactor shutdown and cooldown activities in the main control room in preparation for the refueling outage. This was an activity that required heightened awareness or was related to increased risk. 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 (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and

- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications (if applicable).

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.3 Resident Inspector Quarterly Observation During Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On May 17, 2017 the inspectors observed reactor startup activities following the refueling outage in the main control room. This was an activity that required heightened awareness or was related to increased risk. 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 (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications (if applicable).

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.



1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Control room heating, ventilation and air conditioning.

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 one quarterly maintenance effectiveness sample as defined in IP 71111.12-05.

b. Findings

No findings were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed 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:

- Emergent repairs to PCV-3027, pressure control valve for CV-3027, emergency core cooling system recirculation to safety injection/refueling water tank;

- risk evaluation for operating at reduced power in support of maintenance activities;
- higher risk plant operating state (HRPOS) associated with reduced inventory period #1;
- HRPOS associated with reduced inventory period #2;
- emergent work on LS-1453, 1-2 diesel generator (DG) control level switch, for failure to stop filling the diesel generator day tank; and
- movement and staging of FLEX equipment for RFO 1R25.

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 six samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Immediate operability of containment spray pump P-54B after identification of overcurrent relay on breaker 152-112 outside of design basis;
- Operability evaluation of ED-01, left channel main station battery, after identification of base of a post on cell 46 was rising;
- Operability of 1-2 DG cabinet with improper latching bolts; and
- Initial operability evaluation of P-18A, fuel oil transfer pump failure to stop auto fill and LS-1453, 1-2 DG control level switch to initiate startup of P-18A at expected level.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and Updated Final Safety Analysis Report (UFSAR) to

the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors 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.

.2 Licensee Implementation of Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance"

On June 10, 2015, the NRC issued Regulatory Issue Summary 2015-06, "Tornado Missile Protection," focusing on the requirements regarding tornado-generated missile protection and required compliance with the facility-specific licensing basis. The Regulatory Issue Summary also provided examples of noncompliance that had been identified through different mechanisms and referenced enforcement guidance memorandum (EGM) 15-002, which was also issued on June 10, 2015. Revision 1 of EGM 15-002 was issued on February 7, 2017. The EGM provided guidance to allow the NRC staff to exercise enforcement discretion when an operating power plant licensee did not comply with the current licensing basis for tornado-generated missile protection. Specifically, the discretion applied to structures, systems, and components (SSCs) declared inoperable resulting in TS Limiting Condition for Operations (LCOs) that would require a reactor shutdown or mode change if the licensee could not meet the required actions within the TS completion time. The discretion allowed the licensee to re-establish operability through compensatory measures and established criteria for continued operation of the facility as longer term corrective actions were implemented. The EGM stated that the bounding risk analysis performed for this issue concluded that this issue was of low risk significance and, in Palisades' case, provided for enforcement discretion of up to three years from the date of issuance of the EGM.

Palisades was licensed prior to issuance of Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants (GDC)." Specifically, GDC 2, "Design Bases for Protection Against Natural Phenomena," and GDC 4, "Environmental and Dynamic Effects Design Basis," discuss how licensee's SSCs important to safety shall be designed to protect against natural phenomena such as tornadoes and shall be adequately protected against dynamic effects including missiles. The licensee's site-specific licensing bases with regard to how they comply with the GDCs are described in the UFSAR. In particular, UFSAR Sections 5.1.2.2 and 5.1.2.4 describe how Palisades meets GDC 2 and GDC 4. Additional discussion on how Palisades protects SSCs against tornado-generated missiles can be found in UFSAR Section 5.5, "Missile Protection."

On March 29, 2017, the licensee initiated condition reports (CRs) CR-PLP-2017-01248, CR-PLP-2017-01249, CR-PLP-2017-01250, CR-PLP-2017-01251, CR-PLP-2017-01252, and CR-PLP-2017-01253, identifying

a nonconforming condition of their site-specific licensing basis. Specifically, multiple vulnerabilities were identified where SSCs were not adequately protected from tornado-generated missiles. The licensee declared multiple SSCs inoperable and promptly implemented compensatory measures designed to reduce the likelihood of tornado-generated missile effects within the expiration time of the affected TS LCO required actions. The inspectors reviewed the licensee's immediate and more comprehensive compensatory measures that included:

- review and revision of procedures for a tornado watch and a tornado warning to provide additional instructions for operators preparing for tornados and/or high winds, and a potential loss of SSCs vulnerable to the tornado missiles;
- confirmation of readiness of equipment and procedures dedicated to the Diverse and Flexible Coping Strategy (FLEX);
- verification that training was up to date for individuals responsible for implementing preparation and response procedures; and
- establishment of a heightened station awareness and preparedness relative to identified tornado missile vulnerabilities.

The condition was reported to the NRC as Event Notice 52647 as an unanalyzed condition and potential loss of safety function. The licensee documented the inoperability of the SSCs and the affected TS LCO conditions in the CAP and in the control room operating log. The licensee notified the NRC resident inspectors of implementation of EGM 15-002, and documented the implementation of the compensatory measures to establish the SSCs "operable but nonconforming" prior to expiration of the LCO required action. The enforcement discretion was applied to the required shutdown actions of the following TS LCOs:

- TS 3.0.3, General Shutdown LCO (cascading or by reference from other LCOs)
- TS 3.7.5, "Auxiliary Feedwater System";
- TS 3.7.7, "Component Cooling Water System";
- TS 3.7.8, "Service Water System";
- TS 3.7.10, "Control Room Ventilation Filtration";
- TS 3.7.11, "Control Room Ventilation Cooling";
- TS 3.8.1, "AC Sources – Operating"; and
- TS 3.8.3, "Diesel Fuel, Lube Oil, and Starting Air".

The comprehensive actions were to remain in place until permanent repairs are completed, or until the NRC dispositions the non-compliance in accordance with a method acceptable to the NRC such that discretion was no longer needed.

a. Inspection Scope

The inspectors reviewed the licensee's immediate actions and compensatory measures to restore operability of the affected SSCs in accordance with Revision 1 of EGM 15-002. The inspectors' review addressed the material issues in the plant, and whether the measures were implemented in accordance with the guidance documentation for the EGM. The inspectors also evaluated whether the measures as implemented would function as intended and were properly controlled. The inspectors did not review the underlying circumstances that resulted in the TS violations.

Additionally, the inspectors reviewed the licensee's 60-day comprehensive compensatory measures. The inspectors concluded that those actions provided additional protection such that the likelihood of tornado missile effects were lessened.

This review constituted one operability sample as defined in IP 71111.15-02.

b. Findings

No findings were identified. Additional information regarding the non-conforming conditions and performance deficiencies associated with the tornado-generated missile vulnerability is discussed in Section 4OA3.1 of this report.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modifications:

- Air accumulator addition to CV-0910, containment cooling water (CCW) supply to containment (permanent); and
- overcurrent relay setting modification on breaker 152-112, P-54B containment spray pump (permanent).

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 system(s). 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 two permanent plant modification samples as defined in IP 71111.18-05.

b. Findings

No findings were identified.

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:

- QO-6 after CV-0780 atmospheric dump valve positioner replacement;
- VT-2 after E-54B, CCW heat exchanger inspection and tube plugging;
- tan-delta testing after "C" bus cable repairs;
- VT-2 after repairs to containment building fire water supply MV-SW264; and
- RO-22 and VT-2 after control rod drive CRD-40 seal repairs.

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 five post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Risk Assessment and contingency plans for RFO 1R25, conducted April 23, 2017, to May 20, 2017, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the RFO, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below:

- licensee configuration management, including maintenance of defense-in-depth commensurate with the outage safety plan for key safety functions and compliance with the applicable TS when taking equipment out of service;
- implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;
- installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- controls over the status and configuration of electrical systems to ensure that TS and outage safety plan requirements were met, and controls over switchyard activities;
- monitoring of decay heat removal processes, systems, and components;
- controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- maintenance of secondary containment as required by TSs;
- licensee fatigue management, as required by 10 CFR 26, Subpart I;
- refueling activities, including fuel handling and sipping to detect fuel assembly leakage;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the primary containment to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing; and
- licensee identification and resolution of problems related to RFO activities.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted one RFO sample as defined in IP 71111.20–05.

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:

- RO–105, safety injection tank valve full flow testing (routine);
- RO–11, containment high radiation surveillance test (routine);
- RT–8D, right train engineered safeguards systems test (routine);
- RO–32–14, CCW containment inlet local leak rate test (containment isolation valve);

- QO-16, C containment spray pump test (inservice test); and
- RO-22, control rod drop time testing (routine).

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

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four routine surveillance testing samples, one in-service test sample, and one containment isolation valve sample as defined in IP 71111.22, Sections-02 and-05.

b. Findings

No findings were identified.



## 2. RADIATION SAFETY

### 2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

#### .1 Radiological Hazard Assessment (02.02)

##### a. Inspection Scope

The inspectors assessed the licensee's current and historic isotopic mix, including alpha emitters and other hard-to-detect radionuclides. The inspectors evaluated whether survey protocols were reasonable to identify the magnitude and extent of the radiological hazards.

The inspectors determined if there have been changes to plant operations since the last inspection that may have resulted in a significant new radiological hazard for onsite individuals. The inspectors evaluated whether the licensee assessed the potential impact of these changes and implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard. The inspectors reviewed the last two radiological surveys from selected plant areas and evaluated whether the thoroughness and frequency of the surveys were appropriate for the given radiological hazard.

The inspectors conducted walkdowns of the facility, including radioactive waste processing, storage, and handling areas to evaluate material conditions and performed independent radiation measurements as needed to verify conditions were consistent with documented radiation surveys.

The inspectors assessed the adequacy of pre-work surveys for select radiologically risk-significant work activities.

The inspectors evaluated the radiological survey program to determine if hazards were properly identified. The inspectors discussed procedures, equipment, and performance of surveys with radiation protection staff and assessed whether technicians were knowledgeable about when and how to survey areas for various types of radiological hazards.

The inspectors observed work in potential airborne areas to assess whether air samples were being taken appropriately for their intended purpose and reviewed various survey records to assess whether the samples were collected and analyzed appropriately. The inspectors also reviewed the licensee's program for monitoring contamination, which has the potential to become airborne.

These inspection activities constituted one complete sample as defined in IP 71124.01-05.

##### b. Findings

No findings were identified.

.2 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors reviewed select radiation work permits used to access high radiation areas and evaluated the specified work control instructions or control barriers. The inspectors also assessed whether workers were made aware of the work instructions and area dose rates.

The inspectors reviewed electronic alarming dosimeter dose and dose rate alarm setpoint methodology. For selected electronic alarming dosimeter occurrences, the inspectors assessed the worker's response to the alarm, the licensee's evaluation of the alarm, and any follow-up investigations.

The inspectors reviewed the licensee's methods for informing workers of changes in plant operations or radiological conditions that could significantly impact their occupational dose.

The inspectors reviewed the labeling of select containers of licensed radioactive material that could cause unplanned or inadvertent exposure to workers.

These inspection activities constituted one complete sample as defined in IP 71124.01-05.

b. Findings

No findings were identified.

.3 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitors material leaving the radiologically controlled area and assessed the methods used for control, survey, and release of material from these areas. As available, the inspectors observed health physics personnel surveying and releasing material for unrestricted use.

The inspectors observed workers leaving the radiologically controlled area and assessed their use of tool and personal contamination monitors and reviewed the licensee's criteria for use of the monitors.

The inspectors assessed whether instrumentation was used at its typical sensitivity levels based on appropriate counting parameters or whether the licensee had established a de facto release limit.

The inspectors selected several sealed sources from the licensee's inventory records and assessed whether the sources were accounted for and verified to be intact. The inspectors also evaluated whether any transactions, since the last inspection, involving nationally tracked sources were reported in accordance with Title 10 of the *Code of Federal Regulations*, Part 20.2207.

These inspection activities constituted one complete sample as defined in IP 71124.01-05.

b. Findings

No findings were identified.

.4 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors evaluated ambient radiological conditions during tours of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, radiation work permits, and worker briefings.

The inspectors evaluated the adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination controls. The inspectors evaluated the licensee's use of electronic alarming dosimeters in high noise areas as high radiation area monitoring devices.

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors assessed whether the dosimeter was placed in the location of highest expected dose or that the licensee properly employed an NRC-approved method of determining effective dose equivalent.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in work areas with significant dose rate gradients.

For select airborne area radiation work permits, the inspectors reviewed airborne radioactivity controls and monitoring, the potential for significant airborne levels, containment barrier integrity, and temporary filtered ventilation system operation.

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials stored within pools and assessed whether appropriate controls were in place to preclude inadvertent removal of these materials from the pool.

These inspection activities constituted one complete sample as defined in IP 71124.01-05.

b. Findings

No findings were identified.

.5 High Radiation Area and Very High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors observed posting and physical controls for high radiation areas and very high radiation areas to assess adequacy.

The inspectors conducted a selective inspection of posting and physical controls for high radiation areas and very high radiation areas to assess conformance with performance indicators.

The inspectors reviewed procedural changes to assess the adequacy of access controls for high and very high radiation areas to determine whether procedural changes substantially reduced the effectiveness and level of worker protection.

The inspectors assessed the controls for very high radiation areas and areas with the potential to become very high radiation areas. The inspectors also assessed whether individuals were unable to gain unauthorized access to these areas.

These inspection activities constituted a partial sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

.6 Radiation Worker Performance and Radiation Protection Technician Proficiency (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance and assessed their performance with respect to radiation protection work requirements, the level of radiological hazards present, and radiation work permit controls.

The inspectors assessed worker awareness of electronic alarming dosimeter set points, stay times, or permissible dose for radiologically significant work as well as expected response to alarms.

The inspectors observed radiation protection technician performance and assessed whether the technicians were aware of the radiological conditions and radiation work permit controls and whether their performance was consistent with training and qualifications for the given radiological hazards.

The inspectors observed radiation protection technician performance of radiation surveys and assessed the appropriateness of the instruments being used, including calibration and source checks.

These inspection activities constituted one complete sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

.7 Problem Identification and Resolution (02.08)

a. Inspection Scope

The inspectors assessed whether problems associated with radiological hazard assessment and exposure controls were being identified at an appropriate threshold and were properly addressed for resolution. For select problems, the inspectors assessed the appropriateness of the corrective actions. The inspectors also assessed the licensee's program for reviewing and incorporating operating experience.

The inspectors reviewed select problems related to human performance errors and assessed whether there was a similar cause and whether corrective actions taken resolve the problems.

The inspectors reviewed select problems related to radiation protection technician error and assessed whether there was a similar cause and whether corrective actions taken resolve the problems.

These inspection activities constituted one complete sample as defined in IP 71124.01–05.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

.1 Implementation of ALARA and Radiological Work Controls (02.04)

a. Inspection Scope

The inspectors reviewed the radiological administrative, operational, and engineering controls planned for selected radiologically significant work activities and evaluated the integration of these controls and as-low-as-reasonably-achievable (ALARA) requirements into work packages, work procedures and/or radiation work permits.

The inspectors conducted observations of in-plant work activities and assessed whether the licensee had effectively integrated the planned administrative, operational, and engineering controls into the actual field work to maintain occupational exposure ALARA. The inspectors observed pre-job briefings, and determined if the planned controls were discussed with workers. The inspectors evaluated the placement and use of shielding, contamination controls, airborne controls, radiation work permit controls, and other engineering work controls against the ALARA plans.

The inspectors assessed licensee activities associated with work-in-progress to ensure the licensee was tracking doses, performed timely in-progress reviews, and, when jobs did not trend as expected, appropriately communicated additional methods to be used to reduce dose. The inspectors evaluated whether health physics and ALARA staff were involved with the management of radiological work control when in-field activities deviated from the planned controls. The inspectors assessed whether the Outage Control Center and station management provided sufficient support for ALARA re-planning.

The inspectors assessed the involvement of ALARA staff with emergent work activities during maintenance and when possible, attended in-progress review discussions, outage status meetings, and/or ALARA committee meetings.

The inspectors compared the radiological results achieved with the intended radiological outcomes and verified that the licensee captured lessons learned for use in the next outage.

These inspection activities constituted one complete sample as defined in IP 71124.02–05.

b. Findings

No findings were identified.

.2 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas to assess whether workers demonstrated the ALARA philosophy in practice and followed procedures. The inspectors observed radiation worker performance to evaluate whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

The inspectors interviewed individuals from selected work groups to assess their knowledge and awareness of planned and/or implemented radiological and ALARA work controls.

These inspection activities constituted one complete sample as defined in IP 71124.02–05.

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**

40A1 Performance Indicator Verification (71151)

.1 Unplanned Power Changes per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Power Changes per 7000 Critical Hours performance indicator (PI) for the period from the second quarter 2016 through the first quarter 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, condition reports, maintenance rule records, event reports and U.S. Nuclear Regulatory Commission (NRC) Integrated Inspection Reports for the period of April 2016 through March 2017 to validate the accuracy of the submittals. The inspectors also reviewed the licensee’s issue report 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 transients per 7000 critical hours sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures PI for the period from the second quarter 2016 through the first quarter 2017. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," definitions and guidance, were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, condition reports, event reports and NRC Integrated Inspection Reports (IR)s for the period of April 2016 through March 2017 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report 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 safety system functional failures sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's corrective action program at an appropriate threshold, adequate attention was being given to timely corrective actions, and adverse trends were identified and addressed. Some minor issues were entered into the licensee's corrective action program as a result of the inspectors' observations; however, they are not discussed in 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.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector corrective action program item screening discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of January 2017 through June 2017, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This review constituted one semi-annual trend review inspection sample as defined in IP 71152.

b. Observations

The inspectors reviewed the licensee's initiation of condition reports (CRs) to ensure that conditions adverse to quality were identified and receiving the appropriate level of oversight within the CAP. A decline in the implementation of some elements of the CAP, including initiation, was noted in CR-PLP-2016-02440 and CR-PLP-2016-02536. During routine reviews of the CAP, the inspectors noted some examples where issues were either not entered into the CAP or there was a delay in the entry of issues into the CAP. Additionally, the site Nuclear Independent Oversight organization also identified an instance where identified issues were not entered into the CAP.

The inspectors discussed CAP trending, performance monitoring, and self-assessments with the licensee's performance improvement personnel. The licensee discussed the decline in the implementation of some elements of the CAP and provided examples of initiation elements that had declined, such as housekeeping items. In response to the CRs noted above, the licensee discussed CAP requirements with personnel during site "tailgate" discussion. The inspectors also performed an independent review of operating logs to determine any instances where issues were not entered into the CAP. In general, issues were entered into the CAP in accordance with the procedural guidance in EN-LI-102, "Corrective Action Program." Issues identified during the inspectors' independent review of logs and CRs were discussed with the licensee.



c. Findings

No findings were identified.

.3 Annual Follow-Up of Selected Issues: Degraded Steam Generator B Tube

a. Inspection Scope

The inspectors selected the following condition report for an in-depth review:

- CR–PLP–2017–02177, Axial Crack Identified in SG–E–50 B Tube

As appropriate, the inspectors verified the inspection procedure attributes as discussed below during their review of the licensee's corrective actions for the above condition report. The inspectors discussed the corrective actions and associated evaluations with licensee personnel.

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

b. Observations

It is an infrequent occurrence that steam generator (SG) tube degradation meets criteria for conducting an in-situ pressure test. The in-situ pressure test provides a means to determine whether a flawed tube meets the structural integrity and accident leakage performance criteria required by the licensee's SG Program as implemented by TS 3.4.17 and 5.5.8. Therefore, the inspectors elected to review the licensee's corrective actions associated with CR–PLP–2017–02177, which documented an axial crack identified in a SG B tube that met criteria for an in-situ pressure test. The inspectors noted that CR–PLP–2017–02177 did not reference vendor documents that assessed the cause and significance of this degraded SG B tube. To improve the auditability of the CR, the licensee subsequently incorporated reference to LR–LAR–2016–00155 in the closure notes which included actions to complete the 1R25 SG Tube Inspection Report as required by TS 5.6.8 and this report will incorporate or reference the vendor documents that contain detailed evaluations of the cause and significance as discussed below.

The inspectors reviewed the licensee's vendor (AREVA) document 51–9270659, "Palisades Steam Generator Condition Monitoring for 1R25 and Preliminary Operational Assessment for Cycle 26," which recorded the detailed crack profiling for the degraded tube R62, C101 identified in the B SG located in the hot leg side free-span region between support plates 03 and 04. Specifically, based on eddy current testing (ECT) data recorded using the +Point™ probe, the licensee's vendor determined the crack depth and length of eight distinct flaws aligned axially within the degraded section of SG B tube R62, C101 and attributed the cause of this cracking to be outside diameter stress corrosion cracking (ODSCC). The deepest of these flaws was measured at 64 percent through-wall and could not be demonstrated analytically to meet the structural performance criteria identified in the licensee's SG Program. Therefore, the licensee completed an in-situ pressure test during the outage, which demonstrated that this degraded tube had retained adequate structural and leakage integrity during the previous operating cycle and subsequently installed mechanical tube plugs to remove tube R62, C101 from service. Document 51–9270659 also included a historical record

of tubes removed from service with ODSCC identified in the free-span area and based upon this review, the inspectors confirmed that no adverse increasing trend for ODSCC existed. Specifically, ODSCC in the free-span was identified in three SG tubes in 2004, two SG tubes in 2006 and one SG tube in 2009. The inspectors also interviewed the licensee's ECT vendor personnel who conducted reviews of prior ECT data to confirm that no evidence of a defective tube existed during the RFO 24 SG ECT. Specifically, the vendor provided records of the SG ECT bobbin probe data to demonstrate that tube R62, C101 had not contained ECT signals indicative of flaws as defined by the site approved ECT Data Analyst Guidelines during RFO 1R24.

Based on the reviews discussed above, the inspectors confirmed that the licensee determined the cause, extent of cause and extent of condition for the degraded SG B tube. Additionally, the inspectors verified the completed corrective actions were appropriately focused to correct the problem.

c. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 05000255/2017001-00: Inadequate Protection from Tornado Missiles Identified Due to Non-Conforming Design Conditions

a. Inspection Scope

The inspectors reviewed Licensee Event Report (LER) 05000255/2017001-00, which was submitted to the NRC on May 24, 2017. On March 29, 2017, the licensee identified non-conforming conditions in the plant as-built configuration and conditions such that specific TS equipment was considered to not be adequately protected from tornado missiles as required by the current licensing and design basis. The licensee entered various TS action statements for the equipment listed below. Operability was restored promptly using the guidance in Interim DSS-ISG-2016-01, "Clarification of Licensee Actions in Receipt of Enforcement Discretion," dated February 2016 per Enforcement Guidance Memorandum EGM 15-002, Revision 1, "Enforcement Discretion for Tornado-Generated Missile Protection Non-Compliance," dated February 17, 2017.

A list of specific equipment adversely effected and discussed in the LER included:

- Ventilator openings that provide a straight-line path to parts of the service water system;
- Ventilator openings that provide a straight-line path to parts of the diesel generator fuel oil system;
- Vent lines for the fuel oil day tanks associated with the 1-1 diesel generator (DG) and 1-2 DG;
- Steam supply relief valves for the steam-driven auxiliary feedwater pump;
- CCW surge tank; and
- Air intake piping for the control room ventilation filtration system.

The licensee performed a root cause evaluation for these tornado missile vulnerabilities. Planned corrective actions include submission of a license amendment request to use

a tornado risk evaluation model and implement the model as part of the current licensing basis.

The inspectors reviewed the LER to ensure it was reported accurately in accordance with 10 CFR, Part 50.73 reporting requirements. Therefore, this LER is closed.

b. Findings

A finding and an associated violation of 10 CFR, Part 50, Appendix B, Criterion III, "Design Control," was identified based upon the lack of adequate tornado missile protection to the safety-related equipment listed above. The finding was determined to be less than red (i.e., high safety significance) based on a generic and bounding risk evaluation performed by the NRC in support of the resolution of tornado-generated missile non-compliances. The bounding risk evaluation is discussed in Enforcement Guidance Memorandum 15-002, Revision 1, "Enforcement Discretion for Tornado-Generated Missile Protection Non-Compliance," and can be found in ADAMS Accession No. ML16355A286.

Because this finding and violation was identified during the discretionary period covered by Enforcement Guidance Memorandum 15-002, Revision 1, "Enforcement Discretion for Tornado Missile Protection Non-Compliance" and because the licensee, prior to the expiration of the associated LCO, took initial compensatory measures that provided additional protection such that the likelihood of tonado missile effects were lessened, followed by more comprehensive compensatory measures that were completed within approximately 60 days of issue discovery, and has final corrective actions planned, the NRC is exercising enforcement discretion by not issuing an enforcement action, as discussed in Section 1R15.2 of this report.

This event follow-up review constituted one sample as defined in IP 71153-05.

4OA5 Other Activities

.1 (Closed) Unresolved Item 05000255/2014008-10: Lack of Analysis for Electrical Containment Penetration Protection

The inspectors completed a review of Unresolved Item (URI) 05000255/2014008-10, "Lack of Analysis for Electrical Containment Penetration Protection." The inspectors reviewed the Current Licensing Basis for Palisades, specifically NUREG-1424, Safety Evaluation Report related to the full-term operating license for Palisades Nuclear Plant; NUREG-0820, Palisades Systematic Evaluation Program (SEP); and associated regulatory correspondence. The inspectors determined that secondary containment penetration protection was not an original design requirement nor was it ever formally imposed on Palisades; therefore, the inspectors found no violation of regulatory requirements.

The inspectors also reviewed the underlying technical basis for the conclusion in SEP Topic VIII-4 and were concerned that the conclusion of the SEP, i.e., no further action was required, was no longer appropriate given current standards for containment penetration protection. Specifically, the SEP stated, "The staff concluded that the design of the Palisades Plant electrical penetrations is similar to those in other SEP plants, the probability of electrical failure of the penetrations is low, and any resultant leakage path would be small." The inspectors were specifically concerned with the assertion that the

probability of electrical penetration failure is low and any resultant leakage path would be small was no longer appropriate given current standards (specifically Regulatory Guide 1.63, "Electric Penetration Assemblies in Containment Structures for Nuclear Power Plants") for containment penetration protection. The inspectors reviewed industry data on the failure probability of electrical cables and circuit breakers along with the Core Damage Frequency for Palisades. These data were compared to established risk thresholds for Large Early Release Frequency. The inspectors concluded that although the licensee did not necessarily meet current day standards, the contribution to the Large Early Release Frequency due to a lack of secondary containment penetration protection was sufficiently low that a Safety Backfit in accordance with 10 CFR 50.109 would not be warranted. Because of this, the inspectors determined that no further action was warranted for this URI. This URI is closed.

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On July 27, 2017, the inspectors presented the inspection results to Mr. C. Arnone, 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 Radiation Safety Program review with Mr. C. Arnone, Site Vice President, and other members of the licensee staff on May 5, 2017; and
- The inspection results for the Inservice Inspection (ISI) with Mr. C. Arnone, Site Vice President, and other members of the licensee staff on May 5, 2017.

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.

#### 4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) or Severity Level IV was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as a non-cited violation (NCV).

- A finding and an associated violation of the licensee's current site-specific licensing basis for tornado-generated missile protection was identified. Because this violation was identified during the discretionary period discussed in Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado Missile Protection Noncompliance," Revision 1, and because the licensee implemented interim compensatory measures and has planned

final corrective actions, the NRC is exercising enforcement discretion by not issuing an enforcement action for the underlying 10 CFR Part 50, Appendix B, Criterion III, "Design Control," violation. This violation is discussed in Section 4OA3.1.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

C. Arnone, Site Vice President  
D. Corbin, General Manager Plant Operations  
B. Baker, Operations Manager – Shift  
J. Borah, Engineering Manager, Systems and Components  
M. Briley, Corporate Level III, NDE  
D. Dagget, SG Program Engineer  
T. Davis, Regulatory Assurance  
N. DeMaster, Outage Manager  
B. Dotson, Regulatory Assurance  
J. Erickson, Regulatory Assurance  
D. Gerber, NDE Lead  
O. Gustafson, Director of Regulatory and Performance Improvement  
J. Hardy, Regulatory Assurance Manager  
J. Haumersen, Site Projects and Maintenance Services Manager  
G. Heisterman, Maintenance Manager  
J. Jerz, Engineering Supervisor  
G. Katt, ISI Engineer  
M. Lee, Operations Manager – Support  
D. Lucy, Production Manager  
D. Malone, Emergency Planning Manager  
T. Mulford, Operations Manager  
W. Nelson, Training Manager  
D. Nestle, Radiation Protection Manager  
K. O'Connor, Engineering Manager, Design and Programs  
C. Plachta, Nuclear Independent Oversight Manager  
P. Russell, Site Engineering Director  
M. Schultheis, Performance Improvement Manager  
M. Soja, Chemistry Manager  
J. Tharp, Security Manager  
N. Wortman, Boric Acid Program Owner

#### U.S. Nuclear Regulatory Commission

E. Duncan, Chief, Reactor Projects Branch 3  
R. Daley, Chief, Reactor Safety Engineering Branch 3  
A. Shaikh, Senior Reactor Inspector

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

Opened

None

Closed

|                     |     |   |
|---------------------|-----|---|
| 05000255/2017001-00 | LER | Inadequate Protection from Tornado Missiles Identified Due to Non-Conforming Design Conditions (4OA3) |
| 05000255/2014008-10 | URI | Lack of Analysis for Electrical Containment Penetration Protection (4OA5)                             |

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.

### 1R01 Adverse Weather Protection

- AOP-38, Acts of Nature, Revision 10
- CR-PLP-2016-04928, CR-PLP-2016-04928, F-4B, Travelling Screen Periodic Abnormal Noise, October 14, 2016
- CR-PLP-2016-04980, Small Puddle (About 1 Cup) of Water in Safeguards Bus Enclosure, October 18, 2016
- CR-PLP-2016-05287, Auto Trip Indicator Tripped Out, November 3, 2016
- CR-PLP-2016-05325, Feedwater Purity Diesel Fuel Oil Storage Tank T-926 has Accumulated Water of .25 Inches, November 7, 2016
- CR-PLP-2016-05341, Breaker 52-1406 was Found Open with No Indication it had Tripped, November 8, 2016
- CR-PLP-2017-00477, AOP-38 "Acts of Nature" Does Not Address Entry if a Gale Warning is Issued for Waters of Lake Michigan West of Palisades, February 8, 2017
- CR-PLP-2017-01399, NRC Identified: AOP-38 Entry Criteria Met Due to High Wind Warning for Berrien County, April 6, 2017
- CR-PLP-2017-01463, Noticeable Shaft Wear from Packing on P-4 Screen Wash Pump, April 11, 2017
- CR-PLP-2017-02695, SOP-23 Completed on April 13, 2017, is Missing the Shift Manager Administrative Review Signature, May 25, 2017
- CR-PLP-2017-03142, NRC Identified Oil Leak on EX-07 Safeguards Transformer 1-1, June 29, 2017
- CR-PLP-2017-03143, The NRC Identified a Possible Crack on the MOD-24F1 Safeguard XMFR 1-1 Disconnect Z Phase Insulator, June 29, 2017
- CR-PLP-2017-03156, F-4B/C Traveling Screen, Head Sprocket Beatings, Outer Two Zirc Fittings (F-4B North End and F-4C South End) Did Not Readily Accept Grease, June 30, 2017
- CR-PLP-2017-03164, Minor Oil Leak of EX-07 Safeguards Transformer, June 30, 2017
- CR-PLP-2017-03176, NRC Identified a Fabricated Sheet Metal FME Cover on the South Side of F-4C, June 30, 2017
- WO 383605, V-21C Louvers Won't Open Top 2 Leaves Binding, June 8, 2017
- WO 52686854, Check Operation of F-4B/C
- WO 52688688, Warm Weather Checklist

### 1R04 Equipment Alignment

- CR-PLP-2017-01792, Potential Boric Acid Leak from MV-ES3299A, April 25, 2017
- DBD-3.04, 2400V AC System, Revision 5
- DBD-6.02, 345Kv Switchyard, Revision 3
- E-1, Single Line Meter and Relay Diagram 480 Volt Motor Control Center Warehouse, Revision 85
- GOP-14, Attachment 3, Shutdown Cooling Equipment Availability, Revision 51
- GOP-14, Shutdown Cooling Operations, Revision 51
- M-202, System Diagram, Chemical and Volume Control System, Sheet A, Revision 11



- M-203, System Diagram, Safety Injection, Containment Spray and Shutdown Cooling System, Sheet A, Revision 7
- M-204, Piping & Instrument Diagram, Safety Injection Containment Spray and Shutdown Cooling System, Sheet 1A, Revision 44
- M-204, Piping & Instrument Diagram, Safety Injection, Containment Spray, Sheet 1B, Revision 41
- M-204, Piping & Instrument Diagram, Safety Injection, Containment Spray and Shutdown Cooling System, Sheet 1, Revision 88
- M-204, System Diagram, Safety Injection, Containment Spray and Shutdown Cooling System, Sheet A, Revision 8
- SOP-2A, Chemical and Volume Control System, Revision 87
- SOP-2B, Attachment 2, Checklist CL 2.1, CVC System Checklist, Revision 52
- SOP-3, Safety Injection and Shutdown Cooling System, Revision 105

#### 1R05 Fire Protection

- 17-012, Transient Combustible Evaluation, February 1, 2017
- 17-042, Transient Combustible Evaluation, March 22, 2017
- 17-044, Transient Combustible Evaluation, April 25, 2017
- 17-071, Transient Combustible Evaluation, April 10, 2017
- 17-098, Transient Combustible Evaluation, April 12, 2017
- 17-109, Transient Combustible Evaluation, April 19, 2017
- 17-115, Transient Combustible Evaluation, April 21, 2017
- 17-119, Transient Combustible Evaluation, April 21, 2017
- 17-121, Transient Combustible Evaluation, April 23, 2017
- Admin 4.49, Non-Power Operation Fire Risk Management, Revision 0
- CR-PLP-2017-01820, Fire Tour in 590' and 607' Elevation of the Component Cooling Water Room is Suspended Due to Emergent High Contamination Levels, April 26, 2017
- CR-PLP-2017-01957, While Performing Oil Leak Inspection on P-50D Noted Oil Puddle Under DC Lift Pump, April 29, 2017
- CR-PLP-2017-02005, Door-196A, Pressure Relief Panel from Component Cooling Water Room to Turbine Building had Hoses and an Extension Cord Running Through the Jail Door for E54B Eddy Current Testing Without a Compensatory Measure in Place, May 1, 2017
- CR-PLP-2017-02112, During Primary Coolant Pump P-50B Motor Lube Oil and Oil Collection System Inspection, Noted a Small Amount of Oil had Collected, May 3, 2017
- CR-PLP-2017-02113, Following Primary Coolant Pump P-50A and P-50B Lube Oil and Oil Collection System Inspection, Noted a Thin Layer of Oil Remaining in the Lower and Upper Site Glass Drip Pans, May 3, 2017
- CR-PLP-2017-02363, Combustible Materials were Not Removed or Protected Within 35 Feet While Performing Hot Work on RV-3264 "High Pressure Safety Injection Relief Valve – Train 2", May 10, 2017
- DBD 7.10, NFPA 805 Fire Protection Program, Revision 0
- EA-APR-98-002, Unsealed Openings Between Fire Area 13 and Fire Area 27, Revision 0
- EA-APR-98-003, Analysis of the Effect of a Fire on the Fire Barrier Penetrations Between Rooms 150/229-232, Revision 1
- EA-FPP-03-001, Analysis of Combustible Loading at Palisades Nuclear Plant, Revision 3
- EN-DC-127, Control of Hot Work and Ignition Sources, Revision 17
- EN-DC-161, Control of Combustibles, Revision 17
- FPIP-4, Fire Protection Systems and Fire Protection Equipment, Revision 37
- FPSP-RI-2, Functional Test of the Fire Detection System in Containment, Revision 4
- GOP-14, Shutdown Cooling Operations, Revision 51

- Hot Work Permit Initiation, WO 429827-08, May 1, 2017
- Hot Work Permit Initiation, WO 429827-09, May 1, 2017
- Hot Work Permit Initiation, WO 429828-08, May 1, 2017
- Hot Work Permit Initiation, WO 429830-08, May 1, 2017
- M-214, Piping & Instrument Diagram, Lube Oil, Fuel Oil & Diesel Generator System, Sheet 5, Revision 2
- M-216, Fire Protection System, Sheet 2, Revision 72
- Operations Narrative Logs, April 27, 2017
- Palisades Pre-Fire Plans, Revision 5
- PLP-RPT-12-00025, Definition of Power Block, Revision 3
- Pre-Fire Plan 10, East Engineered Safeguards Room, Elevation 570' and 579'
- Pre-Fire Plan 13A, Main Corridor – North, Elevation 590'
- Pre-Fire Plan 13A, Main Corridor – South, Elevation 590'
- Pre-Fire Plan 13G, Spent Fuel Pool Heat Exchanger Room, Elevation 590'
- Pre-Fire Plan 14, Reactor Containment Building, Elevation 590'
- Pre-Fire Plan 14, Reactor Containment Building, Elevation 625'
- Pre-Fire Plan 14, Reactor Containment Building, Elevation 649'
- Pre-Fire Plan 14, Reactor Containment Building, Elevations 607' & 611'
- Pre-Fire Plan 16, Component Cooling Pump Room, Elevation 590'
- Pre-Fire Plan 16, Component Cooling Pump Room, Elevation 607' 6"
- Pre-Fire Plan 16, Component Cooling Pump Room, Elevation 625'
- Pre-Fire Plan 28, West Engineered Safeguards Room, Elevation 570'
- WO 428895, FPSP-RI-2 – Functional Test of Fire Detection in Rx
- WO 52675082, P-50A, EMA-2103, Oil Leak Inspection
- WO 52675083, P-50B, EMA-2203, Oil Leak Inspection
- WO 52675084, P-50C, EMA-2194, Oil Leak Inspection
- WO 52675085, P-50D, MEA-2204, Oil Leak Inspection

#### 1R07 Heat Sink Performance

- CR-PLP-2014-04874, A License Renewal Audit Question was Posed Related to an Exception Taken to the GALL on Not Crediting Flow Testing of Components in the Closed Cycle Cooling Water Program, October 8, 2014
- CR-PLP-2017-01812, During Performance of T-365 the Close Indication of CV-3223 (SDC Hx E-60A Inlet) Did Not Indicate Closed, April 26, 2017
- CR-PLP-2017-01814, During Performance of T-365 "Determination of Heat Transfer Capability of Shutdown Cooling Heat Exchangers E-60A/E-60B" the Required Component Cooling Water Flow Could Not be Obtained, April 26, 2017
- CR-PLP-2017-01899, Related to WO 396154, It was Discovered Attachment 9.1, "Measurement and Test Equipment (MT&E) Evaluation Form", was Not Completed per EN-DC-106, April 28, 2017
- M-204, System Diagram, Safety Injection, Containment Spray & Shutdown Cooling System, Sheet A, Revision 8
- M-209, Piping & Instrument Diagram, Component Cooling System, Sheet 2, Revision 33
- M-209, Piping & Instrument Diagram, Component Cooling System, Sheet 3, Revision 60
- PLP-RPT-17-000013, Shutdown Cooling Heat Exchanger E-60A Thermal Performance Test Evaluation, Revision 0
- PLT-RPT-16-00035, Design of Test – Shutdown Cooling Heat Exchanger Thermal Performance Test, Revision 0
- SEP-HX-PLP-001, Heat Exchanger Condition Assessment Program, Revision 3

- Specification No. 70P-017, Engineering Specification for a Shutdown Heat Exchanger, Revision 3
- T-365, Determination of Heat Transfer Capability of Shutdown Cooling Heat Exchangers E-60A & E-60B, Revision 4
- WO 00396154, Perform Thermal Performance Testing on SDC Heat Exchangers

#### 1R08 Inservice Inspection Activities

- CR-PLP-2017-01001, Dry Boric Acid on SIT T-82C Outlet Isolation Valve, March 18, 2017
- CR-PLP-2017-00996, Control Rod Drive CRD-12 with Dry Boric Acid, March 18, 2017
- CR-PLP-2017-01695, Shutdown Cooling SDC Relief Valve RV-0401 with Dry Boric Acid, April 24, 2017
- CR-PLP-2017-02064, Encoded Phased Array Ultrasonic Testing (PAUT) of Pressurizer PORV, May 2, 2017
- CR-PLP-2017-02177, During 1R25 Steam Generator Inspection a Flaw (Axial Crack) was Identified in SG-E-50B (SGB). The Flaw has been Validated by ECT Level III and Independent Level III, May 4, 2017
- CEP-NDE-0955, Visual Examination (VE) of Bare-Metal Surfaces
- EN-DC-319, Boric Acid Corrosion Control Program, Revision 11
- EN-LI-102, Corrective Action Program, Revision 29
- AREVA Document # 03-1275284 Field Procedure for Remote Rolled Plugging Utilizing Plugging Control Box, Revision 22
- AREVA Document # 03-6016219-010, Field Procedure for In-Situ Pressure Testing SG Tubes Using the Triplex Pump
- AREVA Document No. 51-9248748-001, Palisades Steam Generator Condition Monitoring for 1R24 and Final Operational Assessment for Cycle 25
- AREVA Document No. 51-9267304-000 Steam Generator Degradation Assessment for Palisades 1R25 Inspection, Spring 2017
- AREVA Procedure Number 54-ISI-460-004, Multi-Frequency Eddy Current Examination of Nozzle Weld Regions
- AREVA Procedure Number 54-ISI-494-000, Multi-Frequency Eddy Current Array Probe Examination of Ventline and RVLIS Nozzle Bores
- AREVA Procedure Number 54-ISI-604-013, Automated Ultrasonic Examination of Open Tube RPV Closure Head Penetrations
- CEP-WP-002, Welding Procedure Specification WPS No. WPS-SS-1/1-B, Revision 0
- CEP-WP-002, Welding Procedure Specification WPS No. WPS-SS-8/8-B, Revision 0
- Entergy Program No. SEP-ISI-PLP-003 Palisades Inservice Inspection Master Program Fifth Interval, ASME Section XI, Division 1, Revision 3
- Examination Technique Specification Sheet ETSS1 Bobbin PAL1R25, Revision 0
- Examination Technique Specification Sheet ETSS3 1Coil PAL1R25, Revision 0
- Procedure LMT-10-PAUT-007, Fully Encoded Phased Array Ultrasonic Examination of Dissimilar Metal Piping Welds, Revision 2
- Procedure LMT-10-PAUT-019, Manual Phased Array Ultrasonic Examination of Dissimilar Metal Piping Welds, Revision 0

#### 1R11 Licensed Operator Requalification Program

- CR-PLP-2017-01648, CRDM-1, 13, and 17 Rod Bottom Lights did Not Light Following Reactor Trip, April 23, 2017
- CR-PLP-2017-01651, Received Alarm EK-0547, 125V DC Bus Ground Unexpectedly, April 23, 2017

- CR-PLP-2017-01653, Relay 386C, Generator Indirect Trip Lockout Relay will Not Reset, April 23, 2017
- CR-PLP-2017-01659, The Control of Auxiliary Feedwater Flow Immediately After the Plant Shutdown (Mode 3) did Not Meet Operations Expectations for Precise Control, April 23, 2017
- CR-PLP-2017-01661, Two Instances of Improper Place Keeping were Identified During Operations Performance of the Plant Cooldown, April 23, 2017
- CR-PLP-2017-01666, Differential Temperature Between Pressurizer Vapor Space and T-Cold was Greater than 200°F While Pressurizer was Being Taken Solid, April 23, 2017
- CPE-1, Crew Performance Examination, Revision 2
- EN-RE-327, Pressurized Water Reactor Startup Critical Predictions and Evaluation Process, Revision 4
- EOP Supplement 1, Pressure and Temperature Limit Curves, Revision 6
- GOP-3, Mode 3  $\geq$  525°F to Mode 2, Revision 32
- GOP-4, Mode 2 to Mode 1, Revision 24
- GOP-8, Power Reduction and Plant Shutdown to Mode 2 or Mode 3  $\leq$  525°F, Revision 37
- GOP-9, Mode 3  $\geq$  525°F to Mode 4 or Mode 5, Revision 37
- PO-2, PCS Heatup/Cooldown Operations, Revision 7
- RT-191, Startup Physics Test Program, Revision 11
- SOP-3, Safety Injection and Shutdown Cooling System, Revision 105

#### 1R12 Maintenance Effectiveness

- ARP-33, Auxiliary Systems Scheme EK-02 (C-11A), Revision 27
- CR-PLP-2017-00257, VC-11, Control Room Heating, Ventilation and Air Conditioning Refrigeration Condensing Unit did Not Automatically Start as Expected, January 21, 2017
- CR-PLP-2017-00634, VC-11, Control Room Heating, Ventilation and Air Conditioning Refrigeration Condensing Unit did Not Automatically Start as Expected, February 22, 2017
- CR-PLP-2017-01462, High Resistance Contact on HS-1675 Condensing Unit VC-11 Control Switch for the Auto Start, April 11, 2017
- CR-PLP-2017-02985, Received Alarm 1-VAS-ANNUNC-EK-0249, Control Room Low Pressure DPIC-1659/1660 Unexpectedly, June 18, 2017
- CR-PLP-2017-02986, Technical Support Center Roof was Found to be Leaking Through the Ceiling Tiles, June 18, 2017
- E-270, Schematic Diagram Control Room Heating, Ventilation and Air Conditioning Condensing Unit VC-11 for Air Handling Unit V-95, Sheet 6, Revision 9
- EN-LI-102, Corrective Action Program, Revision 29
- WO 468415, VC-11; Investigate Why Unit will Not Auto Start as Expected
- WO 469960, VC-11 Perform Troubleshooting for Failure to Auto Start
- WO 471117, SV-1676A; Replace Coil

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

- Admin 4.02, Control of Equipment, Revision 77
- Admin 4.49, Non-Power Operation Fire Risk Management, Revision 0
- CR-PLP-2009-00867, PI-3027P Air to CV-3027 Actuator Indicates Low Out of Service, March 2, 2009
- CR-PLP-2017-00380, Weakness in Work Preparation, Scheduling and Execution of the Work Window, January 31, 2017
- CR-PLP-2017-00953, Perform a Risk Assessment/Analysis Due to the Plant Being Below 98 Percent Power for Cooldown Activities, March 15, 2017

- CR-PLP-2017-01174, Evaluation of Potential Issues Based on Maintaining 60 Percent Power for the Next Month, March 26, 2017
- CR-PLP-2017-01188, After Completing Power Escalation to 70 Percent Power Observed that CV-0570, High Pressure Turbine #1 Governor Valve, has a Rather Loud Harmonic Noise Compared to the Other Governor Valves Which Sound Normal, March 27, 2017
- CR-PLP-2017-01189, Following Power Escalation from 60 Percent to 70 Percent Observed that the Air Supply Line to CV-0517A, #2 Main Steam Stop Valve CV-0571 B/P is Vibrating Excessively, March 27, 2017
- CR-PLP-2017-01204, Scaffold Crew Notified 3/27/2017 Shift Manager of Very Small Steam Leak from CV-0554, Reheater Drain Tank T-4B Drain to Heater E-6B, March 27, 2017
- CR-PLP-2017-01205, Noted After Power Escalation from 60 Percent to 70 Percent Power that CV-0605, Feedwater Heater E-6B Level Control is Cycling Nearly Fully Opened and Closed with a Short Period, March 28, 2017
- CR-PLP-2017-01270, The Published Online Maintenance Schedule for March 30, 2017, Would have Resulted in a Risk Achievement Worth (RAW) Score of 4.58 (Orange) if it had been Executed as Scheduled, March 30, 2017
- CR-PLP-2017-01326, PI-3027, High Pressure Air to CV-3027 Actuator, High Out of Specification, April 3, 2017
- CR-PLP-2017-01404, Found SV-2236, Solenoid X Isolation in Line HC-11-3", De-Energized, April 7, 2017
- CR-PLP-2017-01406, A Burning Smell Coming from SV-2236 was Reported, April 7, 2017
- CR-PLP-2017-01585, While Preparing and Performing Cable Pulls from EX-02 to Man Hole #3, Door-142, Entrance to C Bus Area, has to be Blocked Open, April 19, 2017
- CR-PLP-2017-01592, WO 52653536 Baker Testing of V-27B East Engineered Safeguards Room Cooler Could Not be Performed as Scheduled, April 19, 2017
- CR-PLP-2017-02314, Door 142 Second Door Dog from the Top on the South Side of the Active Leaf is Severely Degraded, May 9, 2017
- CR-PLP-2017-02315, Bottom Left Door Dog on West Engineering Safeguards Access Door (Door 59) Needs to Have the Ramp on the Frame Built Up to Allow Adjustment of the Dog, May 9, 2017
- CR-PLP-2017-02316, Multiple Door Dogs Require Weld Build Up on Frame Ramps in Order to Properly Adjust Door Dogs on East Engineering Safeguards Entry Door (Door51), May 9, 2017
- CR-PLP-2017-02329, During Entry into 1-C-Switch Gear it was Identified that Only One of the Two Required Secured Dogs were Tightened Down, May 9, 2017
- CR-PLP-2017-02373, The Preferred Service Water Pump was Not in Service During the Primary Coolant System Drain, May 10, 2017
- CR-PLP-2017-02429, Breaker 52-945 "Welding Outlets & Iodine Removal Fans V-940A/B" Tripped, May 12, 2017
- CR-PLP-2017-02649, CV-3057 Safety Injection and Refueling Water Tank T-58 Outlet Isolation Open High Pressure Air Supply Pressure is High, May 22, 2017
- CR-PLP-2017-02655, P-18A Fuel Oil Transfer Pump Would Not Stop Auto Filling, May 23, 2017
- CR-PLP-2017-02667, P-18A Fuel Oil Transfer Pump did Not Start at the Normal Setpoint, May 24, 2017
- CR-PLP-2017-02958, NRC Questions Concerning the Requirements for Removal of FLEX Components from the Two FLEX Storage Buildings, June 15, 2017
- EC 35158, Evaluation of Palisades Operation at Reduced Power Down to 55 Percent for Maintenance Activities, Revision 0
- EC 69182, Risk Evaluation of Palisades Operation for End of Cycle 25 Coast-Down Power Reduction, Revision 0

- EC 72304, Extent of Condition Evaluation for Level Switch Malfunction Associated with LS-1453, Diesel Generator 1-2 Control Level Switch
- EN-DC-115, Engineering Change Process, Revision 20
- EN-DC-359, Fire Risk Management During Non-Power Operations for NFPA 805 Plants, Revision 1
- EN-MA-125, Troubleshooting Control of Maintenance Activities, Revision 20
- EN-OP-102, Protective and Caution Tagging, Revision 19
- EN-OP-110, Protected Equipment Postings, Revision 8
- EN-OP-201-05, Palisades FLEX Program Document, Revision 1
- EN-OU-108, Shutdown Safety Management Program, Revision 8
- EN-WM-104, Online Risk Assessment, Revision 15
- FSG-15, Shutdown ELAP, Revision 0
- FSG-4, ELAP DC Bus Load Shed and Management, Revision 1
- GOP-14, Attachment 3, Shutdown Cooling Equipment Availability, Revision 51
- GOP-14, Shutdown Cooling Operations, Revision 51
- LCO Annex Log, April 11, 2017
- LCO Annex Log, April 12, 2017
- M-204, Piping & Instrument Diagram, Safety Injection Containment Spray and Shutdown Cooling System, Sheet 1, Revision 88
- M-204, Piping & Instrument Diagram, Safety Injection Containment Spray, Sheet 1B, Revision 41
- M-204, Piping & Instrument Diagram, Safety Injection Containment Spray, Sheet 1A, Revision 44
- M-225, Piping & Instrument Diagram, High Pressure Air Operated Valves, Sheet 1, Revision 55
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- Operations Narrative Logs, April 3, 2017
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- PLP-RPT-12-00063, Risk Assessment of the Potential Impact of Direct and Indirect Passive Pipe Failures of the Primary Coolant Systems During Reduced Power Operation at Palisades, Revision 0
- PLP-RPT-12-00064, Palisades Primary Cooling System Operability Structural Assessment for 55 Percent Power Operation, Revision 0
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- RFL-SG-2, Steam Generator Primary Nozzle Dam Installation and Removal, Revision 10
- SOP-1C, Primary Coolant System Heatup, Revision 23
- SOP-20, High Pressure Control Air System, Revision 37
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- WO 476367, LS-1453 1-2 Diesel Generator Day Tank Level Control Not Functioning
- WO 51657200, CV-3027 High Pressure Air Indicator Calibrations
- Work Week 1715 Review Schedule, April 10, 2017
- Work Week 1716, Review Schedule, April 17, 2017

#### 1R15 Operability Determinations and Functionality Assessments

- Admin 4.00, Operations Organization, Responsibilities and Conduct, Revision 61
- AOP-35, Loss of Service Water Basis, Revision 1
- AOP-35, Loss of Service Water, Revision 0

- AOP-36, Loss of Component Cooling Basis, Revision 2
- AOP-38, Acts of Nature Basis, Revision 9
- AOP-38, Acts of Nature, Revisions 8, 9 and 10
- ARP-20A, Diesel Generator 1-1 Scheme EK-20, Revision 8
- ARP-20B, Diesel Generator 1-2 Scheme EK-30, Revision 8
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- C & D Cover Crack Project Summary Report, May 15, 2013
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- CR-PLP-2016-01540, During the Development of the EC-58888 50 Percent Package by Sargent Lundy, the Following were Noted, April 11, 2016
- CR-PLP-2016-02392, The Basis for the Tornado Missiles Listed for the Containment, Auxiliary Building, and Turbine Building FSAR (Section 5.5.1.1.1) is Unclear, May 24, 2016
- CR-PLP-2016-03412, Discovered Multiple Battery Jar Lids with Hairline Cracks in Them, July 25, 2016
- CR-PLP-2017-01248, Service Water System (SWS) is Non-Conforming to the Current Licensing Basis, March 29, 2017
- CR-PLP-2017-01249, The Fuel Oil System (FOS) is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01250, The Emergency Diesel Generator (EDG) Support Equipment is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01251, The Control Room Heating, Ventilation, and Air Conditioning System (CRHVAC) is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01252, The Steam Drive Auxiliary Feedwater Pump (P-8B) is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01253, The Component Cooling Water System is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01364, Protective Relaying on Breaker 152-112 Containment Spray Pump P-54B) is Outside the Current Design Basis at the Extremes of Degraded Voltage Levels, April 4, 2017
- CR-PLP-2017-01394, Y-Phase Overcurrent Relay (150/151-112) for 152-112 Seal in Coil Picked Up Out of Tolerance High, April 6, 2017
- CR-PLP-2017-01507, NRC Identified Issue Involving Editorial Discrepancies, April 12, 2017
- CR-PLP-2017-01523, Panel Door for EG-30, Diesel Generator 1-2 Gauge Panel does Not Properly Latch, April 13, 2017
- CR-PLP-2017-01976, During WO 52674209-01 (ED-01 Station Battery Post-Maintenance) Noticed the Base of a Battery Post on Cell 46 was Rising from the Battery, April 30, 2017
- CR-PLP-2017-02655, P-18A Fuel Oil Transfer Pump Would Not Stop Auto Filling, May 23, 2017
- CR-PLP-2017-02667, P-18A Fuel Oil Transfer Pump did Not Start at the Normal Setpoint, May 24, 2017
- CR-PLP-2017-02679, Palisades' Response to the NRC for IEB 79-25 Appears to Inaccurately Indicate that Palisades does Not Use the Westinghouse BFD/NBFD Relays, May 24, 2017
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- EA-EAR-96-0204-01, Documentation of T25A and T25B Level Transmitter Calibration and Values and Worst Case Low Level Alarm, Revision 3
- EA-ELEC-VOLT-01A, Dynamic Response of Emergency Diesel Generators and ECC Motor Acceleration Times, Revision 2
- EA-GOTHIC-04-09, Containment Response to a MSLB Using GOTHIC 7-2A, Revision 3
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- EC 70797, Tornado Missile Vulnerability Immediate Compensatory Measure Recommendations, Revision 0
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- EN-HU-104, Engineering Task and Risk Rigor, Revision 7
- EN-LI-108, Event Notification and Reporting, Revision 14
- EN-OP-104, Operability Determination Process, Revision 11
- EOP Supplement 19, Alternate Auxiliary Feedwater Methods, Revision 11
- EOP Supplement 42, Pre and Post RAS Actions, Revision 8
- EOP-4.0, Loss of Coolant Accident Recovery, Revision 24
- EOP-7.0, Loss of All Feedwater Recovery, Revision 17
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- LO-PLPLO-2015-00052, High Energy Line Break and Tornado Snapshot Assessment
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- M-398, Level Settings Diagram, Emergency Diesel Generator Day Tank T-25A & B, Sheet 38, Revision 6
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- QE-35A, ED-01 Battery Checks – Quarterly, Revision 14
- SOP-12, Feedwater System, Revision 76
- SOP-22, Emergency Diesel Generators, Revision 72
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- VTD-0595-0015, Magnetrol Inc. Installation, Maintenance and Operating Instructions for Models 126, 251, 291, 601 Boiler Water Level Controls
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- WO 52674209, ED-01, Station Battery Post-Maintenance
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- CR-PLP-2016-01141, NRC Finding 2015004-02, March 7, 2016
- CR-PLP-2016-02342, PMT Task did Not Align with EC, May 9, 2017
- CR-PLP-2017-01364, Protective Relaying on Breaker 152-112 (Containment Spray Pump P-54B) is Outside the Current Design Basis at the Extremes of Degraded Voltage Levels, April 5, 2017
- CR-PLP-2017-02198, Engineering Change had No Completion Steps, May 5, 2017



- CR-PLP-2017-02394, Engineering Department Review of Currently Installed Temporary Modifications, May 11, 2017
- EC 07490, Update Breaker 152-112 Relay Setting for Containment Spray (P-54B), Revision 0
- EC 59327, Update 152-210 Breaker Setting for Containment Spray (P-54A), Revision 0
- EC 63832, Air Accumulator Addition to CV-0910, Containment Cooling Water Supply to Containment and Appendix J Program Update, February 27, 2017
- EN-DC-115, Engineering Change Process, Revision 20
- SOP-30, Station Power, Revision 84
- WO 470915, 152-112 (P-54B) Change Setpoint on Breaker per EC-70490

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- CEP-NDE-0902, VT-2 Examination Record
- CEP-WP-WIIR-1, Weld Inprocess Inspection Requirements, Revision 3
- CR PLP-2015-05095, Pinhole Leak in the Service Water System Inside of Containment, October 16, 2015
- CR-PLP-2016-03699, CV-0780, Steam Generator E-50B, ASDV (MZ-3) is Exhibiting Some Very Minor Seat Leakage, August 9, 2016
- CR-PLP-2016-03843, E/P-0781 Steam Generator E-50B CV-0890 Instrument Signal to POC-0780 was Found at 3.16 psig, August 17, 2016
- CR-PLP-2017-01047, Had New Booster Relay Fail Upon Restoration and Initial Testing of CV-0780, March 20, 2017
- CR-PLP-2017-02070, During Inspections of E-54B Component Cooling Water Heat Exchanger, Mechanics Discovered Leaks on Existing Plugs in a Minimum of Four Locations on the North Tube Sheet and Three Locations on the South Tube Sheet, May 2, 2017
- CR-PLP-2017-02131, CV-0918, Component Cooling Water Surge Tank T-3 Fill did Not Open Automatically as Required by LS-0918, May 4, 2017
- CR-PLP-2017-02167, During Tubesheet Plug Installation on South End of Component Cooling Water Heat Exchanger E-54B, a Crack was Observed in the Ligament Between Tube Locations 1-32 and 2-34, May 4, 2017
- CR-PLP-2017-02337, Following the Installation of New Cable for the Safeguards Bus to 152-105 "Station Power Trans 1-2 Breaker Bus 1C" Circuit, the Tan Delta Test Results were a Bit Higher than Expected, May 9, 2017
- CR-PLP-2017-02573, During Control Rod Drop Times Testing, CRD-10, Control Rod Drive Mechanism – Reactor Head Location did Not Annunciate EK-0948, May 16, 2017
- CR-PLP-2017-02576, Control Rod Drive CRD-40 Indicated a Step Change in Leak Off Temperature, May 17, 2017
- CR-PLP-2017-02608, An NCO Entered the Backpanel Area Without Wearing a Long Sleeve Shirt, May 19, 2017
- CR-PLP-2017-2337, Station Power Transformer 1-2 Breaker Bus 1C has High Tan Delta, May 9, 2017
- EC 60770, Change Class 3 Boundary for Fire Water in Containment Building, Revision 0
- EC 60773, Alternate Configuration for the Service Water Piping Downstream of MV-SW 264, Containment Building Fire Water Supply, Revision 0
- EC 61240, Minimum Wall Thickness Evaluation of 2.5" Service Water Piping Downstream of MV-SW264, Containment Building Fire Water Supply, Revision 0
- EC 64730, Re-Classification of Non-Class Service Water Piping Downstream of MV-SW264, Revision 0

- EC 71738, Update VEN-M14 Sheet 30 to Accommodate Oversized Tubes in Component Cooling Water Heat Exchangers, E-54A and E-54B, Revision 0
- EC 71849, Component Cooling Water Heat Exchanger E-54B Mechanical Tube Plug Weepage, Revision 0
- EN-DC-2015, Functional Failure Determination Form for CR-PLP-2017-02576, May 11, 2017
- EN-MA-138, VLF Tan Delta and Withstand Testing of Electrical Power Cables, Revision 4
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- HVA Summary Report for A11-x02, HV Diagnostics, May 9, 2017
- Procedure 9.20, Process Control Sheet, Attachment 3, Revision 26
- QO-6, Attachment 36, Cold Shutdown Valve Test Procedure (Includes Containment Isolation Valves), Revision 51
- QUAD-1-79-281, B31.1 Pipe Stress Analysis for Service Water System Extension for Fire Hose Station in the Containment Building of Palisades Nuclear Power Plant, Revision 2
- SEP-ISI-PLP-002, ASME Code Boundaries for ASME Section XI Inservice Inspection Program, Revision 2
- WI-MSM-M-30, Inspections of Opportunity, Revision 1
- WO 427975, MV-SW264 Pinhole Leak Downstream of Valve
- WO 453231-04, CV-0780, Minor Seat Leakage
- WO 475823, CRD-40, Seal Leakoff Temperature Indicates Degraded Seal
- WT-WTPLP-2015-00280, Track the Non-Functional Status of in Containment Fire Hose Stations 37 and 38, October 18, 2015

#### 1R20 Outage Activities

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- ANP-3589P-000, Palisades Cycle 26 Startup and Operations Report
- AOP-25, Loss of Refueling Water Accident, Revision 1
- AOP-26, Loss of Spent Fuel Pool Cooling, Revision 3
- AOP-30, Loss of Shutdown Cooling, Revision 2
- AOP-32, Loss of Containment Integrity, Revision 0
- AOP-34, Fuel Handling Accident, Revision 0
- CR-PLP-2017-01573, Cycle 26 Loading Pattern Discrepancies During a Review of a Draft AREVA Document, April 18, 2017
- CR-PLP-2017-01619, Cycle 26 Loading Pattern Discrepancies During a Review of a Draft AREVA Document, April 18, 2017
- CR-PLP-2017-01649, SPI Indication for Control Rod 27 and Control Rod 40 Indication Withdrawn Following the Reactor Trip, April 23, 2017
- CR-PLP-2017-01670, During Plant Shutdown it was Found that CV-0608, Moisture Separator Drain Tank T-5 Level Control Would Not Go Full Closed, April 23, 2017
- CR-PLP-2017-01678, During Removal of Inner Steel per RFL-D-1 the Upper Left Bolt on Steel Plate #6 was Unable to be Removed, April 23, 2017
- CR-PLP-2017-01685, Recommend Performing Primary to Secondary Leakrate Sampling During RO25 Startup, April 23, 2017
- CR-PLP-2017-01686, Mode 3 Walkdown MV-PC1147, PCP P-50A Seal Flush Inlet, April 23, 2017
- CR-PLP-2017-01687, Mode 3 Walkdown MV-PC1085A, P-50D Middle Seal PT-0142B Root Valve, April 24, 2017
- CR-PLP-2017-01688, Mode 3 Walkdown CV-1903, Primary Coolant Loop 2 Hot Leg Sample PT, April 24, 2017
- CR-PLP-2017-01689, Mode 3 Walkdown, HGR/CC20-R10 was Loose, April 24, 2017

- CR-PLP-2017-01690, Mode 3 Walkdown MC-PC1179A, Seal Flush Filter F-60 Drain, April 24, 2017
- CR-PLP-2017-01694, MV-PC1035B, T-72 Level XMTR LT-0101B Lower Isolation, April 24, 2017
- CR-PLP-2017-01696, Mode 3 Walkdown, Primary Coolant Pump P-50C, April 24, 2017
- CR-PLP-2017-01700, Mode 3 Walkdown, Primary Coolant Pump P-50A, April 24, 2017
- CR-PLP-2017-01701, Critical Path Delay: Approximately 4.5 Hours of Scheduled Critical Path Time was Lost Due to Evolutions Surrounding L-1, Containment Polar Crane, PMs, April 24, 2017
- CR-PLP-2017-01702, Mode 3 Walkdown, Discarded Boot Cover Next to the Pressurizer, April 24, 2017
- CR-PLP-2017-01705, Main Turbine was Found Not on Turning Gear, April 24, 2017
- CR-PLP-2017-01735, VOP-0939, MZ-11 Shield CLG Surge TK T-62 Inlet Isolation, Failed its Drop-Test, April 24, 2017
- CR-PLP-2017-01736, CV-3031 (Safety Injection and Refueling Water Tank Outlet) Handswitch at C-33 Panel Appears to be Mechanically Broken, April 24, 2017
- CR-PLP-2017-01745, CV-0781, Steam Generator E-50A ASDV, Actuator was Noted as Having Audible and Physically Noticeable Air Leaking Around the Actuator Stem, April 24, 2017
- CR-PLP-2017-01771, CV-3031, Safety Injection and Refueling Water Tank T-58 Outlet Isolation Seemed to Stick or Sputter Throughout the Last 30 Percent of Travel, April 24, 2017
- CR-PLP-2017-01772, 487-Steam Generator Transformer Differential Relays, April 25, 2017
- CR-PLP-2017-01776, While Reinstalling RV-3264, HP Safety Injection Relief – Train 2, RV-3264; the 3/4" Inlet Piping Appears to be Rotating While Completing the Final Torquing Pass, April 25, 2017
- CR-PLP-2017-01777, Nuclear Independent Oversight Identified, PT-0105B, Pressurizer Wide Range Pressure Transmitter Channel "B" has a Separated Flexible Conduit, April 24, 2017
- CR-PLP-2017-01779, Physical Master for WO #443743-01 Indicated a Final Torque of 340 ft-lbs as Part of the Critical Step, April 25, 2017
- CR-PLP-2017-01794, Concrete had Apparently Spalled During the Previous Tightening, April 25, 2017
- CR-PLP-2017-01798, RV-3264, HP Safety Injection Relief – Train 2, will Not Have Discharge Flange Bolted Due to Misalignment, April 25, 2017
- CR-PLP-2017-01803, Control Rod Drives (CRD) 1, 2, 21, 26, 31 did Not Have Proper Matrix Light Indications, April 25, 2017
- CR-PLP-2017-01806, MV-ES3188 High Pressure Safety Injection Pump P-66A Miniflow and MV-ES3179 High Pressure Safety Injection Pump p-66B Miniflow were Found in the Locked Open Position when the Test Position is Locked Closed, April 25, 2017
- CR-PLP-2017-01807, Testing of EX-07 "Safeguards Transformer" Identified that the Power Factor Test was Much Lower than Previous Test, April 26, 2017
- CR-PLP-2017-01808, While Disconnecting the Low Side Bushing of EX-07 "Safeguards Transformer" a Crack was Identified on the Z Phase Pad, April 26, 2017
- CR-PLP-2017-01818, Water was Spraying Out of the FE-0404 Outlet Inlet Flange, April 26, 2017
- CR-PLP-2017-01837, Found Broken Flex Near the Rod of Secondary Position Indicator on Control Rod Drive-5 and Control Rod Drive-33, April 26, 2017
- CR-PLP-2017-01855, While Replacing Lower Gasket on FE-0404, Found Three Bolts to be Finger Tight on Lower Flange, April 27, 2017
- CR-PLP-2017-01864, TCET25, GET No 25 (H13) Channel B is Indication 115 Degrees Fahrenheit on the PPC, April 27, 2017
- CR-PLP-2017-01870, Received Alarm EK-0547, 125 Volt DC Bus Ground, April 27, 2017

- CR-PLP-2017-01871, The Connectors to Make New Cables from the Safeguards Transformer High Voltage Lightning Arrestors to the Disconnect are Not Available, April 27, 2017
- CR-PLP-2017-01893, EX-07 "Safeguards Transformer" an Audible Leak was Found at the Load Tap Changer, April 28, 2017
- CR-PLP-2017-01905, SNB-51, "Steam Generator A Snubber 1-SS-6" As-Found-Lock-Up Velocity was Unsatisfactory, April 28, 2017
- CR-PLP-2017-01908, Breaker 52-389 MSIV CV-510 Bypass (MS-2) Tripped on Thermal Overload, April 28, 2017
- CR-PLP-2017-01913, Identified a 90 Degree Fitting on the Instrument Signal Input to CV-0782 were No Longer Connected, April 28, 2017
- CR-PLP-2017-01914, EX-07 "Safeguards Transformer" Oil Analysis Results were Unacceptably High, April 28, 2017
- CR-PLP-2017-01922, NIOS Identified: GOP-14, Shutdown Cooling Operation, Attachment 15, Shutdown Operation Protected Train Equipment List, April 28, 2017
- CR-PLP-2017-01949, While Performing Work Order 52646097-01 (PM Breaker/Starter 52-389, Feeds MO-0510), April 29, 2017
- CR-PLP-2017-01960, RV-3264 High Pressure Safety Injection Relief-Train 2 Inlet Pipe was Deformed by Over-Torquing the Flange, April 29, 2017
- CR-PLP-2017-01977, A Maintenance Individual Inadvertently Exceeded the Fatigue Rule Limit, April 28, 2017
- CR-PLP-2017-01993, Puddles Formed that Migrated to Within 2 Feet of A Bus Cubical for Breaker 252-106, April 30, 2017
- CR-PLP-2017-02025, Deficiencies were Noted in the Engineering Change (EC) Associated with the Swing-Lo Scaffold C-Clamp, May 1, 2017
- CR-PLP-2017-02027, The Control Rod Drive Mechanism Leakoff Piping in the Clean Waste Receiver Tank Room is Missing One of the Bolts, May 1, 2017
- CR-PLP-2017-02073, Discovered a .5 Drop per Minute Leak from "C" Primary Coolant Pump Controlled Bleedoff Line, May 2, 2017
- CR-PLP-2017-02074, Work Order 52681033-01 (Replace SV-0869) Found Low Air Pressure to Solenoid Valve, May 2, 2017
- CR-PLP-2017-02079, FAC Component MS-EB-1-FE-0702 was Inspected, May 2, 2017
- CR-PLP-2017-02087, Control Rod Drive Seal Housing Serial Number 246 was Found to Have Significant Damage to the Tool Access Flange Seating Surface, May 3, 2017
- CR-PLP-2017-02089, CV-3027, Safety Injection and Refueling Water Tank T-58 Recirc, and CV-3056, Safety Injection and Refueling Water Tank T-58 Recirc, All 12 Stem Coupling Capscrews were Found Bent after Disassembling Both Valves, May 3, 2017
- CR-PLP-2017-02094, The Pressure Control Valve (PCV) that Supplies the H-11 Refueling Machine Failed, May 3, 2017
- CR-PLP-2017-02095, Foreign Material Discovered on Top of Fuel Assembly in Core Location V-17, May 3, 2017
- CR-PLP-2017-02097, NIOS Identified Problem: Operations did Not Document the 8-Hour Notification to the Nuclear Regulatory Commission Under 10 CFR 50.72 in the Narrative Logs, May 3, 2017
- CR-PLP-2017-02104, EK-0333 Switchyard 125VDC and 240VAC Trouble Alarm Came in and Cleared, May 3, 2017
- CR-PLP-2017-02110, The Current CV-1359 (Service Water Non-Critical Header Isolation Valve) Configuration Does Not Reflect Initial Plant Conditions that are Assumed During a DBA for the Performance of RO-216, May 3, 2017
- CR-PLP-2017-02150, Operations Momentarily Dropped Below the GOP-14 Requirement to Maintain Shutdown Cooling Return Temperature Greater than 73F, May 4, 2017

- CR-PLP-2017-02153, Signal Conditioning Unit (SCU) on Reactor Side Fuel Transfer Failed to Register Proper Readout, May 4, 2017
- CR-PLP-2017-02154, Refueling Machine H-11 Motor Driven Mast Rotate Feature Failed to Operate, May 4, 2017
- CR-PLP-2017-02156, RO-98, Low Pressure Safety Injection and Containment Spray Comprehensive Pump Test and Check Valve Test, Pump Data Out of Specification, May 4, 2017
- CR-PLP-2017-02157, P-54A, Containment Spray Pump D/P was 141 psid, Which Fails in the "Alert Range", May 4, 2017
- CR-PLP-2017-02165, To Restore CV-3027, Safety Injection and Refueling Water Tank T-58 Recirc, and CV-3056, Safety Injection and Refueling Water Tank T-58 Recirc, Using the Stem Coupling Bolting, May 4, 2017
- CR-PLP-2017-02174, F-1053 (Containment Sump Passive Strainer Assembly PCI Units A & B) was Missing a Bolt and Cotter Pin on Module 10, May 4, 2017
- CR-PLP-2017-02176, During RT-92, Inspection of Containment Sump Envelope, it was Identified by the NRC Inspector and System Engineer During the "As-Left" Inspection that Various Gaps of up to 1" Exists Between the Outer Wall of the Sump and the Ceiling, May 4, 2017
- CR-PLP-2017-02178, During RT-92, Inspection of Containment Sump Envelope, it was Identified by the NRC Inspector that the Mounting Bracket for One of the Level Switch Probes was Rusted and had Flexibility when Challenged, May 4, 2017
- CR-PLP-2017-02180, During RT-92, Inspection of Containment Sump Envelope, Leakage was Identified During the "As-Found" Inspection Coming from One of the 2 Reactor Cavity Drain Plugs, May 4, 2017
- CR-PLP-2017-02181, Sump Floor Drains F-1059, F-1060, F-1061, F-1064, and F-1065 were Partially Blocked, May 4, 2017
- CR-PLP-2017-02196, A Fuel Move Deviation Form was Created, May 5, 2017
- CR-PLP-2017-02206, Flow Through CV-0869 VHX-4 CAC Inlet Isolation Exceeded its Acceptance Criteria of <97 Gallons per Minute, May 5, 2017
- CR-PLP-2017-02214, The Red (Open) Indication for CV-0780, Steam Generator E-50B ASDV, Failed to Illuminate, May 5, 2017
- CR-PLP-2017-02221, CV-0823, Component Cooling Water Heat Exchanger E-54A Service Water Outlet Shows a Dual Position Indication, May 5, 2017
- CR-PLP-2017-02241, Several Oil Leaks have Been Identified on EX-10 (Main Transformer) Coming from the Packing of the Valves, May 6, 2017
- CR-PLP-2017-02243,  $\frac{3}{4}$ " by  $\frac{3}{4}$ " Indication was Observed on the Outer Edge of Quadrant 3, From Bottom of Control Rod 204 (CR-204), May 6, 2017
- CR-PLP-2017-02246, Replacement of Position Switch POS-1042A (Pressurizer to Quench Tank T-73), Failed its Post Maintenance Test, May 6, 2017
- CR-PLP-2017-02247, Replacement of Position Switch POS-1043A (Pressurizer to Quench Tank T-73), Failed its Post Maintenance Test, May 6, 2017
- CR-PLP-2017-02248, During as Left Valve Testing of CV-0869 CAC VHX-4 Service Water Inlet a Large Air Leak was Discovered, May 6, 2017
- CR-PLP-2017-02262, Containment Air Cooler Service Water Flow was Outside of the Containment +/- 10 Percent Air Cooler Flow Band, May 5, 2017
- CR-PLP-2017-02286, EX-10 Appears to Have an Oil Leak at the Top Flange on the West Side, May 7, 2017
- CR-PLP-2017-02288, During Performance of RO-144 Comprehensive Pump Test Procedure Service Water Pumps P-7A, P-7B and P-7C Service Pump Vibration Data did Not Meet Acceptance Criteria, May 7, 2017

- CR-PLP-2017-02293, During the Removal Process of Steam Generator B Handhole \*C\*, Stuck Studs in Locations #3 and #9, May 8, 2017
- CR-PLP-2017-02296, A Tool Lanyard was Not Used on a Gasket Scraper, May 8, 2017
- CR-PLP-2017-02299, Received Alarm EK-0547, 125 Volt DC Bus Ground, May 8, 2017
- CR-PLP-2017-02307, It was Identified that Conduit A021 was Damaged, May 8, 2017
- CR-PLP-2017-02341, Control Rod Drive-43 Would Not Rack Down, May 9, 2017
- CR-PLP-2017-02365, During Performance of RI-33, Functional Testing of Atmospheric Steam Dump and Turbine Bypass Valves, Two Position Lights did Not Work Properly, May 10, 2017
- CR-PLP-2017-02377, During Work Order 52677, Install Hotwell and Steam Dome Manways, Found Debris Inside the South Side to the Steam Dome, and in the Hotwell, May 10, 2017
- CR-PLP-2017-02399, Responded to EK-0547, 125V DC Bus Ground, May 11, 2017
- CR-PLP-2017-02409, While Completing Re-Install of FE-1820 Tubing on VHX-2, the Bolt Holes for the Mounting Brackets Found to be Out of Alignment, May 11, 2017
- CR-PLP-2017-02420, A Foreign Material Exclusion (FME) Sign is Not Current, May 11, 2017
- CR-PLP-2017-02421, Relay 386ETD Failed As-Found Testing, May 11, 2017
- CR-PLP-2017-02424, During Reactor Head Reinstallation the Weight of the Reactor Head was Incorrectly Recorded in Two Places, May 11, 2018
- CR-PLP-2017-02425, Received EK-0547, 125V DC Bus Ground, May 11, 2017
- CR-PLP-2017-02426, Water was Observed Leaking from Incore Instrument (ICI) Flanges 3 and 8 on the Reactor Head, May 12, 2017
- CR-PLP-2017-02438, Spent Fuel Hydraulic Power Unit (HPU) Supply Valve (A1-SO) to the "A" Upriser Cylinder is Difficult to Operate, May 12, 2017
- CR-PLP-2017-02455, Containment Coordinator Directed Crane and Rigging Personnel to Fly Contaminated Refuel Box 9A-352 to 625 Track Alley, May 12, 2017
- CR-PLP-2017-02462, After Connecting (ICI) for Flange 5 Location (5-2), Core Coordinate M-13, at the ICI Flange There was No Signal Transmitted, May 13, 2017
- CR-PLP-2017-02463, When Starting P-2B, Condensate Pump, RV-0772, Drain Cooler E-7A Tube Side Relief, Lifted, May 13, 2017
- CR-PLP-2017-02464, TIA-0795, Cond Pump P-2B Thrust Bearing Oil Temperature Alarm Light was Lit, May 13, 2017
- CR-PLP-2017-02466, Orange Foreign Material Exclusion Cover on the Seismic Restraint for CRD-15, May 13, 2017
- CR-PLP-2017-02467, In Cubicle 152-211 (Bus 1D to Pressurizer Heater SFMR EX-16) Found Remnants of the Bumper Stop Assembly, May 13, 2017
- CR-PLP-2017-02469, Rod #30 4 Inch Deviation Alarm was Received as Expected but Would Not Clear, May 13, 2017
- CR-PLP-2017-02470, During the Performance of TSST RO-19 Control Rod Position Verification Control Rod Drive-42 Would Not Move, May 13, 2017
- CR-PLP-2017-02471, Fourteen IPTE have Been Performed in 1R25 Without Conducting the Required IPTE Post Job Brief, May 13, 2017
- CR-PLP-2017-02472, Control Rod 20 Initially Lagged 1-2 Seconds Before Rod Motion, May 13, 2017
- CR-PLP-2017-02483, SOP-1C Step Could Not be Performed as Written During Primary Coolant System Vacuum Fill, May 13, 2017
- CR-PLP-2017-02508, Loose Grounding Strap on Cable Tray CP662, May 14, 2017
- CR-PLP-2017-02524, LT-0101B, Pressurizer Level Control Channel 2 Bypass Valve was Found with a Small Packing Leak, May 15, 2017
- CR-PLP-2017-02526, Several Items were Found in Containment that were Un-Retrieveable, May 15, 2017
- CR-PLP-2017-02527, SOP-1C, Primary Coolant System – Heatup, Provides Guidance on When to Valve Hydrogen into the Volume Control Tank, May 15, 2017

- CR-PLP-2017-02528, Bus 1C Sump High Level Alarm is Locked in, May 15, 2017
- CR-PLP-2017-02531, Report of a Leak from MV-CD618, May 15, 2017
- CR-PLP-2017-02533, Liquid was Identified at the Base on "B" Steam Generator, May 15, 2017
- CR-PLP-2017-02539, Received High Level Alarm on EC-1089 (1C Switchgear Cable Vault Sump Level Control Panel), May 15, 2017
- CR-PLP-2017-02540, PCS Calcium Being Above 40 ppb, May 15, 2017
- CR-PLP-2017-02545, During Performance of RI-115, Power Operated Relief Valves, Step 5.2.8 d was Not Performed Correctly, March 16, 2017
- CR-PLP-2017-02549, Leak is Located Upstream MV-CD190; Cond Return from Main Steam Lines Steam Traps, May 16, 2017
- CR-PLP-2017-02550, Leak from Between MV-CD124; P-2A/B Recirculation CV-0730 Inlet and CV-0730; Condensate Pumps P-2A/B Recirculation, May 16, 2017
- CR-PLP-2017-02551, Steam from the Discharge of RV-0583, May 16, 2017
- CR-PLP-2017-02557, Dry Boric Acid Around the Seal Area of the Seal Package for CRD-26, May 16, 2017
- CR-PLP-2017-02558, Leakage on the Seal Leak Off Connection for CRD-25, May 16, 2017
- CR-PLP-2017-02559, Leakage on the Seal Leak Off Connection for CRD-6, May 16, 2017
- CR-PLP-2017-02562, Leakage (Boric Acid) on the Seal Package Area of CRD-7, May 16, 2017
- CR-PLP-2017-02563, Observed Evidence of Leakage from the Seal Package Area CRD-44, May 16, 2017
- CR-PLP-2017-02564, Evidence of Leakage (Boric Acid) on MV-ES3270, FT-0315 Isolation Valve, May 16, 2017
- CR-PLP-2017-02570, Dry White Boric Acid Residue MV-ES3039, T-82A Fill and Drain CV-3039 ISOL, May 16, 2017
- CR-PLP-2017-02571, Rope Securely Tied to an Angle Iron on the Outer Containment Wall, 649' East Wall, Near the Safety Injection Bottle, May 16, 2017
- CR-PLP-2017-02581, Control Rod #31 Thermocouple is Cycling Between Burnout and its Normal Temperature, May 17, 2017
- CR-PLP-2017-02609, Through Wall Leak in the Piping Downstream of MV-FW118, MFWP P-1B Seal Injection Supply, May 19, 2017
- CR-PLP-2017-02626, CV-0606, Heater E-6B Dump to Condenser had Multiple Water Hammer Events, May 21, 2017
- CR-PLP-2017-02629, EK-0945, Primary Coolant Pump, P-50C Seal Leakage Flow Low Remains Locked, May 21, 2017
- CR-PLP-2017-02633, Issues with MV-FW155, "A" Feedwater Pump High Pressure T&T Valve, May 21, 2017
- CR-PLP-2017-02656, MV-HED645, T-5 Hi Level Dump CV-0609 Bypass, May 23, 2017
- EN-DC-319, Boric Acid Corrosion Control Program (BACCP), Revision 11
- EN-DC-359, Fire Risk Management During Non-Power Operations for NFPA 805 Plants, Revision 1
- EN-FAP-OU-108, Fuel Handling Process, Revision 5
- EN-MA-118, Foreign Material Exclusion, Revision 10
- EN-MA-119, Material Handling Program, Revision 29
- EN-OM-123, Fatigue Management Program, Revision 13
- EN-OP-102, Protective and Caution Tagging, Revision 19
- EN-OP-116, Infrequently Performed Tests or Evolutions, Revision 12
- EN-OU-108, Shutdown Safety Management Program (SSMP), Revision 8
- EN-RE-326, PWR Core Loading Verification, Revision 1
- EN-RE-327, Pressurized Water Reactor Startup Critical Predictions and Evaluation Process, Revision 4

- EN-WM-104, Integrated Risk Review, Revision 15
- FHS-M-23, Movement of Heavy Loads in the Spent Fuel Pool Area, Revision 38
- FHS-M-24, Movement of Heavy Loads in the Containment Building Area, Revision 39
- GOP-11, Refueling Operations and Fuel Handling, Revision 50
- GOP-14, Shutdown Cooling Operations, Revision 51
- GOP-3, Mode 3  $\geq$  525°F to Mode 2, Revision 32
- GOP-4, Mode 2 to Mode 1, Revision 24
- GOP-5, Power Escalation in Mode 1, Revision 45
- GOP-8, Power Reduction and Plant Shutdown to Mode 2 or Mode 3  $\geq$  525°F, Revision 37
- GOP-9, Mode 3  $\geq$  525°F to Mode 4 or Mode 5, Revision 37
- MSM-M-71, Containment Cleanliness Implementation Plan and Containment Closeout, Revision 13
- RFL-D-13, Reactor Pressure Vessel Head Detensioning, Revision 7
- RFL-D-16, Reactor Vessel Closure Head Removal, Revision 19
- RFL-D-3, Open Equipment Hatch, Revision 9
- RFL-R-16, Reactor Vessel Closure Head Installation, Revision 17
- RFL-V-7, Fuel Movement, Revision 14
- RFL-V-9, Core Mapping System Setup and Operation, Revision 8
- Schedule Report for 1R22 Electrical Maintenance, April through May, 2017
- Schedule Report for IC Maintenance, April through May, 2017
- Schedule Report for Post-Outage-Mechanical, April through May, 2017
- SOP-1A, Primary Coolant System, Revision 33
- SOP-1B, Primary Coolant System-Cooldown, Revision 21
- SOP-1C, Primary Coolant System-Heatup, Revision 23
- SOP-8, Main Turbine and Generating Systems, Revision 107
- WI-MSM-M-29, Installation and Removal of Primary Coolant System Vacuum Refill Equipment, Revision 5
- WI-PCS-M-06, NSSS Walkdown, Revision 5
- WO 473447, ED-01, +100VDC Ground in Solid During Plant Trip
- WO 52677362, Rx Disassembly, Re-Assembly and Fuel Moves

### 1R22 Surveillance Testing

- Basis Document RE-139, Test Starting Time of Diesel Generator, Revision 3
- Basis Document RT-8D, Engineered Safeguards System – Right Channel, Revision 7
- Certificate of Calibration, Asset ID 010344, July 8, 2017
- CR-PLP-2015-05468, Preliminary Green Finding with Associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion II, Quality Assurance Program and a Severity Level IV Violation of 10 CFR 50.59 Under Traditional Enforcement, November 3, 2015
- CR-PLP-2016-00563, QO-16X Component Cooling Water Testing to Containment Spray Pumps, February 1, 2016
- CR-PLP-2016-00698, UFM Readout did Not Have a Calibration Date, February 8, 2016
- CR-PLP-2017-01836, CV-2099, PCP Controlled Bleed Off Containment Isolation does Not Have Position Indication, April 26, 2017
- CR-PLP-2017-01847, During Performance of Local Leak Rate Test RO-32-14, Penetration #14 Component Cooling Water Inlet, there was Excessive Leakby Past CV-0910, Component Cooling Water Supply to Containment, April 26, 2017
- CR-PLP-2017-01860, During Performance of Local Leak Rate Test RO-32-11, (MZ-11) Cond to Shield Cooling Surge Tank, Test Leakage was Greater than the Administrative Limit, April 7, 2017



- CR-PLP-2017-01907, RV-3128, Safety Injection Tank T-82B Relief Valve, has Minor Leakby, April 28, 2017
- CR-PLP-2017-01929, During Performance of RO-32-15 (MZ-15 LLRT), Test Pressure was Not Able to be Achieved, April 29, 2017
- CR-PLP-2017-02011, During Performance of RO-105, Safety Injection Tank T-82A to Loop 1A Failed to Indicate Full Open in the Control Room, May 1, 2017
- CR-PLP-2017-02012, The Outage Control Center Authorized Performance of RO-105 Full Flow Test for Safety Injection Tank Check Valve Prior to Installation of the Tri-Nuclear Filtration Unit, May 1, 2017
- E-209, Schematic Diagram Safety Injection & Sequencer Loading Circuits, Sheet 3, Revision 25
- E-209, Schematic Diagram Safety Injection & Sequencer Loading Circuits, Sheet 3A, Revision 2
- E-293 Sheet 5, Annunciators – Safeguards, Safety Injection and Isolation, Revision 26
- EC 31817, Revise the Hydraulic Pipe-Flo Model for the ESS from Version 4.11 to Version 2007A, Revise the ESS Pump Curve Calculation and Recirculation Mode NPSH Calculation, Revision 0
- EC 70203, FE-0404, Recirculation Flow to Safety Injection and Refueling Water Tank, Revision 0
- EN-DC-106, Temporary Installation of Measurement and Test Equipment (M&TE), Revision 0
- EN-DC-334, Primary Containment Leakage Rate Testing (Appendix J), Revision 3
- ESS-S-06, Check Valve Program – Condition Monitoring Analysis, Revision 2
- M-204, Piping & Instrument Diagram Safety Injection Containment Spray, Sheet 1B, Revision 41
- M-204, Piping & Instrument Diagram Safety Injection Containment Spray and Shutdown Cooling System, Sheet 1, Revision 88
- M-204, Piping & Instrument Diagram Safety Injection Containment Spray and Shutdown Cooling System, Sheet 1A, Revision 44
- M-209, Piping & Instrument Diagram Component Cooling System, Sheet 1, Revision 68
- Operations Log, April 12, 2017
- Operations Log, April 29, 2017
- Operations Log, May 6, 2017
- QO-16, Inservice Test Procedure – Containment Spray Pumps, Revision 38
- RE-139-2, Test Starting Time of Diesel Generator 1-2, Revision 12
- RO-105, Full Flow Test for Safety Injection Tank Check Valves and PCS Loop Check Valves, Revision 15
- RO-11, Containment High Radiation Test, Revision 25
- RO-22, Control Rod Drop Times, Revision 21
- RO-32, Basis Document Containment Building Penetrations – Local Leak Rate Test, Revision 15
- RO-32, LLRT – Local Leak Rate Test Main Procedure, Revision 34
- RO-32-14, LLRT – Local Leak Rate Test Procedure for Penetration MZ-14, Revision 25
- RO-32-15, LLRT – Local Leak Rate Test Procedure for Penetration MZ-15, Revision 23
- RT-8D, Engineered Safeguards System – Right Channel, Revision 38
- SEP-APJ-010, Palisades Containment Leakage Rate Testing (Appendix J) Program Section, Revision 4
- SEP-APJ-PLP-101, Palisades Mechanical Containment Penetration Basis Program Section, Revision 0
- SOP-16, Component Cooling Water System, Revision 48
- VEN-M201, Wiring Diagram Terminal Blocks and Miscellaneous Equipment Section C13-1R, Sheet 41, Revision 90

- WO 429021, RO-105 Full Flow Test for Safety Injection Tank Check Valves
- WO 429022, RO-11, Containment High Radiation Test
- WO 429142, RT-8D, Engineered Safeguards System Right Channel
- WO 444184, RO-32-14, Penetration #14 – Component Cooling Water Inlet
- WO 468699, FI-0404, Lowered to 1 Gallon per Minute W/T-58 on Slow Recirc thru T-50
- WO 474096, CV-0910 Failed RO-32-14
- WO 5278309, QO-16C – P-54C, Inservice Test Procedure – Containment Spray Pump
- WT-WTPLP-2016-00019, 2016 Engineering Routine Actions, January 5, 2016

#### 2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

- CR-PLP-2016-02260, Loose Contamination Discovered in Clean Area of 590' Auxiliary Building, Dated May 15, 2016
- CR-PLP-2016-02630, HEPA Unit 27 Not in Use and Dampers Not Closed, Dated June 8, 2016
- CR-PLP-2017-02012, Outage Control Center Authorized Performance of RO-105 Prior to Installation of Tri-Nuclear Filtration, Dated May 1, 2017
- CR-PLP-2017-02024, Discrepancies Identified Between the 1R25 Near Critical Path Schedule and the Intended Controls for In-Core Instrument Removal, Dated May 1, 2017
- CR-PLP-2017-02100, Adverse Radworker Performance Trend, Dated May 3, 2017
- EN-RP-104 Attachment 9.11, Personnel Contamination Event Log, Various Dates
- EN-RP-104, Personnel Contamination Events, Revision 9
- EN-RP-106, Radiological Survey Documentation, Revision 7
- EN-RP-108, Radiation Protection Posting, Revision 18
- EN-RP-122, Alpha Monitoring, Revision 9
- EN-RP-131 Attachment 9.2, Air Sample Form, Various Dates
- EN-RP-131, Air Sampling, Revision 15
- EN-RP-141, Job Coverage, Revision 7
- Radiological Survey Maps, Various Dates
- RWP 20170429, Refuel Project, ICI Removal/Installation to Include Cut Up of ICIs and Work On ICI Equipment, Revision 0
- RWP 20170433, Refuel Project: Disassembly of the Reactor Head and Associated Work Activities, Revision 0
- RWP 20170449, Reactor Head Inspection: Volumetric (UT) Inspection Activities, Revision 0
- RWP 20170454, S/G Primary Side Activities, Revision 0
- RWP 20170471, ISI – FAC Exams in Containment/Aux Building, Revision 0
- RWP 20170471, ISI – FAC Exams in Containment/Aux Building, Revision 1
- WO 52685904, Perform Annual Rad Source Inventory, Dated January 11, 2017
- WO 52705346, Semi-Annual Sealed Source Leak Test, Dated January 30, 2017

#### 2RS2 Occupational ALARA Planning and Controls (71124.02)

- RWP 20170429, Refuel Project: ICI Removal/Installation to Include Cut Up of ICIs and Work On ICI Equipment, Revision 0
- RWP 20170433, Refuel Project: Disassembly of the Reactor Head and Associated Work Activities, Revision 0
- RWP 20170449, Reactor Head Inspection: Volumetric (UT) Inspection Activities, Revision 0
- RWP 20170454, S/G Primary Side Activities, Revision 0
- RWP 20170471, ISI – FAC Exams in Containment/Aux Building, Revision 0
- RWP 20170471, ISI – FAC Exams in Containment/Aux Building, Revision 1

#### 4OA1 Performance Indicator Verification

- EN-LI-114, Regulatory Performance Indicator Process, Revision 7
- NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 7
- NRC PI Technique/Data Sheet, Safety System Functional Failures (MS05), April 2016 through March 2017
- NRC PI Technique/Data Sheet, Unplanned Power Changes per 7000 Critical Hours (IE03), April 2015 through March 2017

#### 4OA2 Problem Identification and Verification

- AREVA Document - 51-9270659-000 Palisades Steam Generator Condition Monitoring for 1R25 and Preliminary Operational Assessment for Cycle 26, Revision 0
- AREVA Document - PAL1R24 ETSS #1 Bobbin, Revision 1
- AREVA Document - PAL1R25 ETSS #1 Bobbin, Revision 0
- AREVA Document - PAL1R25 ETSS #2 3-Coil RPC, Revision 1
- Corrective Action Program Performance Summary, April 2017
- CR-PLP-2016-01288, As a Result of a 100 Percent Snapshot Assessment of the Emergency Operating Facility (EOF) Controlled Copies, Discrepancies were Identified, March 14, 2016
- CR-PLP-2016-01784, Late Initiation of CRs from Walkdowns, April 13, 2016
- CR-PLP-2016-02419, SRC Identified Two DEP Failures were Not Entered into the Corrective Action Program, May 25, 2016
- CR-PLP-2016-02440, SRC Oversight Subcommittee Identified the Following Executive Summary Concern, A Decline in the Implementation of Some Elements of the Corrective Action Program, May 26, 2016
- CR-PLP-2016-02536, SRC Executive Summary Issue: In Several Cases there has Been a Decline in the Implementation of Some Elements of the Corrective Action Program, May 26, 2016
- CR-PLP-2016-02720, Issued Condition Report to Document DEP Failure, June 14, 2016
- CR-PLP-2016-04682, RIA-5707, RW-Packaging East Area Radiation Monitor Momentarily Spiked Causing Alarm EK-1366, Plant Area Monitoring Hi Radiation to Alarm in the Control Room, September 30, 2016
- CR-PLP-2016-04780, Nuclear Independent Oversight Identified: No Condition Report was Generated for Issue Discovered During a Snap-Shot Self-Assessment, October 6, 2016
- CR-PLP-2016-05982, CR Not Generated in a Timely Manner, December 19, 2016
- CR-PLP-2016-05983, P-41 Diesel Fire Pump, has Been Out of Service for Greater than Seven Days, December 19, 2016
- CR-PLP-2017-00646, NRC Senior Resident Inspector Noted that a Condition Report had Not Been Created to Document Non-Compliance, February 23, 2017
- CR-PLP-2017-00646, Scaffold Non-Compliance Noted Week of January 30, 2017, February 23, 2017
- CR-PLP-2017-00647, NRC Senior Resident Noted that a Condition Report had Not Been Generated to Document Non-Compliance, February 23, 2017
- CR-PLP-2017-02177, Axial Crack Identified in SG-E-50 B Tube; May 4, 2017
- CR-PLP-2017-02694, Corrective Actions to Address Adverse Conditions were Not Resolved Commensurate with their Significance, May 24, 2017
- CR-PLP-2017-02696, Corrective Action to Address Adverse Conditions were Not Resolved Commensurate with their Significance, May 25, 2017
- CR-PLP-2017-02758, Condition Reports were Not Initiated for 15 Adverse to Quality and/or Procedure Issues, June 1, 2017

- CR-PLP-2017-03019, Groundwater Monitoring Well, MW-2, Shows Low Indications of Tritium Over the Last Few Sampling Periods, June 20, 2017
- CR-PLP-2017-03032, Received Alarm 1-RIA, Annunciator-EK-1366, Plant Area Monitoring Hi Radiation Unexpectedly, June 21, 2017
- DPRM/APRM Report, Performance Improvement, February 2017
- EN-LI-102, Corrective Action Program, Revision 29
- EN-LI-121, Trending and Performance Review Process, Revision 22
- EN-MA-133, Control of Scaffolding, Revision 17
- LO-PLPLO-2017-00036, Adverse CA Closures Since Announcement of Plant Shutdown, April 13, 2017
- Operations Log, June 19, 2017
- Performance Improvement Review Group (PRG) Screening Package, June 27, 2017
- Performance Improvement Review Group (PRG) Screening Package, June 20, 2017
- PLP-RPT-15-00027, Palisades Unit 1 Steam Generator Eddy Current Analysis Guidelines, Revision 0
- QA-3-2017-PLP-1, Corrective Action Program, May 8, 2017 through June 27, 2017

#### 40A3 Follow-Up of Events and Notices of Enforcement Discretion

- Admin 4.00, Operations Organization, Responsibilities and Conduct, Revision 61
- AOP-35, Loss of Service Water Basis, Revision 1
- AOP-36, Loss of Component Cooling Basis, Revision 2
- AOP-38, Acts of Nature Basis, Revision 9
- AOP-38, Acts of Nature, Revisions 8, 9, and 10
- CR-PLP-2016-01540, During the Development of the EC-58888 50 Percent Package by Sargent Lundy, the Following were Noted, April 11, 2016
- CR-PLP-2016-02392, The Basis for the Tornado Missiles Listed for the Containment, Auxiliary Building, and Turbine Building FSAR (Section 5.5.1.1.1) is Unclear, May 24, 2016
- CR-PLP-2017-01248, Service Water System (SWS) is Non-Conforming to the Current Licensing Basis, March 29, 2017
- CR-PLP-2017-01249, The Fuel Oil System (FOS) is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01250, The Emergency Diesel Generator (EDG) Support Equipment is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01251, The Control Room Heating, Ventilation, and Air Conditioning System (CRHVAC) is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01252, The Steam Drive Auxiliary Feedwater Pump (P-8B) is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-01253, The Component Cooling Water System is Vulnerable to Impact from Tornado Missiles, March 29, 2017
- CR-PLP-2017-03144, Lack of Log Entry for LCOs That were Entered, June 29, 2017
- EC 70792, Tornado Missile Vulnerability Assessment Guidance Documents, Revision 0
- EC 70797, Tornado Missile Vulnerability Immediate Compensatory Measure Recommendations, Revision 0
- EN-OP-115-09, Log Keeping, Revision 2
- EOP Supplement 19, Alternate Auxiliary Feedwater Methods, Revision 11
- EOP-7.0, Loss of All Feedwater Recovery, Revision 17
- LCO Board Log, June 29, 2017
- LER 2017-001-00, Inadequate Protection from Tornado Missiles Identified Due to Nonconforming Design Conditions, May 24, 2017

- LO-HQNLO-2016-00042, Administrative LO to Ensure Missile Protection Issues are Adequately Addressed Throughout the Entergy Nuclear Fleet, June 30, 2016
- LO-PLPLO-2015-00052, High Energy Line Break and Tornado Snapshot Assessment
- Night & Standing Order Log, March 30, 2017
- OE-NOE-2015-00125, NRC Regulatory Issue Summary 2015-2016 – Tornado Missile Protection
- PAD Log #: 17-0063, Licensing Basis Document Change Request (LBDCR) 17-0010
- PAD Log #: 17-0087, Procedure AOP-38, “Acts of Nature”

#### 40A5 Other Activities

- NUREG-0820, Palisades Nuclear Plant
- NUREG-1424, Safety Evaluation Report Related to the Full-Term Operating License for Palisades Nuclear Plant

## LIST OF ACRONYMS USED

|       |   |
|-------|---|
| AC    | Alternating Current                               |
| ADAMS | Agencywide Documents Access and Management System |
| ALARA | As-Low-As-Reasonably-Achievable                   |
| ASME  | American Society of Mechanical Engineers          |
| CAP   | Corrective Action Program                         |
| CCW   | Component Cooling Water                           |
| CFR   | <i>Code of Federal Regulations</i>                |
| CR    | Condition Report                                  |
| CRD   | Control Rod Drive                                 |
| DG    | Diesel Generator                                  |
| ECT   | Eddy Current Testing                              |
| EGM   | Enforcement Guidance Memorandum                   |
| EPRI  | Electric Power Research Institute                 |
| HRPOS | Higher Risk Plant Operating State                 |
| IP    | Inspection Procedure                              |
| IR    | Inspection Report                                 |
| ISI   | Inservice Inspection                              |
| LCO   | Limiting Condition for Operation                  |
| LER   | Licensee Event Report                             |
| NCV   | Non-Cited Violation                               |
| NDE   | Non-Destructive Examination                       |
| NEI   | Nuclear Energy Institute                          |
| NRC   | U.S. Nuclear Regulatory Commission                |
| ODSCC | Outside Diameter Stress Corrosion Cracking        |
| PAUT  | Phased Array Ultrasonic Testing                   |
| PI    | Performance Indicator                             |
| RFO   | Refueling Outage                                  |
| SEP   | Systematic Evaluation Program                     |
| SG    | Steam Generator                                   |
| SSC   | Structure, System, and Component                  |
| TS    | Technical Specification                           |
| TSO   | Transmission System Operator                      |
| UFSAR | Updated Final Safety Analysis Report              |
| URI   | Unresolved Item                                   |
| UT    | Ultrasonic Testing                                |
| WO    | Work Order  |