



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
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November 10, 2016

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  
05000255/2016003

Dear Mr. Arnone:

On September 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Palisades Nuclear Plant. On October 19, 2016, the NRC inspectors discussed the results of this inspection with yourself and other members of your staff. The enclosed report documents the results of this inspection.

Based on the results of this inspection, the NRC has identified one issue that was evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that a violation is associated with this issue. Because a condition report was generated to address the issue, the violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The NCV is described in the subject inspection report.

If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to: (1) the Regional Administrator, Region III; (2) the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and (3) the NRC Resident Inspector at the Palisades Nuclear Plant.

In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Palisades Nuclear Plant.

C. Arnone

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

Sincerely,

**/RA/**

Eric Duncan, Chief  
Branch 3  
Division of Reactor Projects

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

Enclosure:  
Inspection Report 05000255/2016003

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-255

License No: DPR-20

Report No: 05000255/2016003

Licensee: Entergy Nuclear Operations, Inc.

Facility: Palisades Nuclear Plant

Location: Covert, MI

Dates: July 1 through September 30, 2016

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Enclosure

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## SUMMARY

Inspection Report (IR) 05000255/2016003; 07/01/2016 – 09/30/2016; Palisades Nuclear Plant; Maintenance Risk Assessments and Emergent Work Control

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding was identified by the inspectors. This finding involved a Non-Cited Violation (NCV) of U.S. Nuclear Regulatory Commission (NRC) requirements. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6, dated July 2016.

### Cornerstone: Mitigating Systems

- Green. A self-revealed finding of very low safety significance and an associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion III, "Design Control," was identified for the failure to appropriately select and review for suitability of application the control switch and circuit design of the engineered safeguards room cooler fans. Specifically, on July 27, 2016, when the licensee was conducting troubleshooting activities for the tripping of engineered safeguards room cooler fan V-27B, it was revealed that the control switch design was "break before make" and as the hand switch was transitioned from one position to the next, the supply voltage and the motor became "out of phase" and caused an overcurrent trip of the breaker. This resulted in an unplanned entry into a 72 hour limiting condition for operation (LCO) for the right train of the emergency core cooling system (ECCS). In the apparent cause evaluation (ACE) for this issue, the licensee determined that the contributing cause had not previously addressed this particular failure mode (i.e. the control switch and circuit design) when similar overcurrent events occurred in the past. Prior corrective actions included adding guidance to system operating procedures to pause between hand switch movements and replacing other components within those systems. These actions were not successful in eliminating this failure mode. The licensee documented the issue in their CAP, planned to revise the control circuit and switch design, and added specific procedural steps on how to operate these fans until the design change was implemented.

The finding was more than minor in accordance with IMC 0612, Appendix B, because it was associated with the Mitigating Systems Cornerstone attribute of Equipment Reliability and adversely impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, as a result of the overcurrent trip of its breaker, V-27B was declared non-functional and unavailable and the equipment in the room it cooled was declared inoperable, which included the 'A' high pressure safety injection (HPSI) pump and the 'A' containment spray (CS) pump. This led to an unplanned entry into a 72 hour LCO for the right train of ECCS. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution and was related to the cross-cutting component of Evaluation, which required that the licensee thoroughly evaluate issues to

ensure that resolutions address causes and extent of conditions commensurate with their safety significance. As discussed above, in the ACE for this issue the licensee determined that the corrective actions associated with the identified contributing cause following similar overcurrent events that occurred in the past had not addressed or been successful in eliminating this failure mode [PI.2]. (Section 1R13.1)

## REPORT DETAILS

### Summary of Plant Status

The plant began the assessment period operating at full power. The unit operated at or near full power for the entire inspection period.

#### 1. REACTOR SAFETY

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

#### 1R04 Equipment Alignment (71111.04)

##### .1 Quarterly Partial System Walkdowns

##### a. Inspection Scope

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

- 'A' charging system train;
- 'B' auxiliary feedwater (AFW) train; and
- 'B' low pressure safety injection (LPSI) train.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), 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 Corrective Action Program (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 Inspection procedure (IP) 71111.04–05.

##### b. Findings

No findings were identified.

## .2 Semi-Annual Complete System Walkdown

### a. Inspection Scope

On July 11 through 13, 2016, the inspectors performed a complete system alignment inspection of the service water system to verify the functional capability of that system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; support system operability; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system's functions. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

These activities constituted one complete system walkdown sample 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 the availability, accessibility, and condition of firefighting equipment in the following risk-significant plant areas:

- Fire Areas 1 & 33: control room and technical support center, elevation 625';
- Fire Areas 29, 30, and 31: mechanical equipment rooms, elevations 629' & 639';
- Fire Areas 21 and 26: electrical equipment room and southwest cable penetration room, elevation 607';
- Fire hose stations in the turbine and auxiliary buildings;
- Fire protection post-indicator valves inside and outside plant buildings; and
- Fire Area 13B: charging pump rooms, elevation 590'.

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 issues identified during the inspection were entered into the licensee's CAP.

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

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On September 8, 2016, and September 15, 2016, the inspectors observed a fire brigade activation drill for a fire in a switchyard transformer. Based on these observations, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner, and took appropriate corrective actions. Specific attributes evaluated included the following:

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

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk-important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal

flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- east and west engineered safeguards rooms (zones 1 and 2).

Documents reviewed during this inspection are listed in the Attachment to this report. This inspection constituted one internal flooding sample as defined in IP 71111.06–05. In addition, the inspectors did not identify a history of cable degradation or failure due to submergence at the site. As a result and as provided for in IP 71111.06–05, an underground vaults inspection sample was not performed.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

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

a. Inspection Scope

On September 30, 2016, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator regualification 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;
- the 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
- the crew's 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 regualification 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 August 16, 2016, the inspectors observed activities in the main control room during a downpower and AFW pump testing. This was an activity that required heightened awareness and was related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- the 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 procedures;
- control board manipulations; and
- oversight and direction from supervisors.

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 systems:

- diesel driven fire pump, P-41.

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 Title 10 of the *Code of Federal Regulations* (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 work on V-24A and V-24B, 1-1 diesel generator (DG) ventilation fans, temperature switches concurrent with intermittent 2400V ground alarm troubleshooting;
- troubleshooting for slow start time of 1-2 DG 'B' air start motor concurrent with failure of the right train DG load sequencer design basis accident (DBA)/normal shutdown (NSD) processor in the control room;
- unplanned inoperability of 'A' high pressure safety injection (HPSI) and 'A' containment spray (CS) pumps due to the east engineered safeguards room cooler, V-27B, breaker tripping;
- emergent, risk significant troubleshooting for CV-0780, 'B' steam generator atmospheric steam dump valve, leakage; and
- planned risk-significant work to perform preventive maintenance on the 1-2 DG, conduct the quarterly surveillance test of the 'C' service water pump, perform a high risk diving evolution, and conduct ISFSI dry runs on September 19-20, 2016.

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 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 five samples as defined in IP 71111.13-05.

b. Findings

Introduction: A self-revealed finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion III, "Design Control," was identified for the failure to appropriately select and review for suitability of application the control switch and circuit design of the engineered safeguards room cooler fans. Specifically, on July 27, 2016, when the licensee was conducting troubleshooting activities for V-27B, engineered safeguards room cooler fan, tripping, it was revealed that the control switch design was "break before make" and as the hand switch was transitioned from one position to the next, the supply voltage and the motor became "out of phase," and caused an overcurrent trip of the breaker. This resulted in an unplanned entry into a 72 hour limiting condition for operation (LCO) for the right train of the emergency core cooling system (ECCS).

Description: On July 27, 2016, operators were attempting to secure the motor for V-27B, the engineered safeguards room cooler fan, by moving the hand switch from the "auto" position to the "push to lock" position. Per the guidance in the system operating procedure, the operator paused in between each hand position while moving the hand switch. While transitioning through these positions, the operator noticed that the indicating lights were not lit on the hand switch and the breaker was later found to be tripped. This resulted in V-27B being declared non-functional and unavailable and the equipment in the room it cooled being declared inoperable, which included the 'A' HPSI pump and the 'A' CS pump.

Troubleshooting revealed the supply breaker for V-27B tripped on overcurrent with no other issues identified after inspecting the breaker. Plant internal operating experience suggested a potential issue with the control switch for the fan motor, so the engineers then conducted troubleshooting on a spare, identical model control switch from the warehouse. This troubleshooting revealed that the control switch design was "break before make," which meant that as the hand switch was moved through the various switch positions, the circuit was designed to break one connection before making up another connection. If the control circuit was signaling the fan to run in both positions, the voltage to the motor will transition from on, to off, and back to on again. Normally, the supply voltage and the motor position are "in phase." As the hand switch is transitioned from one position to the next, the supply voltage and the motor can become "out of phase" and if that deviation is large enough, a current transient can occur.

After validating no physical issues with the fan, motor, or breaker, the licensee restarted the fan and it operated appropriately. The licensee determined this issue to be a repeat maintenance rule functional failure; the same control switch design issue caused maintenance rule functional failures of 1–1 and 1–2 DG ventilation fans earlier in 2016 and in 2014. The licensee conducted an ACE which determined the cause to be the design of the control switch being “break before make,” leading to the supply voltage and motor voltage being out of phase, and causing the overcurrent condition. A contributing cause identified to be associated with this issue was that this particular failure mode, the control switch and circuit design, had not been previously addressed when similar overcurrent events occurred on this and other fans with the same switch design in the past. Prior corrective actions included adding guidance to system operating procedures to pause between hand switch movements and replacing other components within those systems. These actions were not successful in eliminating this failure mode. New planned corrective actions included remediation of the control circuit and switch design and the addition of specific, procedural steps on how to operate these fans until the design change was implemented.

Analysis: The inspectors determined that the failure to appropriately select and review for suitability of application the control switch and circuit design of the engineered safeguards room cooler fans was a performance deficiency that warranted a significance determination.

The inspectors determined that the finding was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it affected the Mitigating Systems Cornerstone attribute of Equipment Reliability and adversely impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, as a result of the overcurrent trip of its breaker, V-27B was declared non-functional and unavailable and the equipment in the room it cooled was declared inoperable, which included the 'A' HPSI pump and the 'A' CS pump. This led to an unplanned entry into a 72 hour LCO for the right train of ECCS. Utilizing IMC 0609, Appendix A, Exhibit 2, effective July 1, 2012, the finding screened as Green by answering “No” to the Mitigating SSC’s and Functionality questions related to the finding representing an actual loss of function of at least a single train for greater than its TS allowed outage time or an actual loss of function of one or more non-TS, maintenance rule high safety-significant trains for greater than 24 hours.

The finding had a cross-cutting aspect in the area of Problem Identification and Resolution related to the cross-cutting component of Evaluation, which required that the licensee thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. In the apparent cause evaluation for this issue, the licensee determined that the contributing cause had not previously addressed this particular failure mode (i.e. the control switch and circuit design) when similar overcurrent events occurred in the past. Prior corrective actions included adding guidance to system operating procedures to pause between hand switch movements and replacing other components within those systems. These actions were not successful in eliminating this failure mode [PI.2].

Enforcement: 10 CFR 50, Appendix B, Criterion III, “Design Control,” requires, in part, that measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of structures, systems, and components.

Contrary to the above, on July 27, 2016, it was discovered that the licensee failed to select and review for suitability the control switch for the safeguards room cooler fan V–27B as required by 10 CFR 50, Appendix B, Criterion III, “Design Control.”

Specifically, while conducting troubleshooting activities for V–27B, engineered safeguards room cooler fan, tripping, it was revealed that the control switch design was “break before make” and as the hand switch was transitioned from one position to the next, the supply voltage and the motor became “out of phase,” and caused an overcurrent trip of the breaker. This resulted in V–27B being declared non-functional and the equipment in the room it cooled being declared inoperable, which included the ‘A’ HPSI pump and the ‘A’ CS pump, which resulted in an unplanned entry into a 72 hour LCO for the right train of the ECCS.

The licensee documented this issue in condition report CR–PLP–2016–03456, Unavailability of V–27B “East Engineered Safeguards Room Cooling Fan” Resulting in an LCO Action Statement Entry, and performed an equipment apparent cause evaluation. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy because it was of very low safety significance and was entered into the licensee’s CAP. Corrective actions included remediation of the control circuit and switch design and specific, procedural steps on how to operate these fans until the design change was implemented. **(NCV 05000255/2016003–01, Failure to Appropriately Select and Review for Suitability of Application the Control Switch and Circuit Design of the Engineered Safeguards Room Cooler Fans)**

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- elevated seal temperature for control rod drive 13;
- cracks identified on the lids of the safety-related, main station batteries;
- past operability evaluation for issues identified on the left train control room heating and ventilation system (CRHVAC);
- loose bolts identified on both DG exhaust hangers; and
- continued service life of the 1–2 DG jacket water cooler after tube plugging.

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 TSs and UFSAR to the licensee’s evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures

in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sample of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Review of Operator Workarounds

a. Inspection Scope

Operator workarounds are operator actions taken to compensate for degraded or non-conforming conditions. Operator workarounds that cannot be implemented effectively can contribute to an increase in overall plant risk. The inspectors verified that the licensee was identifying operator workarounds at an appropriate threshold, entering them into their CAP, and had planned or taken appropriate corrective actions. As part of their review, the inspectors considered all existing plant conditions and the cumulative impact of all operator workarounds.

The inspectors evaluated the licensee's operator workarounds to determine if any mitigating system functions were adversely impacted. Additionally, the inspectors assessed whether the operator workarounds had adversely impacted the operator's ability to implement abnormal or emergency operating procedures. The inspectors placed particular emphasis on any operator workarounds that had not been evaluated by the licensee; that had been formalized or proceduralized as the long-term corrective actions for a degraded or nonconforming condition; and that may have increased the potential for human error, such as operator workarounds that:

- required operations that were not consistent with current training and system knowledge;
- required a change from long-standing operational practices;
- required operation of a system or component in a manner that was inconsistent with similar systems or components;
- created the potential for the compensatory action to be performed on equipment or under conditions for which it was not appropriate;
- impaired access to required indications, increased dependence on verbal communications, or impacted the timeliness of time-critical event mitigating actions under adverse environmental conditions;
- required the use of equipment and interfaces that had not been designed with consideration of the task being performed;
- required the licensee to assess and manage an increase in risk; or
- required a license amendment in accordance with 10 CFR 50.59, but were implemented without an approved amendment.

Documents reviewed are listed in the Attachment to this report.



These activities by the inspectors constituted a single operator workarounds review inspection sample as required by IP 71111.15, Section 02.01(a).

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification:

- temporary shielding on charging pump piping and components.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 and 72.48 safety evaluation screenings against the design basis, the UFSAR, and the TSS, as applicable, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modification was installed as directed and consistent with the design control documents; the modification operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modification did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one temporary plant modification sample 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 testing activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- system operating test of P–55C, ‘C’ charging pump, following preventative maintenance activities;
- surveillance test of C–2B, ‘B’ instrument air compressor, following valve and relay replacements;

- diagnostic testing and stroke timing of CV-3025, shutdown cooling heat exchanger discharge valve, after valve operator replacement;
- partial safety injection actuation system surveillance test after replacement of the right channel DG load sequencer DBA/NSD processor;
- system operating test and non-destructive examination of new welds on P-55B, 'B' charging pump, discharge manifold flush line; and
- surveillance testing of 1-2 DG following air system and jacket water cooler maintenance.

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

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- RI-3C, 'C' channel pressurizer pressure calibration (routine);
- QO-21B, 'B' AFW pump surveillance test (inservice test);
- MO-7A-2, 1-2 DG surveillance test (routine);
- QI-5, containment high pressure test (routine); and
- primary coolant system leakrate surveillance (reactor coolant system leak detection).

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

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

Documents reviewed are listed in the Attachment to this report.

This inspection constituted three routine surveillance testing samples, one in-service test sample, and one reactor coolant system leak detection inspection sample, as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

## 2. RADIATION SAFETY

### 2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

#### .1 Engineering Controls

##### a. Inspection Scope

The inspectors reviewed procedural guidance for use of ventilation systems, and assessed whether the systems were used, to the extent practicable, during high-risk activities to control airborne radioactivity and minimize the use of respiratory protection. The inspectors assessed whether installed ventilation airflow capacity, flow path, and filter/charcoal unit efficiencies for selected systems were consistent with maintaining concentrations of airborne radioactivity in work areas below the concentrations of an airborne area to the extent practicable. The inspectors also evaluated whether selected temporary ventilation systems used to support work in contaminated areas were consistent with licensee procedural guidance and as-low-as-reasonably-achievable (ALARA).

The inspectors reviewed select airborne monitoring protocols to assess whether alarms and set points were sufficient to prompt worker action. The inspectors assessed whether the licensee established trigger points for evaluating levels of airborne beta-emitting and alpha-emitting radionuclides.

These inspection activities constituted one complete sample as defined in IP 71124.03–05.

##### b. Findings

No findings were identified.

#### .2 Use of Respiratory Protection Devices

##### a. Inspection Scope

The inspectors assessed whether the licensee provided respiratory protection devices for those situations where it was impractical to employ engineering controls such that occupational doses were ALARA. For select instances where respiratory protection devices were used, the inspectors assessed whether the licensee concluded that further engineering controls were not practical. The inspectors also assessed whether the licensee had established a means to verify that the level of protection provided by the respiratory protection devices was at least as good as that assumed in the work controls and dose assessment.

The inspectors assessed whether the respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA) or had been approved by the NRC. The inspectors evaluated whether the devices were used consistent with their NIOSH/MSHA certification or any conditions of their NRC approval.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus (SCBA) bottles to assess whether the air used met or exceeded

Grade D quality. The inspectors evaluated whether plant breathing air supply systems satisfied the minimum pressure and airflow requirements for the devices.

The inspectors evaluated whether selected individuals qualified to use respiratory protection devices had been deemed fit to use the devices by a physician.

The inspectors reviewed training curricula for use of respiratory protection devices to assess whether individuals are adequately trained on donning, doffing, function checks, and how to respond to a malfunction.

The inspectors observed the physical condition of respiratory protection devices ready for issuance and reviewed records of routine inspection for selected devices. The inspectors reviewed records of maintenance on the vital components for selected devices and assessed whether on-site personnel assigned to repair vital components received vendor-provided training.

These inspection activities constituted one complete sample as defined in IP 71124.03–05.

b. Findings

No findings were identified.

.3 Self-Contained Breathing Apparatus for Emergency Use

a. Inspection Scope

The inspectors reviewed the status and surveillance records for select SCBAs. The inspectors evaluated the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions.

The inspectors assessed whether control room operators and other emergency response and radiation protection personnel were trained and qualified in the use of SCBAs and evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors assessed whether appropriate mask sizes and types were available for use. The inspectors evaluated whether on-shift operators had no facial hair that would interfere with the sealing of the mask and that appropriate vision correction was available.

The inspectors reviewed the past two years of maintenance records for selected in-service SCBA units used to support operator activities during accident conditions. The inspectors assessed whether maintenance or repairs on an SCBA unit's vital components were performed by an individual certified by the manufacturer of the device to perform the work. The inspectors evaluated the on-site maintenance procedures governing vital component work to determine whether there was any inconsistencies with the SCBA manufacturer's recommended practices. The inspectors evaluated whether SCBA cylinders satisfied the hydrostatic testing required by the U.S. Department of Transportation.

These inspection activities constituted one complete sample as defined in IP 71124.03–05.

b. Findings

No findings were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The inspectors assessed whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold and were properly addressed for resolution. Additionally, the inspectors evaluated the appropriateness of the corrective actions for selected problems involving airborne radioactivity documented by the licensee.

These inspection activities constituted one complete sample as defined in IP 71124.03–05.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

.1 Source Term Characterization

a. Inspection Scope

The inspectors evaluated whether the licensee had characterized the radiation types and energies being monitored and that the characterization included gamma, beta, hard-to-detects, and neutron radiation.

The inspectors assessed whether the licensee had developed scaling factors for including hard-to-detect nuclide activity in internal dose assessments.

These inspection activities constituted one complete sample as defined in IP 71124.04–05.

b. Findings

No findings were identified.

.2 External Dosimetry

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor was National Voluntary Laboratory Accreditation Program accredited and if the approved irradiation test categories for each type of personnel dosimeter used were consistent with the types and energies of the radiation present and the way the dosimeter was being used.

The inspectors evaluated the on-site storage of dosimeters before their issuance, during use, and before processing/reading. For personal dosimeters stored on-site during the monitoring period, the inspectors evaluated whether they were stored in low dose areas with control dosimeters. For personal dosimeters that were taken off-site during the monitoring period, the inspectors evaluated the guidance provided to individuals with respect to the care and storage of the dosimeter.

The inspectors evaluated the calibration of active dosimeters. The inspectors assessed the bias of the active dosimeters compared to passive dosimeters and the correction factor used. The inspectors also assessed the licensee's program for comparing active and passive dosimeter results, investigations for substantial differences, and recording of dose. The inspectors assessed whether there were adverse trends for active dosimeters.

These inspection activities constituted one complete sample as defined in IP 71124.04-05.

b. Findings

No findings were identified.

3. Internal Dosimetry

a. Inspection Scope

The inspectors reviewed procedures used to assess internal dose using whole body counting equipment to evaluate whether the procedures addressed methods for differentiating between internal and external contamination, the release of contaminated individuals, the route of intake and the assignment of dose. The inspectors assessed whether the frequency of measurements was consistent with the biological half-life of the nuclides available for intake. The inspectors reviewed the licensee's evaluation for use of portal radiation monitors as a passive monitoring system to determine if instrument minimum detectable activities were adequate to detect internally deposited radionuclides sufficient to prompt additional investigation. The inspectors reviewed whole body counts and evaluated the equipment sensitivity, nuclide library, review of results, and incorporation of hard-to-detect radionuclides.

The inspectors reviewed procedures used to determine internal dose using in-vitro analysis to assess the adequacy of sample collection, determination of entry route and assignment of dose.

The inspectors reviewed the licensee's program for dose assessment based on air sampling, as applicable, and calculations of derived air concentration. The inspectors determined whether flow rates and collection times for air sampling equipment were adequate to allow lower limits of detection to be obtained. The inspectors also reviewed the adequacy of procedural guidance to assess internal dose if respiratory protection was used.

The inspectors reviewed select internal dose assessments and evaluated the monitoring protocols, equipment, and data analysis.

These inspection activities constituted one complete sample as defined in IP 71124.04–05.

b. Findings

No findings were identified.

.4 Special Dosimetric Situations

a. Inspection Scope

The inspectors assessed whether the licensee informs workers of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for declaring a pregnancy. The inspectors selected individuals who had declared a pregnancy during the current assessment period and evaluated whether the monitoring program for declared pregnant workers was technically adequate to assess the dose to the embryo/fetus. The inspectors assessed results and/or monitoring controls for compliance with regulatory requirements.

The inspectors reviewed the licensee's methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients exist. The inspectors evaluated the licensee's criteria for determining when alternate monitoring was to be implemented. The inspectors reviewed dose assessments performed using multi-badging to evaluate whether the assessment was performed consistently with licensee procedures and dosimetric standards.

The inspectors evaluated the licensee's methods for calculating shallow dose equivalent from distributed skin contamination or discrete radioactive particles. The inspectors reviewed select shallow dose equivalent dose assessments for adequacy.

The inspectors evaluated the licensee's program for neutron dosimetry, including dosimeter types and/or survey instrumentation. The inspectors reviewed select neutron exposure situations and assessed whether dosimetry and/or instrumentation was appropriate for the expected neutron spectra, there was sufficient sensitivity, and neutron dosimetry was properly calibrated. The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events.

For the special dosimetric situations reviewed in this section, the inspectors assessed how the licensee assigns dose of record. This included an assessment of external and internal monitoring results, supplementary information on individual exposures, and radiation surveys and/or air monitoring results when dosimetry was based on these techniques.

These inspection activities constituted one complete sample as defined in IP 71124.04–05.

b. Findings

No findings were identified.



.5 Problem Identification and Resolution

a. Inspection Scope

The inspectors assessed whether problems associated with occupational dose assessment were being identified by the licensee at an appropriate threshold and were properly addressed for resolution. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving occupational dose assessment.

These inspection activities constituted one complete sample as defined in I P 71124.04–05.

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**

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index—High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - High Pressure Injection Systems (MS07) Performance Indicator (PI) for the period from the third quarter 2015 through the second quarter 2016. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, CRs, MSPI derivation reports, event reports and NRC Integrated Inspection Reports (IRs) for the period of July 1, 2015, through June 30, 2016, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, whether the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee’s CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI - High Pressure Injection System sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index—Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Residual Heat Removal System (MS09) PI for the period from the third quarter 2015 through the second quarter 2016. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, CRs, MSPI derivation reports, event reports and NRC IRs for the period of July 1, 2015, to June 30, 2016, to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, whether the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI - Residual Heat Removal System sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system leakage PI for the period from the third quarter 2015 through the second quarter 2016. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator logs, reactor coolant system leakage tracking data, CRs, event reports and NRC IRs for the period of July 1, 2015 to June 30, 2016 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. Documents reviewed are listed in the Attachment to this report.

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

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

#### b. Findings

No findings were identified.

### .2 Daily Corrective Action Program Reviews

#### a. Inspection Scope

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

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

#### b. Findings

No findings were identified.

### .3 Annual Follow-up of Selected Issues: Inadequate Documentation and Controls for Measuring and Test Equipment

#### a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors reviewed a corrective action item documenting a quality assurance finding identified by the

licensee's Nuclear Independent Oversight (NIOS) group. The licensee identified that they had not adequately implemented controls to ensure that the measuring and test equipment (M&TE) program met the requirements for calibration, storage, and traceability. Specifically, it was identified that environmental conditions were not monitored, or in some cases controlled, in M&TE storage and calibration areas. Additionally, it was identified that documentation of M&TE deviations from calibration standards and the review and approval of vendor-calibrated equipment did not meet the requirements of procedure EN-MA-105, "Control of M&TE."

The inspectors reviewed CAP documents to verify the complete, accurate, and timely documentation of the identified problem. The inspectors reviewed the apparent cause evaluation (ACE) for identification of the apparent cause of the problem and corrective actions that were appropriately focused to correct the problem. The licensee determined that the apparent cause was that the guidance given in procedure EN-MA-105 was not clear. Corrective actions included purchasing monitoring equipment for M&TE calibration and storage locations and implementation of a monitoring process for each of the M&TE locations. The licensee was also evaluating changes to EN-MA-105 to clarify requirements. The inspectors concluded, based on the ACE and interviews with licensee staff, that the corrective actions associated with the above issues were timely and appropriately focused to correct the problem.

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.4 Annual Follow-up of Selected Issues: Fire Tours

a. Inspection Scope

On May 24 and 25, 2016, while the inspectors were observing a maintenance activity on a service water pump in the screenhouse, they noted that hourly fire tours were not being conducted consistently by security personnel. Plant room badging records and the paper hourly fire tour daily log sheets were requested from the licensee for the fire tours completed. The inspectors identified that some areas on the fire tour log sheets were annotated as complete, yet there were no corresponding badge records for these areas. A small extent of condition review was conducted by the inspectors and the identified discrepancies were discussed with the licensee.

The licensee entered this issue into the CAP as CR-PLP-2016-2650, A Review of Fire Tours Reported as Completed by Security Personnel has Found Discrepancies in What was Reported. The licensee promptly began an extent of condition review of the applicable records. The condition report was appropriately characterized as significance level 'A,' which included conducting a root cause evaluation and formulating corrective actions to prevent recurrence. The inspectors reviewed the licensee's immediate interim corrective actions to ensure the issue did not occur while the evaluation was being conducted and determined they were appropriate until further, permanent corrective actions could be implemented.

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

(Open) Unresolved Item: Hourly Fire Tour Discrepancies

Introduction: The inspectors identified an unresolved item (URI) related to discrepancies found during fire tour daily log sheet and corresponding badge record reviews. Specifically, the NRC is in the process of reviewing the licensee's evaluation of the root and contributing causes of the issue, as well as the corrective actions to prevent recurrence. Also, the NRC will verify that the licensee's actions taken to address the issue are sustainable.

Description: On May 24 and 25, 2016, while the inspectors were observing a maintenance activity on a service water pump in the screenhouse, they noted that hourly fire tours were not being conducted consistently by security personnel. The inspectors requested plant room badging records and copies of the hourly fire tour daily log sheets from the licensee for hourly fire tours completed on May 24 and 25, 2016. The inspectors identified that some areas on the fire tour log sheets were annotated as complete, yet there were no corresponding badge records for these areas. The inspectors requested additional fire tour daily log sheets and badge records for May 31 and June 1, 2016 for an extent of condition review. Additional issues were identified with the fire tour log sheets not corresponding with badge records for certain plant areas required to be covered by the hourly fire tours.

On June 8, 2016, the inspectors discussed these discrepancies with the licensee. The licensee entered this issue into the CAP and promptly began an extent of condition review of the fire tour daily log sheets and plant room badging records for the period of March 1, 2016 through June 8, 2016. The condition report included actions to conduct a root cause evaluation to determine the root and contributing causes of the discrepancies identified in the fire tour and badging records and formulating corrective actions to prevent recurrence. The licensee's immediate interim corrective actions included direct supervisor observation of all hourly fire tours being conducted, newly formatted fire tour log sheets with additional detail added, and re-training of personnel conducting the tours on the requirements and expectations for completion of the activity. Pending NRC review of the licensee's evaluation of the issue, subsequent corrective actions to prevent recurrence, and verification that the actions are sustainable, this issue is unresolved.  
**(URI 050000255/2016003-02, Hourly Fire Tour Discrepancies)**

4OA5 Other Activities

.1 Spent Fuel Pool Safety at Operating Reactors

a. Inspection Scope

The inspectors evaluated spent fuel pool safety to verify the design, operation and administrative measures in place assured safety of the spent fuel pool during normal and accident conditions. The inspection evaluated the following areas:

- spent fuel pool inventory control for
  - normal inventory control;
  - emergency make up;
  - spent fuel pool leaks;
  - level monitoring; and
  - cooling system walk down.
- criticality controls
  - criticality analysis of record;
  - spent fuel pool loading per technical specifications; and
  - fixed poison monitoring.
- chemistry and cleanliness
  - chemistry results; and
  - water clarity.
- control of heavy loads
  - spent fuel pool crane maintenance records;
  - spent fuel pool crane daily checks; and
  - walkdown of the spent fuel pool crane.

During the conduct of the inspections, the inspectors performed walkdowns of the spent fuel pool floor and spent fuel pool heat exchanger room, reviewed records as listed in the attachment, and conducted interviews with plant personnel.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted the completion of one spent fuel pool safety at operating reactors inspection as defined in IP 60715.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 19, 2016, 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. D. Nestle, Radiation Protection Manager, and other members of the licensee staff on August 19, 2016.

- The inspection results for the Spent Fuel Pool Safety at Operating Reactors inspection procedure with Mr. A. Williams, General Manager of Plant Operations, and other members of the licensee staff on September 15, 2016.

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

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

C. Arnone, Site Vice President  
A. Williams, General Manager Plant Operations  
T. Mulford, Operations Manager  
B. Baker, Operations Manager – Shift  
J. Borah, Engineering Manager, Systems and Components  
R. Craven, Production Manager  
T. Davis, Regulatory Assurance  
B. Dotson, Regulatory Assurance  
J. Erickson, Regulatory Assurance  
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  
M. Lee, Operations Manager – Support  
D. Lucy, Outage Manager  
D. Malone, Emergency Planning 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

#### U.S. Nuclear Regulatory Commission

E. Duncan, Chief, Reactor Projects, Branch 3



## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000255/2016003-01	NCV	Failure to Appropriately Select and Review for Suitability of Application the Control Switch and Circuit Design of the Engineered Safeguards Room Cooler Fans (Section 1R13.1)
05000255/2016003-02	URI	Hourly Fire Tour Discrepancies (Section 4OA2.4)

### Closed

05000255/2016003-01	NCV	Failure to Appropriately Select and Review for Suitability of Application the Control Switch and Circuit Design of the Engineered Safeguards Room Cooler Fans (Section 1R13.1)
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### Discussed

None

## LIST OF DOCUMENTS REVIEWED

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

### 1R04 Equipment Alignment

- CR-PLP-2014-00584, CV-2111 Has an Air Leak on the Gasket Between the Tophat and the Bonnet of the Valve, January 24, 2014
- CR-PLP-2014-03643, WO 272042 Task 01 to Replace Mechanical Seal on P-56B Boric Acid Pump was Cancelled Due to Satisfactory As-Found Condition, July 8, 2014
- CR-PLP-2015-01003, T-967, Boric Acid Pump P-56B Seal Convection Tank, Won't Maintain Pressure, March 8, 2015
- CR-PLP-2015-04023, Category 5 Air Leak on the Diaphragm of CV-2111, Charging Line Containment Isolation, September 20, 2015
- CR-PLP-2015-04627, WO 52544863 Unable to Isolate Service Water to Containment, October 3, 2015
- CR-PLP-2015-04713, During Review of the Diagnostic Test Results for CV-0869, Containment Air Cooler, VHX-4, Service Water Inlet Valve, A Negative Trend in the Actuator/Valve's Performance was Noted, October 5, 2015
- CR-PLP-2015-04973, During Performance of MO-7A-1, EDG 1-1 Monthly Surveillance Test it was Noted that Service Water Flow to 1-1 Emergency Diesel was Low Out of Specification, October 13, 2015
- CR-PLP-2015-05095, Pinhole Leak in the Service Water System Inside of Containment, October 16, 2015
- CR-PLP-2015-05224, Check Valve, CK-N2/459, Blocks Air Flow from Air System to CV-0522B, is Leaking By, October 20, 2015
- CR-PLP-2015-05429, During Performance of MO-7A-1, EDG 1-1 Monthly Surveillance Test it was Noted that Service Water Flow to 1-1 EDG was Low Out of Specification, November 2, 2015
- CR-PLP-2015-05484, Operations Discovered All Outputs from LIC-1300, Service Water Bay Level Indicating Controller, Indicating 575 Feet, November 3, 2015
- CR-PLP-2015-05559, Found MV-SW231, P-25B, Service Water Booster Pump Suction Valve, has a Solid Stream of Water Coming from the Packing While Opening the Valve, November 8, 2015
- CR-PLP-2015-05872, Found MV-SW231, Service Water Booster Pump P-25B Suction, to Have Packing Leakage, November 29, 2015
- CR-PLP-2015-06069, During Performance of RO-128-1, 24 Hour Emergency Diesel Generator Run, Service Water Flow was Low Out of Specification, December 8, 2015
- CR-PLP-2015-06202, MV-SW231, Service Water Booster Pump, P-25B, Suction has Possible Bent Stem, December 16, 2015
- CR-PLP-2016-00161, Received Alarm EK-0709, Volume Control Tank High-Low Level, Unexpectedly, January 11, 2016
- CR-PLP-2016-00296, Lake Level has Risen Above the Level of 580' and the Service Water Bay Level Transmitters are Above their Operating Range, January 15, 2016
- CR-PLP-2016-00618, During the SOP-22 Test Run of the 1-1 Emergency Diesel Generator, Control Room Received the Low Raw Water Pressure Alarm, February 4, 2016

- CR-PLP-2016-00934, EMA-1204, Motor for Service Water Pump P-7A, Failed the Polarization Index Test During Offline Baker Testing, February 23, 2016
- CR-PLP-2016-01484, Flow Element for FI-0971, Component Cooling Water Outlet Flow Indicator for Charging Pump P-55A, is Wedged Inside the Flow Glass, March 26, 2016
- CR-PLP-2016-01597, Severity Level 2 Air Leak Discovered on Both Compression Unions of HIC-0823, Instrument Air Regulator for CV-0823, April 1, 2016
- CR-PLP-2016-01598, Severity Level 2 Air Leak Discovered on Compression Union Directly Upstream of MV-CA10196, E-54A TCV CV-0821 Air Supply, April 1, 2016
- CR-PLP-2016-01596, Severity Level 2 Air Leak Discovered on Both Compression Unions of HIC-0826, Instrument Air Regulator for CV-0826, April 1, 2016
- CR-PLP-2016-01599, Severity Level 2 Air Leak Discovered on Compression Union Directly Upstream of MV-CA10059, Component Cooling Water Heat Exchanger E-54B Service Water Outlet CV-0826 Air Supply, April 1, 2016
- CR-PLP-2016-01698, Rust Chunks Found in the Baskets of P-7A Service Water Pump Basket Strainer, April 7, 2016
- CR-PLP-2016-01719, Received EK-1144, Service Water Pump P-7C Basket Strainer High Differential Pressure, Initially Multiple Times Over 20 Minutes, April 11, 2016
- CR-PLP-2016-01846, While Performing a VT-2 Exam on Section of Service Water Piping for the K-6B, Emergency Diesel Generator 1-2, a Severity Level 3 Small Water Leak was Noted on E-31B, Diesel Generator 1-2, Lube Oil Cooler, April 19, 2016
- CR-PLP-2016-01886, Critical Service Water Piping had Corrosion on the Sealing Surface of Two Inch Outlet and Inlet Flanges Connected to the Heat Exchanger, April 20, 2016
- CR-PLP-2016-02376, WO 435058 for LA-0205 to Determine Cause of Elevated Low Level Alarm on EK-0709, Volume Control Tank High-Low Level, Found Nothing Wrong, May 23, 2016
- CR-PLP-2016-02435, Thread Damage Was Observed on Both the Pump Packing Shaft and Motor Shaft of P-7A, 'A' Service Water Pump, May 26, 2016
- CR-PLP-2016-02458, Received Alarm EK-0709, Volume Control Tank (VCT) Hi/Low Level Alarm, May 27, 2016
- CR-PLP-2016-02634, On VC-11, Control Room HVAC Refrigerator Condensing Unit, Corrosion has Degraded Five Associated Flanges and the Attached Critical Service Water Piping, June 8, 2016
- CR-PLP-2016-02754, Received Alarm EK-0709, VCT Hi/Low Level Unexpectedly with Level in the Middle of the Normal Operating Band, June 15, 2016
- CR-PLP-2016-02811, CK-FW743, Auxiliary Feedwater Pump P-8B Discharge, Has a Severity Level 3 Leak of 14 Drops per Minute when P-8A, Motor Driven Auxiliary Feedwater Pump, is Running, June 17, 2016
- CR-PLP-2016-03063, TI-0823, Component Cooling Water Heat Exchanger E-54A Service Water Outlet Temperature, Indicating 84 Degrees F While TI-0824, Component Cooling Water Heat Exchanger E-54B Service Water Temperature, Indicates 75 Degrees - They Should Indicate Approximately the Same, July 1, 2016
- CR-PLP-2016-03354, TI-1662B, Condensing Unit VC-10 Service Water Temperature, Reading is Approximately 32 Degrees Lower than Expected, July 21, 2016
- CR-PLP-2016-03450, CV-2155 Make-Up Stop has a Minor Packing Leak, Severity Level 2, Allowing Liquid to Pool in the Packing Gland Area, July 27, 2016
- CR-PLP-2016-03818, During the Performance of RT-711, Found CK-FW743, Auxiliary Feedwater Pump, P-8B, Discharge Check Valve was Leaking from the Body to Bonnet Flange at a Rate of Approximately 20 Drops per Minute, August 16, 2016
- CVC-1.05, Compressed Air Systems, Revision 6
- DBD-1.02, Service Water System, Revision 9
- DBD-1.03, Auxiliary Feedwater System, Revision 9

- EC-37224, Replace Service Water Supply and Discharge Piping and Components for CRHVAC Condenser, VC-11, with Stainless Steel, Revision 0
- M-202, Piping & Instrument Diagram, Chemical & Volume Control System, Sheet 1B, Revision 59
- M-202, Piping & Instrument Diagram, Chemical & Volume Control System, Sheet 1A, Revision 64
- M-203, Piping & Instrument Diagram, Safety Injection, Containment Spray and Shutdown Cooling System, Sheet 2, Revision 28
- 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 1A, Revision 44
- M-204, Piping & Instrument Diagram, Safety Injection, Containment Spray and Shutdown Cooling System, Sheet 1, Revision 87
- M-205, Piping & Instrument Diagram, Main Steam and Auxiliary Turbine Systems, Sheet 2, Revision 71
- M-207, Piping & Instrument Diagram, Auxiliary Feedwater System, Sheet 2, Revision 41
- M-208, Piping & Instrument Diagram, Non-Critical Service Water System, Sheet 1, Revision 105
- M-208, Piping & Instrument Diagram, Service Water System, Sheet 1A, Revision 65
- M-208, Piping & Instrument Diagram, Service Water System, Sheet 1B, Revision 40
- M-213, Piping & Instrument Diagram, Service Water, Screen Structure and Chlorinator, Revision 96
- M-222, Piping & Instrument Diagram, Miscellaneous Gas Supply Systems, Sheet 2, Revision 31
- QO-20, Inservice Test Procedure – Low Pressure Safety Injection Pumps, Revision 23
- SOP-12, Feedwater System, Revision 76
- SOP-15, Service Water System, Revision 64
- SOP-19, Attachment 2, Nitrogen/Air Backup Stations, Revision 66
- SOP-2A, Chemical and Volume Control System, Revision 86
- SOP-2B, Chemical and Volume Control System Purification and Chemical Injection, Revision 51
- SOP-3, Checklist CL 3.9, Engineered Safeguards Administrative Control Verification, Revision 103
- WO 052544863, CK-SW410; Disassemble and Inspect
- WO 334984, FI-0971; Wall Thinning, Poor Indication, Replace with New
- WO 366087, K-6A; Replace Raw/Service Water Instrument Tubing from G-20 to CV-0884
- WO 374194, CV-2111; Has Air Leak
- WO 389013, EK-1144 (P-7C); Alarm Is Not Working Properly – Repair/Replace
- WO 406937, MV-SW231; Leak at Packing Gland
- WO 427269, Diagnostics Indicates Degraded Valve
- WO 427975, MV-SW264; Pinhole Leak Downstream of Valve
- WO 428683, CK-N2/459; Leaks By Causing Higher Pressures on PCV-2274
- WO 434622, P-7B; Replace Packing Shaft
- WO 443415, BS-1318 (P-7A); Remove Rust from Basket Strainer
- WO 444268, VC-10; Corrosion on 2" Outlet and Inlet Flanges to Heat Exchanger
- WO 446684, LA-0205; Replace Low Level Alarm Due to Intermittent Drifting
- WO 51612613, VC-11; Replace 3" Critical Service Water System Piping per EC16499
- WO 52619973, P-7A; Replace Relay for Equipment Reliability for P-7B
- WR 361734, T-967; P-56B Seal Convection Tank Losing Pressure

- WT-WTPLP-2015-00058, During Performance of MO-7A-1, Emergency Diesel Generator 1-1 it was Noted that Service Water Flow to 1-1 Emergency Diesel Generator was Low in Step 5.8.7, October 18, 2015
- WT-WTPLP-2016-00168, Track Items Required for Implementation of the Service Water and Fire Protection Master Inspection Plan, April 12, 2016

#### 1R05 Fire Protection

- CR-PLP-2015-01970, MV-FP282, Fire System Cross-tie, has a 10 dpm Packing Leak, May 12, 2015
- CR-PLP-2015-04966, During the Inspection and Test of Control Room Fire Dampers, Discovered a Missing Spring Attachment Point on Damper CD-42, October 13, 2015
- CR-PLP-2016-02081, The Packing Gland Nut and Stud on MV-RP125, Heater Drain Pumps Sprinkler Isolation, is Corroded, May 5, 2016
- CR-PLP-2016-02593, During Performance of WO 415546-01, CD-49 Replace Both Springs on Damper, it was Found that the New Spring Would Not Work Based on the Difference in Size of the New Spring, June 6, 2016
- CR-PLP-2016-02964, During Walkdown of WO 52598103-01, Fire Protection Pressure Instruments #2, Found Pressure Indicator, PI-1343, With No Isolation Valve on Attachment 14 of Procedure SOP-21, June 28, 2016
- CR-PLP-2016-02993, Spare Station Power Transformer Deluge Pressure Switch, PS-1343, Out of Final Tolerance, June 29, 2016
- CR-PLP-2016-03633, Copies of Transient Combustible Evaluations 15-045 and 15-046 Were Identified by the NRC as Being Beyond the Expected Finish Date of December 31, 2015, August 4, 2016
- CR-PLP-2016-04238, During the 3<sup>rd</sup> Quarter Fire Drill, One of the Identified Critical Fire Brigade Response Criteria was Marked as Unsatisfactory, September 8, 2016
- DBD 7.10, NFPA 805 Fire Protection Program, Revision 0
- EA-FPP-03-001, Analysis of Combustible Loading at Palisades Nuclear Plant, Revision 3
- EA-FPP-12-009, Palisades NFPA 805 Circuit Analysis, Revision 1
- EA-PSA-EOOS-FIRE-13-03, Palisades Incorporation of Qualitative Fire Risk into EOOS, Revision 2
- EN-DC-161, Control of Combustibles, Revision 13
- EN-DC-161, Control of Combustibles, Revision 14
- FPIP-2, Fire Emergency Responsibility and Response, Revision 21
- FPIP-3, Plant Fire Brigade, Revision 20
- FPIP-4, Attachment 5, Fire Suppression Water System Post Indicator Valves, Revision 36
- FPIP-4, Fire Protection Systems and Fire Protection Equipment, Revision 36
- M-216, Piping & Instrument Diagram, Fire Protection System, Sheet 1, Revision 27
- M-216, Piping & Instrument Diagram, Fire Protection System, Sheet 2, Revision 71
- Operations Logs, June 26-28, 2016
- PLP-RPT-12-0143, Nuclear Safety Capability Assessment Fire Area Analysis Results, Revision 1
- PLP-RPT-12-0145, NFPA 805 Nuclear Safety Performance Criteria - Fire Area Transition, Revision 1
- Pre-Fire Plan 1, Control Room, Elevation 625'
- Pre-Fire Plan 13B, Charging Pump Rooms, Elevation 590'
- Pre-Fire Plan 21, Electrical Equipment Room, Elevation 607'
- Pre-Fire Plan 26, Southwest Cable Penetration Room, Elevation 590' and 607'
- Pre-Fire Plan 29, 30, and 31, Mechanical Equipment Rooms, Elevations 629' & 639'
- Pre-Fire Plan 33, Technical Support Center, Elevation 625'

- WO 415545, CD-49 (V-95); Replace Both Springs on Damper
- WO 427677, CD-42; Control Room Fire Damper Missing Spring Attachment Point
- WO 51631892, MV-FP125; Heater Drain Pump Sprinklers Corroded

#### 1R06 Flood Protection Measures

- Admin 4.02, Control of Equipment, Revision 75
- AOP-39, Internal Plant Flooding Basis, Revision 1
- AOP-39, Internal Plant Flooding, Revision 1
- C-64, Sub-Grade Waterproof Membrane Plan Details, Revision 6
- CR-PLP-2015-02666, East Engineered Safeguards Sump Pump Went Up from 23.5% to 26% (2.5%) in Eight Hours Which Falls Outside of Sump Level Change of <2%, June 25, 2015
- CR-PLP-2016-01930, Air Leakage Access Door 59 Between East and West Engineered Safeguards, April 25, 2016
- CR-PLP-2016-03565, Door 59 (Door from East to West Safeguards) Did Not Pass the Chalk Test, August 2, 2016
- CR-PLP-2016-03566, Left Corner of Door 181 (East Safeguards to Post Tensioning Tunnel) Found it Failed Chalk Test, August 2, 2016
- CR-PLP-2016-03601, Door 181 (East Safeguards to Post Tensioning Tunnel), Found 18' of Loose Caulking on Bottom Left Hand Side of Joint, August 3, 2016
- CR-PLP-2016-03682, Issues Found with the Boot Seal in East Safeguards on the South Wall, August 9, 2016
- CR-PLP-2016-03712, Issue Identified During Annual Watertight Inspections, August 10, 2016
- CR-PLP-2016-03720, During Work to Repair XJ-0407 it was Noted to Remove Concrete Scale from this Expansion Joint, There was None in XJ-0407, August 10, 2016
- CR-PLP-2016-03738, Issues Identified During Annual Watertight Barrier Inspections, August 11, 2016
- CR-PLP-2016-03747, Found One Spot at Each End of the Boot Seal at the 570' Level of the Dirty Waste Drain Tank Room that has Lifted During Annual Water Tight Barrier Inspections, August 11, 2016
- DBD-7.03, HELB Barrier Controls, Appendix F, Revision 2
- DBD-7.08, Plant Protection Against Flooding, Revision 6
- EA-C-PAL-95-1526-01, Internal Flooding Evaluation for Plant Areas Outside of Containment, Revision 4
- M-211, Piping & Instrument Diagram, Dirty Waste & Gaseous Waste, Sheet 1, Revision 79
- MSM-M-16, Inspection of Watertight Barriers, Revision 17
- WO 396392, Door-58; Failed Chalk Test in Lower Left Hand Corner, August 3, 2016
- WO 452593, Door-181; Failed Chalk Test – Replace Door Seal
- WO 453218, EESG Boot Seal Missing Bolt from Edge Hold Down on Boot
- WO 453359, Corner of Boot Seal is Lifting Up in West Engineered Safeguards Room
- WO 453438, Boot Seal on Each End Lifted in Dirty Waste Drain Tank Room
- WO 453441, XJ-0412; Remove Concrete Scale from Expansion Joint
- WO 5160503, XJ-0421; Replace Expansion Joint per EC-26944
- WO 5160505, XJ-0411; Replace Expansion Joint per EC-26944
- WO 51606283, XJ-0420; Replace Expansion Joint Per EC-26944
- WO 52570730, Annual Inspection of Watertight Barriers (2015)
- WO 52635952, Annual Inspection of Watertight Barriers (Doors)
- WO 52635952, Annual Inspection of Watertight Barriers (Penetrations)
- WO 52635952, Annual Inspection of Watertight Barriers and Expansion Joints

## 1R11 Licensed Operator Regualification Program

- Admin 4.00, Operations Organization, Responsibilities, and Conduct, Revision 59
- AOP-1, Loss of Load, Revision 0
- AOP-28, Pressurizer Pressure Control Malfunctions, Revision 0
- ARP-2, Generator Scheme EK-03 (EC-11), Revision 56
- ARP-8, Safeguards, Safety Injection, and Isolation Scheme EK-13 (EC-13), Revision 81
- CR-PLP-2016-03807, At 11:30 Received Alarm EK-0318, Turbine Trouble Alarm, August 16, 2016
- CR-PLP-2016-03820, At 22:38 Received Alarm EK-0318, Turbine Trouble Alarm, August 16, 2016
- CR-PLP-2016-03856, NIOS Identified Problem: During an Observation of a Downpower and Performance of QO-21, Noted There were a Few Instances Where Less than Crisp Direction for Plant Manipulations was Provided to Workers Without Adverse Consequence, August 18, 2016
- CR-PLP-2016-03857, NIOS Identified: There were Some Missed Opportunities to Engage Senior Reactor Operator (SRO) Trainees in all Aspects of Shift Operations, August 16, 2016
- EN-OP-115, Conduct of Operations, Revision 17
- EN-OP-115-04, Operations Briefs, Revision 2
- EN-OP-115-08, Annunciator Response, Revision 4
- EOP-1, Standard Post-Trip Actions, Revision 18
- EOP-2, Reactor Trip Recovery, Revision 14
- EOP-9, Functional Recovery Procedure, Revision 23
- GOP-8, Power Reduction and Plant Shutdown to Mode 2 or Mode 3, Revision 36
- PLSEG-LOR-16E-03, EOP-9.0 Functional Recovery Procedure, Revision 2
- QO-21, Inservice Test Procedure – Auxiliary Feedwater Pumps, Revision 46
- RO-127, Auxiliary Feedwater System 18-Month Test Procedure, Revision 15
- SOP-12, Feedwater System, Revision 76
- SOP-34, Palisades Plant Computer System, Revision 35
- SOP-8, Main Turbine and Generating Systems, Revision 105

## 1R12 Maintenance Effectiveness

- CR-PLP-20116-03636, Debris Found During Tank Cleaning of T-40 Diesel Day Tank for P-41 Cooling Tower Diesel Driven Fire Pump, August 4, 2016
- CR-PLP-2015-00635, P-41, Diesel Fire Pump, has Been Non-Functional for Greater than 14 Days, February 15, 2015
- CR-PLP-2015-00820, An Additional 156.74 Hours of Unavailability Were Consumed During January and February 2015, February 23, 2015
- CR-PLP-2015-02875, During the Performance of Post-Maintenance Testing on P-9B per FPSP-RM-3 and WO 52588182-02, the Requirements for Step 5.8.7 Was Not Met, July 8, 2015
- CR-PLP-2015-02876, Diesel Fire Pump, P-9B, Failed One of the Post-Maintenance Tests, July 8, 2015
- CR-PLP-2015-04670, P-41 Would Not Start Using 'A' Battery Bank, October 4, 2015
- CR-PLP-2015-05600, The Failure of P-41 Cooling Tower Diesel Driven Fire Pump to Start When Manually Started, as Documented under CR-PLP-2015-04670, was Evaluated as a Functional Failure, November 10, 2015
- CR-PLP-2015-06138, Inspect the Internals of CK-FP450, P-41 Discharge Check Valve, December 14, 2015

- CR-PLP-2016-00166, P-9B, Diesel Driven Fire Pump, Exhaust Rain Cap was Found in the Open Condition, January 11, 2016
- CR-PLP-2016-00195, During Tank Flush, Debris and Sludge were Drained from Tank, January 12, 2016
- CR-PLP-2016-01029, While Conducting Rounds of the Turbine Building, it was Noticed that Diesel Fire Pump, P-41, Crankcase Oil Level has Risen 2-3 Inches Since Last Week with No Oil Additions, February 29, 2016
- CR-PLP-2016-01209, Excessive Amounts of Fuel Oil in Lubrication Oil, March 9, 2016
- CR-PLP-2016-01276, Excessive Packing Leakage was Noted on P-9B, Diesel Fire Pump, March 13, 2016
- CR-PLP-2016-01311, Check Calibration on PI-5351 as the Inlet Pressure Should Not be Less than the Outlet Pressure, March 15, 2016
- CR-PLP-2016-01733, Functional Failure Determination Revised to Functional Failure Due to the Degraded Condition of Lubrication Oil from Fuel Dilution, April 12, 2016
- CR-PLP-2016-02100, This Condition Report is Intended to Drive Replacement of T-24 and T-40, Diesel Fire Pump Day Tanks with New Tanks, May 5, 2016
- CR-PLP-2016-02418, Presentation of MR (a)(1) Evaluation of FPS System for Repeat Functional Failure will Not Meet the 90 Day Guideline for Evaluation Completion, May 25, 2016
- CR-PLP-2016-02653, Crankcase Oil Level has Risen About 3-4 Inches Since 2 Days Ago with No Oil Additions, June 9, 2016
- CR-PLP-2016-02775, Pattern of Failure for Fuel Oil in the Lube Oil system, June 16, 2016
- CR-PLP-2016-02818, During Quarterly Lube Oil Sampling, Found Water and Foreign Material in K-5, Fire Pump P-9B Diesel Driver, June 18, 2016
- CR-PLP-2016-02829, P-41, Diesel Driven Cooling Tower Fire Water Pump, Lube Oil level Indicates About 1 Inch Above the High Mark and Smells of Fuel Oil, June 19, 2016
- CR-PLP-2016-02969, Signs of Fuel Oil Leakage Underneath MV-FO108, T-24 Fuel Oil Transfer SV-1414 Bypass, June 28, 2016
- CR-PLP-2016-03076, Diesel Driven Fire Pump, Oil Level was Observed to be Approximately  $\frac{1}{4}$  Inch Above the Scribe Mark, July 3, 2016
- CR-PLP-2016-03093, With Three Functional Failures the Fire Protection System Exceeds Performance Criteria and is Near MR (a)(1) Due to Issues with P-41, Cooling Tower Diesel Driven Fire Pump, July 5, 2016
- CR-PLP-2016-03181, This Condition Report is Being Initiated to Perform a Maintenance Rule Evaluation for CR-PLP-2016-3076, July 12, 2016
- CR-PLP-2016-03290, P-41, Diesel Fire Pump, was Observed to Have Oil Level Approximately  $\frac{1}{2}$ " Above the High Mark and has a Strong Smell of Fuel Oil, July 19, 2016
- CR-PLP-2016-03371, Fuel Oil Leakage Out of CK-FP491, Fuel Oil Return Check Valve, July 21, 2016
- CR-PLP-2016-03415, Functional Failure of P-41, Cooling Tower Diesel Driven Fire Water Pump, July 25, 2016
- CR-PLP-2016-03428, CK-FP491, Diesel Driver K-10 Fuel Oil Outlet Check Failed to Pass the Seat Tightness Check, July 26, 2016
- CR-PLP-2016-03430, Flush of Fuel Oil Return Reservoir/Vent Tank, Large Amount of Particulate/Rust Scale was Observed, July 26, 2016
- CR-PLP-2016-03630, P-41 has Exceeded 100% of its Maintenance Rule Performance Criteria, August 4, 2016
- PLP-RPT-12-00026, Maintenance Rule Scoping Document, Revision 0



## 1R13 Maintenance Risk Assessments and Emergent Work Control

- Admin 4.02, Attachment 3, Risk Management and Risk Monitoring, Revision 75
- Admin 4.02, Control of Equipment, Revision 75
- CR-PLP-2014-03998, During the Completion of MO-7A-1, Breaker 52-2535, Diesel Generator 1-1 Room Vent Fan V-24A, was Found Tripped, August 5, 2014
- CR-PLP-2014-04000, During Investigation into the Cause of V-24A, 1-1 Diesel Generator Ventilation Fan Tripping, it was Determined There is Recent In-House Operating Experience with Safeguards Ventilation Fans Exhibiting Similar Behavior, August 5, 2014
- CR-PLP-2016-03155, Received Alarm EK-0518, 2400V Bus 1C, 1D and/or 1E Ground, and EK-0333, Switchyard 125V DC and 240V AC Trouble, Unexpectedly, July 9, 2016
- CR-PLP-2016-03456, When Securing V-27B, Both Indicating Lights Went Out and the Breaker was Found to Be Tripped Free, July 27, 2016
- CR-PLP-2016-03526, During the Scheduled X-OPS490 PPAC Test Run of Safeguards Cooler Fans, V-27D, ESS Room Cooler Fan Unexpectedly Started when Its Handswitch was Taken from the Auto Position to the Standby Position, July 31, 2016
- CR-PLP-2016-03690, Repeat Functional Failure of CR-PLP-2014-03998, August 9, 2016
- CR-PLP-2016-03843, During Performance of WO 453231-02, CV-0780 Minor Seat Leakage, Found E/P-0781, Steam Generator E-50B CV-0780 Instrument Signal to POC-0780 at 3.16 psig, August 17, 2016
- CR-PLP-2016-03699, CV-0780, Steam Generator E-50B ADV, is Exhibiting Some Very Minor Seat Leakage that is having No Impact on Primary Coolant System Temperature, August 9, 2016
- CR-PLP-2016-04521, During Observation on Work Order 52701205, Clean/Replace Filters/Fans on EC-23A, it was Identified that the Electrical Safety Checklist Attachment 9.10 of EN-IS-123, Electrical Safety, was Not Used, September 23, 2016
- CR-PLP-2016-3260, Received Alarm, EK-1145, Sequencer Trouble, Unexpectedly, July 18, 2016
- CR-PLP-2016-3262, During Performance of MO-7A-2, 1-2 DG Technical Specification Surveillance Test, the Start Time on ASM-2B, Was Greater than the Acceptance Criteria, July 18, 2016
- DBD-2.02, High Pressure Safety Injection System, Revision 10
- DBD-2.03, Containment Spray System, Revision 9
- DBD-5.01, Diesel Engine and Auxiliary Systems, Revision 7
- EA-GOTHIC-AFW-02, Auxiliary Feedwater Pump Room Heat Up Due to a High Energy Line Break (HELB) in the Turbine Building, Revision 3
- EA-PSA-CCW-HELB-02-17, Evaluation of the Impact of a High Energy Line Break in Component Cooling Water Room, Revision 0
- EC 55129, Update to Assumption Basis for Plant Fire Doors Acting as Temporary High Energy Line Break Barriers in EA-PSA-CCW-HELB-02-17, Revision 0
- EC-62767, Risk Assessment for Blocking Open Door-141 (Emergency Diesel Generator 1-2 Room from Turbine Building Hallway) for Maintenance Activities, Revision 0
- EN-MA-118, Foreign Material Exclusion, Revision 10
- EN-MA-125, Troubleshooting Control of Maintenance Activities, Revision 18
- EN-MA-127, Conduct of Diving Operations, Revision 10
- EN-OP-116, Infrequently Performed Tests or Evolutions, Revision 12
- EN-OP-119, Protected Equipment Postings, Revision 8
- EN-WM-104, Online Risk Assessment, Revision 13
- M-214, Piping and Instrument Diagram, Lube Oil, Fuel Oil, and Diesel Generator Systems, Sheet 1, Revision 79
- National Weather Service Watches, Warnings, & Advisories, July 11, 2016

- Operations Logs, July 18-19, 2016
- Operations Logs, July 27, 2016
- Operations Logs, July 9-10, 2016
- Operator's Risk Achievement Worth Report, July 11, 2016
- Operator's Risk Achievement Worth Report, July 18, 2016
- Operator's Risk Achievement Worth Report, July 27, 2016
- SOP-24, Ventilation and Air Conditioning System, Revision 70
- SOP-30, Station Power, Revision 81
- WO 395856, 52-211; V-27B, Engineered Safeguards Room Cooler/Breaker Trip
- WO 451084, ASM-2B; Troubleshoot Slow Start Time
- WO 453231, CV-0780; Minor Seat Leakage

#### 1R15 Operability Determinations and Functionality Assessments

- Admin 4.19, Primary Coolant System Leak Rate Monitoring Program, Revision 6
- AOP-23, Primary Coolant Leak Basis, Revision 0
- AOP-23, Primary Coolant Leak, Revision 2
- ARP-5, Primary Coolant Pump Steam Generator and Rod Drives Scheme EK-09 (C-12), Revision 105
- C173(Q), Technical Requirements for the Analysis and Design of Safety-Related Pipe Supports, Revision 6
- CR-PLP-2008-03305, Received EK-0954, Rod Drive Seal Leak Off Hi Temp, Alarm Unexpectedly, August 3, 2008
- CR-PLP-2010-02491, On June 24 at Approximately 1200 Hours Palisades Started Power Reduction of Greater than 10% to Shutdown the Plant to Fix a Leak on CRD-22 Seal, June 24, 2010
- CR-PLP-2011-01709, Over the Last Couple of Months the CRD-23 Control Rod Drive Mechanism Reactor Head Location has been Slowly Increasing in Temperature After Forced Outage in January, April 6, 2011
- CR-PLP-2011-06946, Received EK-0954, Rod Drive Seal Leak Off Hi Temp, Due to CRD-23 Control Rod Drive Temperature Reaching 200°F, December 17, 2011
- CR-PLP-2011-06999, The CAPR from CR-PLP-2008-03305 May Not have Been Effective, December 20, 2011
- CR-PLP-2011-6901, CRD-23 Leakoff Temperature is Trending Higher than the Others By 70°F
- CR-PLP-2012-00209, Effect of Component Cooling Water Flow Rates and Temperatures on Control Rod Drive Mechanism Seals Does Not Appear to Have Been Adequately Addressed or Captured in Previous Root Cause Evaluations, January 8, 2012
- CR-PLP-2013-03192, During System Trending and Monitoring of the CRD System, It was Noted that TE-0150-25, CRDM Seal Leakoff Temperature Element, was Indicating 200°F, July 22, 2013
- CR-PLP-2015-02356, TE-0150-03, CRDM Seal Leakoff Temperature Element for CRD-3, is Fluctuating by as Much as 16°F, June 7, 2015
- CR-PLP-2015-05447, Received EK-0954, Rod Drive Seal Leak Off High Temperature, Unexpectedly for Control Rod #30, November 6, 2015
- CR-PLP-2016-00881, Received EK-0954, Rod Drive Seal Leak Off High Temperature, Unexpectedly for Control Rod #35, February 19, 2016
- CR-PLP-2016-02479, Found TE-0150-31, Control Rod Drive Mechanism Seal Leak Off Temperature Element on TR-0150, Indicating Burnout, May 30, 2016
- CR-PLP-2016-02597, During Crankcase Inspection Under WO 52613410 for VC-11, Control Room Heating, Ventilation and Air Conditioning Refrigerator Condensing Unit, Mechanical

- Maintenance Discovered Unexpected Amounts of Metallic Particles in the Crankcase Sump and Filter Area, June 7, 2016
- CR-PLP-2016-02604, Breaker 52-2515, Air Filter Unit VF-26A Inlet Damper D-7, Failed As-Found Testing of Z-Phase, June 7, 2016
  - CR-PLP-2016-02611, During Performance of VC-11, Control Room Chiller Unit, Condenser Overhaul PM, While Inspecting the Removed Suction and Discharge Assemblies, Discovered Two Hairline Radial Cracks, June 7, 2016
  - CR-PLP-2016-02709, While Reviewing the Results of the Eddy Current Tube Inspection Performed on Emergency Diesel Generator 1-1 Jacket Water Heat Exchanger, E-22A, in February 2016, the Highest Degradation for an Unplugged Tube (49% Through Wall) was Found to Not Have Sufficient Life to Last to the Next Inspection in February 2018, June 13, 2016
  - CR-PLP-2016-03280, CRDM 13 is Showing an Elevated Leakoff Temperature (152 Degrees) Following Completion of QO-34, Control Rod Testing, July 19, 2016
  - CR-PLP-2016-03412, Discovered Multiple Battery Jar Lids with Hairline Cracks in Them, July 25, 2016
  - CR-PLP-2016-03426, As an Extent of Condition, Walkdown Identified Three Cells with Hairline Cracks in the Jar Lids, July 25, 2016
  - CR-PLP-2016-03454, All Cells on ED-01 Showed Signs of Cracking from the Post Seals Toward the Outer Edge of the Lid, July 27, 2016
  - CR-PLP-2016-03455, All of the Cells on ED-02 Showed Signs of Cracking from the Post Seals Toward the Outer Edge of the Lid, Between Adjacent Post Seals, July 27, 2016
  - CR-PLP-2016-04165, During MO-7A-1, 1-1 Diesel Generator Monthly Test Run, Found a Bolt and Washer on the Floor, September 6, 2016
  - CR-PLP-2016-04224, During a Walkdown of K-6B Emergency Diesel Generator 1-2 Exhaust System Hanger JB-23-H3, Three Bolts Attaching the Hanger to the South Wall Were Found to be Not Fully Engaged, September 8, 2016
  - CR-PLP-2016-04226, While Executing WO 454995 to Replace a Missing Bolt and Check Torque on Ceiling Plate of Pipe Support JG23, It was Discovered that a Total of Six Bolts Were Not Fully Torqued to Their Design Value, September 8, 2016
  - CR-PLP-2016-04233, While Performing WO 455257, K-6B Emergency Diesel Generator 1-2 Torque of JB23-H3/Section AA Bolts, It was Discovered that the In-Plant Configuration of the Anchor Bolts did Not Match the Drawing, September 8, 2016
  - CR-PLP-2016-04260, While Performing WO 455257, K-6B Emergency Diesel Generator 1-2 Torque of JB23-H3/Section BB Bolts, it was Discovered the Bolt at the Southwest Location Moved Approximately 1 Flat to Achieved Required Torque of 160 Foot Pounds, September 9, 2016
  - CR-PLP-2016-04416, E-22B, Diesel Generator 1-2 Jacket Water Cooler, ECT Inspection Identified Tubes for Plugging During Eddy Testing, September 19, 2016
  - DBD-1.06, Control Room Heating, Ventilation and Air Conditioning System, Revision 9
  - DBD-5.01, Diesel Generator and Auxiliary Systems, Revision 1
  - DWO-1, Operators Daily/Weekly Items Modes 1, 2, 3, and 4, Revision 107
  - E-5, Relay Diagram 480 Volt Motor Control Centers, Sheet 5C, Revision 11
  - EC-62697, Emergency Diesel Generator Jacket Water Cooler Tube Plugging Revision, Revision 0
  - EC-66542, Emergency Diesel Generator 1-1 Exhaust Pipe Support JB-23-H1 Missing Bolt Support for Operability, Revision 0
  - EN-LI-108, Event Notification and Reporting, Revision 13
  - EN-MA-143, Use of Viper of Votes Infinity Air Operator Valve Diagnostics, Revision 5
  - EN-OP-104, Operability Determination Process, Revision 10

- LO-PLPLO-2008-00156, This LO has been Generated to Facilitate Performance of the Effectiveness Review for CR-PLP-2008-03305, Control Rod Drive Seals Continue to Fail, September 4, 2008
- M-195(Q), Attachment 5, Criteria for Determining Justification for Continued Operation when Encountering Discrepancies in "As-Built" Safety Related Piping, Revision 6
- ME-12A, ED-01 Battery Checks – Monthly, Revision 13
- ME-12B, ED-02 Battery Checks – Monthly, Revision 13
- QO-42, Inservice Testing of Shutdown Cooling Control Valves, Revision 18
- SEP-HX-PLP-001, Heat Exchanger Condition Assessment Program, Revision 3
- SOP-24, Ventilation and Air Conditioning System, Revision 70
- Trentic Report #74007.0, Seismic Test Report for C & D Batteries P/N:LCVN-33, Revision 1
- VEN-M101, Diesel Generator K6A Exhaust Elevation 607'-8 1/2" JB-23-H1, Sheet 2574(1), Revision 3
- VEN-M-101, Diesel Generator K6B Exhaust, Elevation 609'-4 3/8", JB-23-H3, Sheet 2574(2), Revision 3
- WO 415439, E-22A (K-6A); Replace Jacket Water Cooler
- WO 415440, E-22B (K-6B); Replace Jacket Water Cooler
- WO 52582454, Post-Maintenance Breaker/Starter 52-2515 (PO-1745)
- WO 52588742-01, Replace VOP-3025 Actuator Diaphragm and Replace PCV-3025 Air Supply Regulator
- WO 52588742-04, Perform Diagnostic Testing on CV-3025 as Needed Following Maintenance and Testing
- WO 52613410, VC-11 Condenser Overhaul Post-Maintenance
- WO 52684506, QE-35A, ED-01, Battery Checks – Quarterly
- WO 52686530, QE-35B, ED-02, Battery Checks – Quarterly
- WO 52700604, QO-42, Inservice Test - Shutdown Cooling Valves

#### 1R18 Plant Modifications

- CR-PLP-20116-04015, Temporary Shield Applications Under EC-53425 Installed in P-55A, B, and C Charging Pump Cubicles are Outside the Allowable Time Frame per the Temporary Shield Request, August 26, 2016
- EC 34298, Modification to TSR #2011-04, P-55B Charging Pump Discharge Line, Revision 0
- EC 39499, Temporary Shielding Package #2012-157, P-55B Charging Pump Discharge Line Piping Near CV-2111, Revision 0
- EC 42409, Temporary Shielding Package #2013-160, T-105C Suction Accumulator and Associated Piping, Revision 0
- EC 44202, Temporary Shielding Package #2013-161, T-106C Discharge Accumulator and Associated Piping, Revision 0
- EC 52107, Temporary Shielding Package #2014-058, P-55B Charging Pump Discharge Line Piping, Revision 0
- EC 52503, Temporary Shielding Package #2014-201, P-55C Suction (T-105C) and Discharge (T-106C) Accumulators and Associated Piping, Revision 0
- EC Reply 48318, Extension of Temporary Shielding Requests 2011-04 and 2012-157, Revision 0
- EC-28942, Temporary Shielding Package #2011-04, P-55B Charging Pump Discharge Line Piping CC-7-2, Revision 0
- EC-53015, Temporary Shielding Package #2014-203, P-55A Suction & Discharge Lines and Piping, Revision 0
- EC-53425, Charging Pumps Suction & Discharge Line Temporary Shielding Extension for MSTRs 2014-203, 2014-201, and 2014-058, Revision 0

- EN-DC-218, Temporary Radiation Shielding Evaluation, Revision 1
- EN-LI-100, Process Applicability Determination, Revision 18
- Procedure 7.14, Temporary Shielding Program, Revision 21
- Temporary Shielding Request #2009-70, T-105A Suction Accumulator Hot Spot, Revision 0
- VEN-M107, Charging Pumps Suction, Sheet 2086, Revision 7
- VEN-M110, Charging Pump P-55A Discharge, Sheet 173, Revision 5
- VEN-M110, Chemical Volume Control Charging Pump P-55B, Sheet 155, Revision 10
- VEN-M110, Chemical Volume Control Charging Pump P-55C Pipe Classification, Sheet 182, Revision 5

#### 1R19 Post Maintenance Testing

- AOP-23, Primary Coolant Leak, Revision 2
- AR 240885, C-2A, C-2B, C-2C Overload Relays, RHM Stated that They Do Not Recommend Testing or Periodic Replacement of These Relays
- AR 257971, Update Model WO 51625665
- AR 257972, Update Model WO 171767
- AR 257973, Update Model WO 51625666
- AR 257974, Update Model WO 51639743
- AR 257976, Update Model WO 51639728
- AR 257977, Update Model WO 196461
- CR-PLP-2015-03446, While Performing WO 422443-01, the As-Found Pressure of the Suction Bladder was 25 psi, August 19, 2015
- CR-PLP-2015-06102, While Performing Work on Suction Accumulator T-105C, As-Found Bladder Pressure was Discovered to be 23 psig, December 10, 2015
- CR-PLP-2016-00704, While Performing the Pressure Checks on T-105C, Charging Pump P-55C Suction Accumulator, the As-Found Pressure was Found to be Out of the Required Band, February 8, 2016
- CR-PLP-2016-01591, While Performing P-55C Suction Accumulator Pressure Check Post-Maintenance, Accumulator Pressure was Found High Out of Specifications, April 1, 2016
- CR-PLP-2016-02663, While Performing Pressure Test on T-105C, Suction Accumulator, for P-55C Charging Pump, the As-Found Pressure of the Tank Bladder was 21 psig, June 9, 2016
- CR-PLP-2016-03144, Oil in P-55C, Charging Pump, Weir Overflow, July 8, 2016
- CR-PLP-2016-03260, Received Alarm EK-1145, Sequencer Trouble, Unexpectedly, July 18, 2016
- CR-PLP-2016-03272, Diesel Generator Load Sequencer DBA/NSD Processor-CKT 2 (MC34R101) Failed, Controller was Removed from Plant per WO 451083 and Tagged as Non-Conforming, July 18, 2016
- CR-PLP-2016-03323, Nuclear Independent Oversight (NIO) Identified Problem: Concerns / Discrepancies were Noted During the Performance of WO 52534512-01, MC-34R101: Replace Sequencer Controller/Power Supply, July 20, 2016
- CR-PLP-2016-03325, Nuclear Independent Oversight (NIO) Identified Problem: A Discrepancy Exists Between Supply Chain Fleet Procedure and End User Site Instructions and Procedures in Regards to the Use of Electrostatic Discharge (ESD) Guidelines, July 20, 2016
- CR-PLP-2016-03684, While Performing Pressure Test on T-105C, Suction Accumulator for P-55C Charging Pump, the As-Found Pressure of the Tank Bladder was 20 psig, August 9, 2016
- CR-PLP-2016-03696, Work Request for Charging Pump P-55C, Perform CVC-M-22 Charging Pump Maintenance for P-55B and P-55C Section 5.15, Seal Cooling System Cleanliness, at the Next Opportunity, August 9, 2016

- CR-PLP-2016-03860, This is a Work Request to Inflate the Current Stock of Charging Pump Suction and Discharge Bladders, August 18, 2016
- CR-PLP-2016-04068, Found PI-1243, C-2B Oil Pressure Indicator, has Blank, Non-Responsive Display While Performing Calibration per WO 433459, August 30, 2016
- CR-PLP-2016-04078, While Working WO 52648092, Preventative Maintenance of Drain Trap 1218, It was Noted the Swagelock Fittings are Degrading and Needing Replacement, August 30, 2016
- CR-PLP-2016-04079, CK-CA40039, C-2B Discharge Check Valve Flange Fasteners Difficult to Tighten, August 30, 2016
- CR-PLP-2016-04081, C-2A/B/C, Instrument Air Compressors Have 6 Month and Annual Preventative Maintenance, August 30, 2016
- CR-PLP-2016-04399, During the Performance of WO 52608042-01 for PCV Replacement, it was Noted that we Assembled the Piping Utilizing the Incorrect Replacement PCV, September 19, 2016
- CR-PLP-2016-04411, This CR is Document Control of Non-Conforming Parts, September 19, 2016
- CR-PLP-2016-04426, Severity Level 4 Jacket Water Leak from the Hose on Top of K-6B, Emergency Diesel Generator 1-2, Cylinder 2L, September 20, 2016
- CR-PLP-2016-04434, Severity Level 2 Air Leak Identified on 1-2 Diesel Generator Air Start Piping, September 20, 2016
- CR-PLP-2016-04435, EK-0555, Diesel Generator Breaker 152-213 Trip While Attempting to Parallel K-6B, Emergency Diesel Generator 1-2 to Bus 1D, September 20, 2016
- CR-PLP-2016-04436, Severity Level 3 Lube Oil Leak from the Seal of P-905B, Diesel Generator 1-2 Pre-Lube Oil Pump, September 20, 2016
- CR-PLP-2016-04505, After Replacement of PCV-1489 and PCV-1490, Emergency Diesel Generator 1-2 K-6B Starting Air Pressure Control Valves, the Starting Air Pressure Control Pressures Have Lowered, September 23, 2016
- CR-PLP-2016-04523, Some Deficiencies Noted During MV-CVC2097, Charging Pump P-55B Suction Manifold Flush Outlet Valve Maintenance, September 23, 2016
- CR-PLP-2016-04526, After Removal of the Bonnet Assembly of MV-CVC2097, It was Discovered that the Seating Surface was Worn Enough that Unable to Re-Install a New Disc and Get 90% Contact on a Blue Check, September 23, 2016
- CR-PLP-2016-04534, At Approximately 1200 on September 24, 2016, P-55B Developed a Leak on the Discharge Manifold Flush Line, September 24, 2016
- CR-PLP-2016-04545, The Failed Piping Associated with P-55B Charging Pump, Removed from System Under WO 456677, September 25, 2016
- CR-PLP-2016-04632, Documenting Scope Change to WO 390213-01 After Discovery that Prefabricated Welded Manifold for P-55B Discharge Manifold Flush Line Would Not be Installable Due to Interferences, September 28, 2016
- DBD-5.01, Diesel Engine and Auxiliary Systems, Revision 7
- E-209, Safety Injection and Sequence Loading Circuit No. 2, Sheet 2A Revision 4
- EC 49790, Update P&ID M-202, Sheet 1B to Provide Piping Line Class Information for Charging Pump P-55A/B/C Discharge Manifold Flush Inlet Lines, Revision 0
- EN-WM-105, Planning, Revision 16
- EN-WM-107, Post-Maintenance Testing, Revision 5
- M-202, Piping & Instrument Diagram, Chemical & Volume Control System, Sheet 1A, Revision 64
- M-202, Piping & Instrument Diagram, Chemical & Volume Control System, Sheet 1B, Revision 59
- M-212, Piping & Instrument Diagram, Service & Instrument Air System, Sheet 1B, Revision 1
- M-212, Piping & Instrument Diagram, Service & Instrument Air System, Sheet 1, Revision 84

- Operations Logs, September 24, 2016
- QO-1, Safety Injection System, Revision 68
- SOP-22, Emergency Diesel Generators, Revision 70
- SOP-2A, Chemical and Volume Control System, Revision 86
- VEN-M41, Instrument Air Compressor C-2A, C-2B, and C-2C, Sheet 1, Revision 5
- WO 390213, MV-CVC2211, MV-CVC2304, MV-CV2205 & MV-CVC2305; Replace Valves
- WO 415440, E-22B (K-6B); Replace Jacket Water Cooler
- WO 424883, MV-CVC2097; Handwheel is Floppy and Stem Rounded – Replace Valve
- WO 438860, MV-CA10443/10444; Replace Swagelok Fittings and Valves to DT-1224
- WO 443407, SV-1279 (C-2B); Replace Solenoid Valve and 1OL Overload Relay
- WO 451083, MC-34R101; Replacement
- WO 456242, 152-213; Diesel Generator 1-2 Output Breaker, Failed to Close
- WO 52534512, MC-34R101; Replace Sequencer Controller/Power Supply
- WO 52608042, PCV-1489; K-6B Air Start PCV Post-Maintenance
- WO 52648092, DT-1218; Drain Trap Preventative Maintenance
- WO 52648093, C-2B; Annual Plant Air Compressor Preventative Maintenance
- WO 52679330, DT-1224; Disassemble, Clean, and Inspect Drain Trap
- WO 52679331, C-2B; 6 Month Preventative Maintenance, Heat Exchangers and Filters
- WO 52699206, P-55C (T-106C) Discharge Accumulator PM
- WO 52699207, P-55C (T-105C) Accumulator Pressure Test

#### 1R22 Surveillance Testing

- EOP Setpoint Basis, Revision 8
- Admin 4.19, PCS Leak Rate Monitoring Program, Revision 6
- AOP-23, Primary Coolant Leak Basis, Revision 0
- AOP-23, Primary Coolant Leak, Revision 2
- Basis Document for QI-5, Containment High Pressure Tests, Revision 0
- Basis Document for RI-3, High Pressurizer Pressure Channel Calibration, Revision 6
- CR-PLP-2015-06115, The PCS Daily Leakrate will Exceed Action Level 1 for Nine Consecutive Days Greater than Baseline Mean if an Elevated Leakrate is Recorded for 12/13/15, December 12, 2015
- CR-PLP-2016-00819, NPO Found Two Air Leaks on K-6B Diesel Air Start System While Performing Work Order Task for K-6B, Snoop Check 1-2 EDG Air Starting System, February 15, 2016
- CR-PLP-2016-00820, During Performance of MO-7A-2, Field Voltage Was Low Out of the Normal Range, February 15, 2016
- CR-PLP-2016-02652, DWO-1 PCS Leak Rate Performed June 9, 2016, had Two of the Last Three Consecutive Unidentified Leak Rates Greater than Two Standard Deviations from the Baseline Mean, June 9, 2016
- CR-PLP-2016-02909, DWO-1 PCS Leak Rate Performed June 24, 2016, had an Unidentified Leak Rate (ULR) Greater than the Baseline Mean Plus 3 Standard Deviations per Admin 4.19, Placing the ULR in Action Level 3, June 24, 2016
- CR-PLP-2016-03262, During Performance of MO-7A-2, EDG Start Time on One Air Start Motor, ASM-2B, was Slow, July 18, 2016
- CR-PLP-2016-03583, An Operator Inadvertently Omitted the Unidentified Leak Rate Reading from the PCS Leak Rate Narrative Log Report on July 19, 2016 at 0315, August 3, 2016
- CR-PLP-2016-03918, NRC Resident Identified that During the Performance of QO-5, Containment High Pressure Test, the Technical Specification LCO Times Entered into the Operations Narrative Logs Did Not Correspond with the Actual Time the LCO was Entered or Exited, August 23, 2016

- DWO-1, Operator's Daily/Weekly Items Modes 1, 2, 3, and 4, Revision 107
- E-207, Schematic Diagram, Containment High Pressure, High Radiation, and SIRW Tank Low Level, Sheet 1, Revision 29
- E-207, Schematic Diagram, Containment High Pressure, High Radiation, and SIRW Tank Low Level Detection Channel No. 2 Circuit, Sheet 2, Revision 12
- E-207, Schematic Diagram, Containment High Pressure, High Radiation, and SIRW Tank Low Level Detection Channel No. 3 Circuit, Sheet 3, Revision 0
- E-207, Schematic Diagram, Containment High Pressure, High Radiation, and SIRW Tank Low Level Detection Channel No. 4 Circuit, Sheet 4, Revision 0
- E-208, Schematic Diagram, Containment Isolation on High Pressure or High Radiation, Circuit No. 1, Sheet 1, Revision 20
- E-208, Schematic Diagram, Containment Isolation on High Pressure or High Radiation, Circuit No. 2, Sheet 1A, Revision 1
- E-208, Schematic Diagram, Containment Isolation on High Pressure or High Radiation, Sheet 2, Revision 30
- E-84, Pressurizer Pressure Control and Measurement Channel Instrumentation Circuit No. 3, Sheet 2B, Revision 3
- EA-ELEC08-97-02, Uncertainty Calculation for Reactor Protection System and ESFAS Pressurizer Pressure Trip Functions, Revision 2
- EN-OP-115-09, Log Keeping, Revision 2
- M-201, Primary Coolant System, Sheet 1, Revision 90
- M-201, Primary Coolant System, Sheet 2, Revision 67
- M-214, Piping & Instrument Diagram, Lube Oil, Fuel Oil, and Diesel Generator Systems, Sheet 1, Revision 79
- M-218, Piping & Instrument Diagram, Heating, Ventilation and Air Conditioning: Containment Building, Sheet 2, Revision 62
- Operation's Unidentified Leakage Data Analysis Worksheets, January 1, 2016-September 30, 2016
- QI-5, Containment High Pressure Surveillance Test, Revision 8
- QO-21, Inservice Test Procedure for – Auxiliary Feedwater Pumps, Revision 46
- RI-3C, Pressurizer Pressure Channel C Calibration, Revision 5
- WO 439996, T-31D (K-6B); Two Air Leaks on Piping Associated with Tank
- WO 451084, ASM-2B; Troubleshoot Slow Start Time

### 2RS3 In-Plant Airborne Radioactivity Control and Mitigation

- CR-HQN-2007-00346, Technical Bases for the Entergy Radiation Protection Program, June 4, 2007
- CR-PLP-2015-04402, HEPA Unit Determined to be Off, September 28, 2015
- CR-PLP-2015-04629, MSA Optimair PAPR Stopped Working, October 3, 2015
- CR-PLP-2016-03846, Grade L Breathing Air Analysis Not Completed for 2015, August 17, 2016
- EN-RP-131, Air Sampling, Revision 15
- EN-RP-404, Operation and Maintenance of HEPA Vacuum Cleaners and HEPA Ventilation Units, Revision 6
- EN-RP-501, Respiratory Protection Program, Revision 5
- EN-RP-502, Inspection and Maintenance of Respiratory Protection Equipment, Revision 9
- EN-RP-504, Breathing Air, Revision 3
- LO-HQNLO-2007-00090, Technical Bases for the Entergy RP Program, June 20, 2007
- LO-PLPLO-2015-00096, Pre-NRC Inspection In-Plant Airborne Radioactivity Control and Mitigation Snapshot Self-Assessment, May 12, 2016



- NPO Supplied Air Respirator User's Manual
- PLLP-FBT-SCOTTSCBA75, SCOTT Air-Pak 75 Self-Contained Breathing Apparatus, Revision 3
- Posi3 USB Test Results, November 2014 and November 2015
- Respirator Qualification Records, Various Dates
- WO 52596692, Analysis of Scott Liberty One Breathing Air Systems
- WO 52613885, Analysis of Scott Liberty One Breathing Air Systems
- WO 52630163, Analysis of Scott Liberty One Breathing Air Systems
- WO 52696861, Analysis of Scott Liberty One Breathing Air Systems

#### 2RS4 Occupational Dose Assessment

- CR-PLP-00780, Minor Violation Related to a Failure to Record and Report Calculated Shallow Dose Equivalent, February 11, 2016
- CR-PLP-2015-03667, Dosimetry Relocation Criteria, September 3, 2015
- CR-PLP-2015-04323, Whole Body DLR Worn With Multipack, September 26, 2015
- CR-PLP-2015-05360, Lapel Air Sampling Not Performed in Accordance With Procedure Requirements, Revision 1
- CR-PLP-HQN-2016-00357, NRC TIA-2014-09, March 15, 2016
- EN-RP-203 Attachment 9.3, Dosimetry Investigation Reports, Various Dates
- EN-RP-203, Dose Assessment, Revision 7
- EN-RP-204, Special Monitoring Requirements, Revision 9
- EN-RP-205, Prenatal Monitoring, Revision 3
- EN-RP-314, Passive Monitor Sensitivity Testing, Revision 0
- Evaluation of the Thermo PM-7 for Use as a Passive Monitor at Palisades Nuclear Plant, June 21, 2011
- Internal Dose Calculations Based on Whole Body Counting, Various Dates
- LO-PLPLO-2015-00095, Occupational Dose Assessment & Performance Indicator Verification Snapshot Self-Assessment, May 10, 2016
- Shallow Dose Equivalent Dose Assessment, October 7, 2015
- TID 2016-04, Annual Evaluation of Palisades Nuclear Power Station's Prospective Evaluation for the Year 2015, Revision 0

#### 4OA1 Performance Indicator Verification

- DWO-1, Operator's Daily/Weekly Items, Modes 1, 2, 3, and 4, Revision 107
- EN-LI-114, Regulatory Performance Indicator Process, Revision 7
- NRC Performance Indicators, Barrier Integrity – Reactor Coolant System Leakage (BI02), 3<sup>rd</sup> Quarter 2015
- NRC Performance Indicators, Barrier Integrity – Reactor Coolant System Leakage (BI02), 4<sup>th</sup> Quarter 2015
- NRC Performance Indicators, Barrier Integrity – Reactor Coolant System Leakage (B102), 1<sup>st</sup> Quarter 2016
- NRC Performance Indicators, Barrier Integrity – Reactor Coolant System Leakage (B102), 2<sup>nd</sup> Quarter 2016
- NRC Performance Indicators, Mitigating Systems Performance Indicator, High Pressure Injection (MS07), July 2015 Through June 2016
- NRC Performance Indicators, Mitigating Systems Performance Indicator, Residual Heat Removal (MS09), July 2015 Through June 2016
- Operation's Daily Logs
- Palisades MSPI Basis Document, December 21, 2011

#### 4OA2 Problem Identification and Verification

- EN-AD-103, Document Control and Records Management Programs, Revision 18
- CR-PLP-2016-02883, Tracking Condition Report to Track Measuring and Test Equipment Non-Conformance Reports, June 22, 2016
- CR-PLP-2015-04476, Both Arbiters 1040C from M&TE Department are out of Calibration, September 29, 2015
- CR-PLP-2016-03289, Palisades Has Not Adequately Implemented Controls to Ensure that Measuring and Test Equipment (M&TE) Meet the Regulatory Requirements for Calibration, Storage and Traceability of M&TE, July 19, 2016
- EN-MA-105, Control of Measuring and Test Equipment (M&TE), Revision 11
- QA-10-2016-PLP-1, Maintenance, June 6, 2016 – August 1, 2016
- PTE-I-3, Calibration of M&TE Gauges, Revision 14
- WO 52544847, EAI-0004, EWI-0009 and EVI-0002 Calibrate Meters
- CR-PLP-2016-00458, Post-Torque Check on Torque Wrench M&TE 021694 50-250 ft/lbs, Would Only Torque at 196 ft/lbs, January 26, 2012
- CR-PLP-2016-00662, Operability Testing of the 1-1 Diesel Generator is Delayed Due to Failure of the Wilmar Timer, February 4, 2016
- CR-PLP-2016-00664, Wilmar Timer M&TE ID#007856 was Returned by Operations for Failure to Function Properly, February 4, 2016
- CR-PLP-2016-00803, Two Items of M&TE Were Returned in a Condition Other than as Issued, February 12, 2016
- CR-PLP-2016-03861, M&TE Lab in the Old Administrative Building Does Not Consistently Maintain the Temperature and Humidity Needed to Provide Proper Storage, August 18, 2016
- CR-PLP-2016-00173, Tracking CR to Track M&TE Non-Conformance Report Issued During the 1<sup>st</sup> Quarter of 2016, January 11, 2016
- CR-PLP-2016-00357, Empro 1200 Amp Shunt M&TE 23914 Used for Testing Failed the Resistance Value, January 19, 2016
- CR-PLP-2016-02771, The Certificate of Calibration for Measuring and Test Equipment (M&TE) ID 100076 States that Some Functions of the Equipment Do Not Meet the “Four to One” Uncertainty Rule, June 16, 2016
- CR-PLP-2016-02776, Measuring and Test Equipment (M&TE) are Being Calibrated in a Non-Environmentally Controlled or Monitored Area, June 16, 2016
- CR-PLP-2016-02777, The Review and Approval of Certificates of Calibration for Measuring and Test Equipment (M&TE), After Being Received from a Vendor, are Not Being Documented, June 16, 2016
- CR-PLP-2016-02778, Thermocouples are Not Calibrated or Labeled, June 16, 2016
- CR-PLP-2016-02957, During the Calibration of Pressure Gauge PAL 094 the Pressure Standard in Use (M&TE ID#100126) was Found to be Erratic, June 28, 2016
- CR-PLP-2016-03184, Pressure Gauge #ENP 010201 As-Found Data Could Not be Obtained, July 12, 2016
- CR-PLP-2016-03691, DMA-35N Maintenance and Test Equipment #011988 Specific Gravity Tester Gave Low and Inconsistent Readings, August 9, 2016
- CR-PLP-2016-0003742, It was Recommended Retesting the Following Breaker 52-217, Charging Pumps to Redundant High Pressure Safety Injection MO-3072, August 11, 2016
- CR-PLP-2016-03743, During Evaluation of M&TE #10-6353 Non-Conformance, it was Recommended Retesting the Following Breaker 52-187, Boric Acid Gravity Feed MO-2170, August 11, 2016

#### 4OA5 Other Activities

- AOP-26, Loss of Spent Fuel Pool Cooling, Revision 3
- COP-27, Spent Fuel Pool System Chemistry, Revision 38
- CR-PLP-2013-4775, Spent Fuel Pool Criticality Analysis Not Updated for Extended Power Uprate, November 5, 2013
- CR-PLP-2016-2841, Metamic Coupon Loss of Weight, June 20, 2016
- DBD-2.07, Spent Fuel Pool Cooling System, Revision 5
- DWC-11D, Safeguards Boron Sample From Spent Fuel Pool, Revision 12
- DWG 6136E11, Palisades Spent Fuel Storage Rack Assembly, Revision 2
- EA-CRIT-99-01, Accounting for Axial Burnup in 2D Criticality Calculations, Revision 0
- EA-CRIT-99-01, Accounting for Burnup Effects in 2D Criticality Calculations, Revision 0
- EA-EC32159-05, Criticality Safety Evaluation for Region 1 Spent Fuel Racks, Revision 0
- EA-SFP-98-03, Palisades Region II Spent Fuel Pool Criticality Calculations Sensitivity to Manufacturing Tolerances and Burnup Credit, Revision 0
- EA-SFP-98-04, Region II Fuel Pool Criticality Calculations, Revision 0
- EA-SFP-99-03, Palisades New Fuel Storage, Fuel Pool and Fuel Handling Criticality Safety Analysis, Revision 0
- EN-MA-119, Material Handling Program, Revision 25
- FHS-M-23, Movement of Heavy Loads in the Spent Fuel Pool Area, Revision 37
- HI-2115004, Licensing Report for Replacement of the Palisades Region 1 Spent Fuel Pool Storage Racks, Revision 1
- Palisades New Fuel Storage, Fuel Pool, and Fuel Handling Criticality Analysis, Revision 0
- SOP-27, Fuel Pool System, Revision 70
- SOP-28, Fuel Handling System, Revision 53
- Spent Fuel Chemistry Results from 1/1/2014 to 4/17/2016
- Spent Fuel Pool Region 1 and 2 Loading, August 2016
- Spent Fuel Pool System Health Report, August 15, 2016
- WO 52600054, L-3; Fuel Pool Building Crane

## LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Documents Access and Management System
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Reasonably-Achievable
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
CRHVAC	Control Room Heating and Ventilation System
CS	Containment Spray
DBA	Design Basis Accident
DG	Diesel Generator
ECCS	Emergency Core Cooling System
HPSI	High Pressure Safety Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
LCO	Limiting Condition for Operation
LPSI	Low Pressure Safety Injection
M&TE	Measurement & Testing Equipment
MSHA	Mine Safety and Health Administration
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NIOS	Nuclear Independent Oversight
NIOSH	National Institute for Occupational Safety and Health
NRC	U.S. Nuclear Regulatory Commission
NSD	Normal Shutdown
PI	Performance Indicator
SCBA	Self-Contained Breathing Apparatus
SSC	Structures, Systems and Components
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order

C. Arnone

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Sincerely,

**/RA/**

Eric Duncan, Chief  
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