



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

July 26, 2019

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

SUBJECT: PALISADES NUCLEAR PLANT, UNIT 1—INTEGRATED INSPECTION
REPORT 05000255/2019002

Dear Mr. Arnone:

On June 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Palisades Nuclear Plant, Unit 1. On July 9, 2019, the NRC inspectors discussed the results of this inspection with Mr. D. Corbin, Acting Site Vice President and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or significance or severity of the violation documented in this inspection report, 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 the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at Palisades.

If you disagree with a cross-cutting aspect assignment 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC Resident Inspector at Palisades.

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

Sincerely,

/RA/

Charles H. Norton, Acting Chief
Branch 2
Division of Reactor Projects

Docket No. 05000255
License No. DPR-20

Enclosure:
As stated

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Letter to Charles Arnone from Charles Norton dated July 26, 2019

SUBJECT: PALISADES NUCLEAR PLANT, UNIT 1—INTEGRATED INSPECTION
REPORT 05000255/2019002

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number: 05000255

License Number: DPR-20

Report Number: 05000255/2019002

Enterprise Identifier: I-2019-002-0061

Licensee: Entergy Nuclear Operations, Inc.

Facility: Palisades Nuclear Plant

Location: Covert, MI

Inspection Dates: April 1, 2019 to June 30, 2019

Inspectors: B. Bartlett, Project Engineer
N. Feliz-Adorno, Senior Reactor Inspector
E. Fernandez, Reactor Inspector
M. Holmberg, Senior Reactor Inspector
M. Jones, Reactor Inspector
P. Laflamme, Senior Resident Inspector
J. Mancuso, Resident Inspector
V. Myers, Senior Health Physicist
J. Winslow, Resident Inspector

Approved By: Charles H. Norton, Acting Chief
Branch 2
Division of Reactor Projects

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an integrated inspection at Palisades Nuclear Plant in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

List of Findings and Violations

Inadequate Ultrasonic Examination of Reactor Head Nozzles Results in Operation with Pressure Boundary Leakage			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000255/2019002-01 Open/Closed	[H.2] - Field Presence	71111.08P
<p>The inspectors identified a Green finding and associated Non-Cited Violation (NCV) of Technical Specification (TS) 3.4.13.a, “Reactor Coolant System Operational Leakage,” for the licensee’s failure to place the plant in Mode 3 (Hot Standby) within 6 hours and Mode 5 (Cold Shutdown) within 36 hours with the plant in Mode 1 (Power Operation) during a portion of operating Cycle 26 with pressure boundary LEAKAGE present at reactor vessel closure head (RVCH) penetration nozzle 25. In particular, the licensee’s UT contractor mischaracterized flaw indications, and thus had not identified them as flaws before they resulted in operation with the pressure boundary LEAKAGE. The inspectors determined the condition was reasonably foreseeable and preventable by the licensee as there were several weaknesses in the licensee’s oversight of its contractor that mischaracterized the nozzle flaw indications.</p>			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000255/2013005-06	Qualification Basis for Safety-Related Agastat Relays and Molded Case Circuit Breakers	71152	Closed
LER	05000255/2018003-00	LER 2018-003-00 — Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations	71111.08P	Closed
URI	05000255/2018004-01	Potential Failure to Identify/Correct Rejectable Flaws in Reactor Pressure Vessel Head Penetration	71111.08P	Closed

PLANT STATUS

The plant began the inspection period at rated thermal power, and remained at or near rated thermal power for the remainder of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

External Flooding Sample (IP Section 03.04) (1 Sample)

- (1) The inspectors evaluated readiness to cope with external flooding from May 23 to May 28, 2019

Summer Readiness Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated summer readiness of offsite and alternate alternating current (AC) power systems on May 28, 2019

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Right Train Control Room Heating, Ventilation, and Air Conditioning (CRHVAC) during Left Train CRHVAC maintenance on May 8 and 9, 2019
- (2) Safeguards Transformer 1-1 System on May 28, 2019
- (3) P-66A, Right Train High Pressure Safety Inspection System following check valve testing on June 27, 2019

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Fire Area 9: Screen House/Intake Structure during the week of April 1, 2019
- (2) Fire Area 24: Auxiliary Feed Water (AFW) Pump Room during the week of April 1, 2019
- (3) Fire Area 1: Control Room and Fire Area 33: Technical Support Center during the week of April 1, 2019
- (4) Fire Area 29-31: Mechanical Equipment Rooms, on May 24, 2019
- (5) Fire Area 4: 1C 2.4KV Switchgear Room on June 20, 2019

71111.07T - Heat Sink Performance

Triennial Review (IP Section 02.02) (3 Samples)

The inspectors evaluated heat exchanger/sink performance on the following:

- (1) Containment Air Coolers VHX-1, VHX-2, VHX-3, Cooled by Service Water
- (2) Diesel Generator 1-2 Jacket Water Heat Exchanger, Cooled by Service Water
- (3) Ultimate Heat Sink, IP 71111.07T Sections 02.02.d.5 and 02.02.d.6 were completed

71111.08P - Inservice Inspection Activities (PWR)

PWR Inservice Inspection Activities Sample (IP Section 03.01) (1 Partial)

- (1) (Partial)
The inspectors verified that the reactor coolant system boundary, steam generator tubes, reactor vessel internals, risk-significant piping system boundaries, and containment boundary are appropriately monitored for degradation and that repairs and replacements were appropriately fabricated, examined and accepted by reviewing the following activities from June 17, 2019 to June 27, 2019:

03.01.b - Pressurized-Water Reactor Vessel Upper Head Penetration Examination Activities
 - Reactor head penetration nozzle nonvisual examinations completed during the 2018 refueling outage and during previous outages

71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

Licensed Operator Regualification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated a Licensed Operator Regualification As Found Exam on June 4, 2019

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Control Room Ventilation System during the week of April 1, 2019
- (2) Chemical and Volume Control System on June 24, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Elevated risk for breaker 52-1214, Motor Control Center 22 and 24 480 volt feeder breaker maintenance on May 1, 2019
- (2) Elevated risk due to geomagnetic storm, planned battery charger #1 maintenance and testing, and dry fuel cask inspections during the week of May 13, 2019
- (3) Elevated risk for planned P-7B, Service Water Pump maintenance and emergent maintenance on 1-1 Emergency Diesel Generator (EDG) during the week of May 6, 2019
- (4) Elevated Risk due to 1-1 EDG speed droop relay replacement on June 20, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Evaluation of 2.4 KV Safeguards Power Supply on April 25, 2019
- (2) 1-1 EDG operability determination after failure to start during surveillance testing on May 7, 2019
- (3) Evaluation of Right Channel Safety Injection Actuation System test circuitry on May 24, 2019
- (4) Evaluation of 1-1 EDG Indicating Lights for Parallel/Unit Selector Switch on June 4, 2019

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Engineering Change (EC) 81531, Main Transformer Cooler Bank 5 Pump from Temporary Power and EC 82148 Supplemental Cooling to EX-10 Main Transformer from May 31 through June 20, 2019

71111.19 - Post-Maintenance Testing

Post Maintenance Test Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the following post maintenance tests:

- (1) QO-5 after CV-3070, P-66B High Pressure Safety Injection Pump Subcooling Valve Actuator maintenance on April 8, 2019
- (2) MO-33B after Right Train CRHVAC maintenance on April 19, 2019
- (3) 1-1 EDG Engine A Start Relay replacement on May 8, 2019
- (4) Testing after Battery Charger #1 preventative maintenance on May 13, 2019
- (5) 1-1 EDG speed droop relay replacement on June 20, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

FLEX Testing (IP Section 03.02) (1 Sample)

- (1) P-1003, FLEX Pump One Year Operational Test as documented in WO 52817904 on April 16, 2019

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) QO-20A, Low Pressure Safety Injection Pumps on June 18, 2019

Surveillance Tests (other) (IP Section 03.01) (3 Samples)

- (1) QO-34, Control Rod Exercising on April 23, 2019
- (2) QI-39, Auxiliary Feedwater Actuation System Logic Test on May 15, 2019
- (3) RE-132, Diesel Generator 1-2 Load Reject Test on May 20, 2019

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (2 Samples)

- (1) The inspectors evaluated an Emergency Response Organization (ERO) Drill on April 10, 2019
- (2) The inspectors evaluated an ERO Drill on May 22, 2019

RADIATION SAFETY

71124.05 - Radiation Monitoring Instrumentation

Calibration and Testing Program (IP Section 02.02) (1 Partial)

The inspectors evaluated the calibration and testing program implementation.

(1) (Partial)

The inspectors completed all items in section 02.02 with the exception of 02.02(c):

Alarm Setpoint and Calibration Method Check of Personnel Contamination Monitors, Portal Monitors and Small Article Monitors

- SAM 54, SN 285662
- GEM-5, SN 1712-186
- ARGOS-5AB, SN 1712-183

Failure to Meet Calibration or Source Check Acceptance Criteria

- Telepole 6605-093, 01/28/2019
- HD-09A Air Sampler 23697, 01/10/2019
- HD-09A Air Sampler 17380, 01/10/2019

Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors evaluated radiation monitoring instrumentation during plant walkdowns.

(1) The inspectors reviewed the following:

Portable Survey Instruments

- Ludlum 12-4, SN 326407
- Telepole, SN 6600-038
- RO-20, SN 11838
- Ludlum 117, SN 12045
- Ludlum 43-92, SN 273222
- AMP 100, SN 600798

Source Check Demonstration

- Telepole, SN 6600-038
- RO-20, SN 11838
- Ludlum 12-4, SN 326407

Area Radiation Monitors and Continuous Air Monitors

- Area monitor for radiologically controlled area hallway
- Area monitor for radioactive waste processing area East
- Area monitor for radioactive waste processing area West
- Air monitoring system for truckbay
- Air monitoring system for hot machine shop
- Air monitoring system for tool decon area

Personnel Contamination Monitors, Portal Monitors and Small Article Monitors

- SAM 54, SN 285662
- ARGOS-5AB, SN 1712-185
- GEM-5, SN 091

71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

Instrumentation and Equipment (IP Section 02.04) (1 Sample)

The inspectors reviewed the following radioactive effluent discharge system surveillance test results:

- (1) The inspectors reviewed effluent flow measurements, air cleaning systems, and accident range effluent monitors

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (1 Sample)

- (1) Unit 1 (10/01/2018–03/31/2019)

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (1 Sample)

- (1) Unit 1 (April 1, 2018 - March 31, 2019)

MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (1 Sample)

- (1) Unit 1 (April 1, 2018 - March 31, 2019)

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

- (1) Unit 1 (10/01/2018–03/31/2019)

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual
Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample.
(IP Section 02.16) (1 Sample)

- (1) Unit 1 (10/01/2018–03/31/2019)

71152 - Problem Identification and Resolution

Annual Follow-Up of Selected Issues (IP Section 02.03) (2 Samples)

The inspectors reviewed the licensee’s implementation of its corrective action program related to the following issues:

- (1) Licensee Cause Evaluation for Missed Flaw Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations as documented in CR-PLP-2018-05857 between June 17 and June 27, 2019
- (2) Adverse Cause Analysis for RPS Channel B Failure Resulting in an Automatic Reactor Trip on January 9, 2019, as documented in CR-PLP-2019-00117

Semiannual Trend Review (IP Section 02.02) (1 Sample)

- (1) The inspectors reviewed the licensee’s corrective action program for potential adverse trends with a focus on human performance issues that might be indicative of a more significant safety issue during the period from January 1, 2019 to June 30, 2019

71153 – Follow-Up of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000255/2018-003-00 Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations. ADAMS Accession: ML19003A239 The circumstances surrounding this LER are documented in the Results Section of this Report

INSPECTION RESULTS

Observation: Semi-Annual Trend Review	71152
<p>The inspectors’ review was focused on human performance issues, but also considered the results of daily inspector CAP item screening and licensee trending efforts. The inspectors’ review nominally considered the 6 month period of January 2019 through June 2019, although some examples expanded beyond those dates when warranted by the scope of the trend.</p> <p>The inspectors reviewed condition reports, trend reports, and human performance evaluations to address performance oversight at the site. During the inspection period, the NRC inspectors noted a few challenges where low level human performance errors occurred in multiple departments, including Operations, Maintenance, and Projects. Examples included an inadvertent fuse disconnect during maintenance activities which resulted in an unanticipated momentary loss of the 1D DC distribution system during live-dead-live checks, component cooling water system miss-alignment to two control rod drive mechanism housings resulting in a 40F increase in housing temperatures, bumping open a Main Steam Isolation Valve Bypass Valve motor power supply breaker with a fire hose during a planned fired drill, and hanging a danger tag on the wrong drain valve on the plant heating boiler system and then not identifying the error until after maintenance had been completed. Although the above examples did not challenge safety function or equipment reliability, these</p>	

issues illustrated a decline in the use of human performance tools to prevent errors while performing work in the field and signs of complacency; all of which could potentially impact nuclear safety.

The licensee appropriately entered these issues into the CAP and completed timely evaluations of these issues to determine the causes of the performance decline. Corrective actions included training, site-wide communications reinforcing standards and expectations, and a re-emphasis on the following human performance tools: pre-job briefs; procedure use and adherence; and verification and validation activities. The inspectors determined that the corrective actions taken to date appeared to be effective at addressing the identified gaps and plan to continue to evaluate these actions during routine observations and inspections.

Observation: RPS Channel B Failure Resulting in an Automatic Reactor Trip	71152
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On January 9, 2019, the licensee experienced an automatic reactor trip and valid actuation of the auxiliary feedwater (AFW) system. The direct cause of the event was identified to be a loss of all power to the reactor protection system (RPS) BD matrix due to shorted capacitors associated with the RPS B channel and a blown fuse association with the RPS D channel BD matrix power supply. The inspectors reviewed the licensee's final adverse cause analysis after a failure evaluation of the RPS D channel BD matrix power supply and fuse was conducted.

The inspectors reviewed the results of the failure evaluation and discussed these results with the licensee. Using the results of the failure evaluation, the licensee identified that the RPS D channel BD matrix power supply module was no longer meeting its efficiency rating and was a causal factor. Additional corrective actions from the failure evaluation included creation of a periodic maintenance activity to perform periodic thermography on the power supplies to identify potential vulnerabilities to similar failure modes. The inspectors determined that the corrective actions were appropriate and timely based on the safety significance of the issue.

Observation: Licensee Cause Determination - Missed Flaw Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations	71152
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On November 10, 2018, with the plant in Mode 6, during bare metal visual inspections of the reactor vessel closure head (RVCH), dried boric acid was identified in the area of reactor head nozzle 25, indicative of a through-wall flaw. The licensee's contractor had recently completed ultrasonic (UT) examinations of this nozzle and the inspectors inquired if the licensee's contractor had identified flaw indications or evidence of leakage during this examination. The inspectors' questions prompted the licensee's contractor to re-review nozzle 25 UT data and the contractor staff subsequently identified an inside diameter (ID) connected flaw indication and UT indications of leakage within the annulus behind nozzle 25 (e.g. UT leak path). Subsequently, the contractor performed a re-review of all nozzle UT data and subsequently applied an eddy current (ET) technique to the ID surface of nozzles 34 and 36 and identified an additional two nozzles with ID flaw indications (nozzles 33 and 36). The results of the licensee's 2018 RVCH UT examination were documented in report 180-9291875-000 "Palisades Unit 1, 1RO26 Reactor Head Inspection Report" and included the following information: penetration nozzle 25 had an inside diameter connected axial 100 percent through-wall flaw indication with a 1.4 inch length; penetration nozzle 33 contained an inside diameter connected axial part through-wall flaw indication with a 0.890 inch length; and penetration nozzle 36 had two inside diameter connected part through-wall off-axis flaws that were recorded as 0.514 inch and 0.729 inch in length respectively. As a corrective action, the licensee performed just-in-time training on the flaw characteristics observed in nozzles 25

and 33 and this training was applied to re-inspection of the remainder of the reactor head nozzle population to ensure all flawed nozzles were identified. The licensee repaired the affected nozzles 25, 33 and 36 utilizing the contractor's (Framatome) half-nozzle replacement method prior to returning the RVCH to service. On January 3, 2019, the licensee issued LER 2018-003-00 "Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations" and reported this in accordance with 50.73(a)(2)(ii)(A) as a condition of the nuclear power plant, including its principal safety barriers, being seriously degraded. Additional information on the event can be found in Section 71153 of this report.

The licensee documented an apparent cause evaluation (ACA) for boric acid found at control rod drive nozzle 25 in CR-PLP-2018-05857. In this ACA, the licensee identified two direct causes of the boric acid deposit found at control rod drive nozzle 25: Direct Cause 1 - the Palisades head nozzle material (Inconel Alloy 600) which is susceptible to primary water stress corrosion cracking (PWSCC), resulted in a through-wall flaw in nozzle 25, and Direct Cause 2 - the contractor examiner's failure to resolve the ID surface initiated flaw in nozzle 25. Additionally, the licensee identified two causal factors: Causal Factor 1 – Flaws that initiate on the outside diameter are the primary area of focus during head penetration exams, resulting in the examiner failing to identify specific characteristics of ID initiated flaws. As a result, the ID initiated flaws were not identified and corrected prior to the through-wall flaw in 1R26 (a.k.a. - Palisades 2018 refueling outage); and Causal Factor 2 – ET was removed as an examination technique and therefore, the ID initiated flaws were not resolved prior to developing a through-wall flaw in 1R26.

The inspectors reviewed the licensee's cause investigation, extent of condition, and extent of cause for this event associated with the identification of degraded nozzles in the RVCH to ensure that the licensee identified the full extent of performance errors and had established actions to correct these errors. Additionally, the NRC Vendor Inspection Branch completed a review of the contractor's root cause investigation and corrective actions for this event as this issue potentially impacted other licensees (reference NRC report 99901300/2019-201). The inspectors confirmed the licensee established an adequate basis for the Direct Causes 1 and 2 in the ACA completed under CR-PLP-2018-05857. However, Causal Factor 2 associated with the removal of the ET technique, did not have a sufficient basis for the inspectors to independently confirm this as a causal factor because both ET and UT are qualified to detect ID flaws. Specifically, the UT technique applied was demonstrated as qualified to detect ID flaws and ET was also qualified to detect ID flaws, so either method would be sufficient to detect PWSCC. Therefore, the inspectors could not substantiate Causal Factor 2 and considered this a weakness in the licensee's ACA. Additionally, the scope of the licensee's ACA was limited to planar flaws within the RVCH nozzles and did not include the contractor's failure to identify evidence of a UT leak path signal at nozzle 25. The UT leak path method is relied on to identify flaws that may exist in the J-groove weld of a nozzle and which may not be detected by visual examinations looking for evidence of leakage on the RVCH. To address this issue, the licensee's contractor assigned an action to correct this error during the 2018 outage (e.g. just in time training and procedure changes) and therefore the inspectors were not concerned that the narrow scope of the licensee's ACA had adversely impacted the ability to detect the full extent of degraded RVCH nozzles and J-groove welds.

In response to the missed flaw indications, the licensee conducted a self-assessment of the programs for contractor oversight of the vessel head inspections. Specifically, in CR-HQN-2019-00577 "Fleet NDE oversight of RVCH examinations" the licensee identified causal factors and conclusions as they related to programs for oversight of the contractor head UT examinations. In this document, the licensee identified program weaknesses which included:

No governing standard existed for oversight of RVCH inspections; Fleet Inspection Services did not rigorously challenge the implementation of the contractor procedure requirements for two specific areas - pre-job briefings and UT data analyst independence, and no formal operating experience screening was performed for a similar missed flaw event that occurred in 2013 at the Shearon Harris Plant. The licensee concluded that had these insights been realized prior to the examinations, Entergy would have been less vulnerable to missed indications.

The inspectors reviewed the licensee's self-assessment as documented in CR-HQN-2019-00577 and confirmed the licensee established an adequate basis for its program findings but noted that the licensee had not reviewed the Indian Point Unit 2 (IP2) nozzle leakage event which occurred within the prior 6 months of the Palisades head leak (reference IP2 licensee event report (LER) 05000-247- 2018-001-00, "Penetration Indications Discovered During Reactor Pressure Vessel Head Inspection"). The lack of a review of the IP2 event to gain insights on program performance indicated a narrow scope of review for related operating experience, in particular since the IP2 site is owned and operated by the Palisades licensee.

Minor Violation	71153
<p>Minor Violation: On January 21, 2019, the licensee was informed by the reactor vessel closure head (RVCH) examination contractor of a Part 21 deviation in contracted services based on a vendor reanalysis of ultrasonic (UT) exam data completed in November of 2018 (reference Framatome CR 2018-9955). The contractor identified a Part 21 deviation from contracted services in RVCH examinations associated with the results the contractor's re-review of UT data, for past outages. Specifically, an axially oriented flaw indication was present in the nozzle 25 material that had not been reported as a flaw indication during previous RVCH examinations. As of June 27, 2019, the licensee had not applied site procedure EN-LI-1008-01 "10 CFR 21 Evaluations And Reporting" in response to the contractor's identification of a Part 21 deviation. Specifically, the licensee did not follow Section 5.2 of procedure EN-LI-1008-01 which stated "If it is determined that the deficiency/condition does constitute "10 CFR 21 discovery" of a Technical Specification Safety Limit related issue, deviation or failure to comply, then the Responsible Department Manager documents the bases of the determination and proceeds to Section 5.3." and "Assign a corrective action to the Responsible Department Manager to complete Attachment 9.3 as soon as practicable, and in all cases within 60 calendar days of determining that the deficiency/condition does constitute discovery of a deviation or failure to comply (i.e., the determination of answers to Attachment 9.2)." The licensee's failure to follow procedure EN-LI-1008-01 and complete an evaluation of the contractor identified Part 21 deviation, represented a violation of 10 CFR Appendix B, Criterion V "Instructions, Procedures, and Drawings," which requires in part that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."</p> <p>Screening: The inspectors determined the performance deficiency was minor. For this issue, the licensee's contractor completed a Part 21 evaluation and concluded that although this issue met the definition of a Part 21 deviation, the missed UT indication in nozzle 25 did not pose a substantial safety hazard or a risk of violating a safety limit (as defined in 10 CFR Part 21) associated with the integrity of the reactor coolant pressure boundary and was therefore not a defect as defined in Part 21. Based on substantial margins that existed until reaching a critical (e.g. unstable) crack size for nozzle 25 and the absence of corrosion induced wastage of the RVCH, the inspectors agreed with the licensee's contractor assessment that this issue did not pose a substantial safety hazard. With this result, the inspectors applied the IMC</p>	

0612, Appendix B “Issue Screening” process and answered “no” to the more than minor questions for this violation because no loss of safety function occurred. Additionally, the inspectors considered this to be this similar to minor “Example F” of Section 4 “Insignificant Procedural Errors” of IMC 0612, Appendix E “Examples of Minor Issues.”

Enforcement: This failure to comply with 10 CFR Appendix B, Criterion V constitutes a minor violation that is not subject to enforcement action in accordance with the NRC’s Enforcement Policy.

Minor Violation	71153
<p>Minor Violation: On November 10, 2018, with the plant in Mode 6, during bare metal visual inspections of the reactor vessel closure head, dried boric acid was identified in the area of reactor head nozzle 25, indicative of a through-wall flaw. On January 3, 2019, the licensee issued a licensee event report (LER) 2018-003-00 “Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations” and reported this in accordance with 10 CFR Part 50.73(a)(2)(ii)(A) as a condition of the nuclear power plant, including its principal safety barriers, being seriously degraded. However, the licensee did not perform an investigation to determine if the accumulation of a boric acid deposit at nozzle 25 was indicative of plant operation with through-wall pressure boundary leakage and as such was prohibited by Technical Specification (TS) LCO 3.4.13, which states that operational LEAKAGE shall be limited to: No pressure boundary LEAKAGE. The licensee’s failure to report plant operation prohibited by TS to the NRC in an LER represented a violation of 10 CFR Part 50.73(a)(2)(i)(B).</p> <p>Screening: The inspectors determined the performance deficiency was minor. Consistent with the guidance in Inspection Manual Chapter (IMC) 0612, “Power Reactor Inspection Reports,” Appendix B, “Issue Screening,” the inspectors determined the performance deficiency was not a finding of more than minor significance based on “No” answers to the more-than-minor screening questions. The inspectors also reviewed the examples of minor issues in IMC 0612, Appendix E, “Examples of Minor Issues and found no examples related to this issue. Additionally, based on review of Section 2.2.2 “Traditional Enforcement” of the NRC’s Enforcement Policy, this issue represents a minor violation because failure to make this report resulted in no appreciable potential safety consequence and was less significant than a SL IV violation.</p> <p>Enforcement: This failure to comply with Part 50.73(a)(2)(i)(B) constitutes a minor violation that is not subject to enforcement action in accordance with the NRC’s Enforcement Policy.</p>	

Unresolved Item (Closed)	Qualification Basis for Safety-Related Agastat Relays and Molded Case Circuit Breakers 05000255/2013005-06	71152
<p>Description: On February 12, 2014, the NRC issued Inspection Report 05000255/2013005 documenting Unresolved Item (URI) 05000255/2013005-06. This URI was associated with safety-related molded case circuit breakers (MCCBs) and Agastat relays installed in mild environments which appeared to not have preventive maintenance (PM) schedules for inspection or replacement to address their specified lifetime. Since then, the NRC undertook efforts, such as training, to assist inspectors in dispositioning issues related to how long safety-related components remain in service and to clarify the applicability of various regulations and industry standards. As part of this effort, the NRC determined current agency regulations require the establishment of quality assurance programs and supporting</p>		

procedures that, among other things, set PM schedules for the inspection or replacement of parts having a specific lifetime.

During the NRC's previous inspection, the inspectors determined the licensee had developed PM schedules and associated procedures for the inspection of the MCCBs. However, the appropriateness of the schedule and procedures to detect degradation prior to the MCCB experiencing a loss of safety function was not readily evident. While the NRC undertook the training efforts previously described, the licensee replaced the MCCBs installed beyond their specified life and created recurring work tasks to replace MCCBs prior to the breakers exceeding their specified life as documented in CR-PLP-2015-1914 and CR-PLP-2013-4010. Because these actions reasonably ensured the continued quality of the MCCBs during their specified lifetime, the inspectors determined further efforts to evaluate the appropriateness of the procedures in effect at the time the URI was issued were no longer needed to provide reasonable assurance of adequate protection of public health and safety.

Regarding the Agastat relays, the inspectors determined the licensee had developed PM schedules and associated procedures to manage the service life of safety-related Agastat relays prior to the issuance of this URI. Specifically, on January 1, 2009, the licensee initiated corrective action document CR-PLP-2009-00346 to address a deficiency regarding their PM strategy for safety-related Agastat relays. The associated corrective actions included the development of EC20559, "Validate Selective Agastat Relays Setpoint Data," Revision 0, which validated and/or established inspection acceptance criteria intended to detect degradation prior to loss of safety function. These acceptance criteria were included in calibration sheets which are implemented during periodic PM activities.

Based on the above, no performance deficiency or violation of regulatory requirements was identified. This review did not represent an inspection sample.

Corrective Action Reference(s): CR-PLP-2015-1914 and CR-PLP-2013-4010

Unresolved Item (Closed)	Potential Failure to Identify/Correct Rejectable Flaws in Reactor Pressure Vessel Head Penetration 05000255/2018004-01	71111.08P
Description: This was closed to a Green NCV.		

Inadequate Ultrasonic Examination of Reactor Head Nozzles Results in Operation with Pressure Boundary Leakage			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000255/2019002-01 Open/Closed	[H.2] - Field Presence	71111.08P

The inspectors identified a Green finding and associated Non-Cited Violation (NCV) of Technical Specification (TS) 3.4.13.a, "Reactor Coolant System Operational Leakage," for the licensee's failure to place the plant in Mode 3 (Hot Standby) within 6 hours and Mode 5 (Cold Shutdown) within 36 hours with the plant in Mode 1 (Power Operation) during a portion of operating Cycle 26 with pressure boundary LEAKAGE present at reactor vessel closure head (RVCH) penetration nozzle 25. In particular, the licensee's UT contractor mischaracterized flaw indications, and thus had not identified them as flaws before they resulted in operation with the pressure boundary LEAKAGE. The inspectors determined the condition was

reasonably foreseeable and preventable by the licensee as there were several weaknesses in the licensee's oversight of its contractor that mischaracterized the nozzle flaw indications.

Description:

On November 10, 2018, with the plant in Mode 6, during bare metal visual inspections of the RVCH, dried boric acid was identified in the area of nozzle 25, indicative of a primary coolant system (PCS) leakage from a through-wall flaw. The licensee's contractor (Framatome) had recently completed UT examinations of nozzle 25 and the NRC inspectors inquired if the contractor had identified flaw indications or evidence of leakage during this UT examination. The inspectors' questions prompted the licensee's contractor to re-review nozzle 25 UT data and the contractor staff subsequently identified an inside diameter (ID) connected axial thru-wall flaw indication and UT indications of leakage within the annulus behind nozzle 25 (e.g. UT leak path). Subsequently, the contractor performed a re-review of all nozzle UT data and then applied an eddy current examination technique to the ID surface of nozzles 34, and 36 and identified additional ID connected flaws in nozzles 33 and 36. In licensee event report (LER) 2018-003-00, the licensee determined the cause of these flaws to be primary water stress corrosion cracking (PWSCC) based on the nozzle material (Inconel Alloy 600) which is known to be susceptible to PWSCC. Additionally, the licensee reported that the reactor head UT contractor performed an in-depth summary of the prior data reviews on reactor head nozzles 25, 33, and 36 and that the result of this review shows that the ID-initiated axial flaws were present and detectable with the demonstrated inspection method in 2007, 2009, 2010, and 2012. The licensee's contractor staff had not observed ID initiated flaws since the 2001-2002 timeframe, and thus the UT examinations of the RVCH were focused on identification of outside diameter (OD) initiated flaws.

Each of the RVCH nozzle UT examinations dating back to 2007 were completed by the same contractor (Framatome) in accordance with procedure 54-ISI-604 "Automated Ultrasonic Examination of Open Tube Reactor Pressure Vessel Closure Head Penetrations" (Revisions 3 through 13) and this procedure was required to be qualified for detection of flaws in vessel head penetration nozzles in accordance with applicable NRC requirements (e.g. NRC Order EA 03-009 Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors, 10 CFR 50.55a "Codes and Standards," Code Cases 729-1 and Code Case N-729-4). Procedure 54-ISI-604 included instructions for identification of ID connected flaws and the contractor staff that applied this procedure had demonstrated the capability to detect ID flaws with this procedure. Specifically, certification records (Performance Demonstration Qualification Records issued by the Electric Power Research Institute (EPRI)) existed for each of the contractor staff that performed inspections of nozzles 25, 33 and 36 confirming that the contractor staff member had demonstrated the ability to detect and size flaws that originated at both the ID and OD surface of mockup RVCH nozzles. However, the procedure steps for classifying UT indications as ID flaws were not properly applied by the licensee's contractor staff during each of the 7 times that the RVCH nozzles were examined from 2007 through 2018. As a result, the flaw indications present in nozzles 25, 33 and 36 were previously mischaracterized by the contractor staff and thus not identified as flaws.

Upon discovery of the through-wall leak on nozzle 25, the licensee determined that the leak was present for a maximum of the duration of operating cycle 26 and that refinement of that leakage duration was immaterial to cause investigation, corrective action determination, or repair plans. Therefore, the licensee did not conduct an evaluation to determine a more precise leakage duration. Based on the presence of a through-wall flaw in nozzle 25, in conjunction with a confirmed UT leak path signal, and dried boric acid deposit present at the

outside vessel head surface at nozzle 25, the inspectors concluded leakage existed well in excess of 36 hours during operating cycle 26.

In response to the missed flaw indications, the licensee conducted a self-assessment of the programs for contractor oversight of the vessel head inspections. Specifically, in CR-HQN-2019-00577 "Fleet NDE oversight of RVCH examinations" the licensee identified causal factors and conclusions as they related to programs for oversight of the contractor head UT examinations. In this document, the licensee identified a number of program weaknesses which included: No governing standard existed for oversight of RVCH inspections; Fleet Inspection Services did not rigorously challenge the implementation of the contractor procedure requirements for two specific areas - pre-job briefings and UT data analyst independence, and no formal operating experience screening occurred for a similar 2013 missed flaw event that occurred at the Shearon Harris Plant. The licensee concluded that had these insights been realized prior to the RVCH examinations, Entergy would have been less vulnerable to missed indications. Therefore, the licensee missed opportunities to strengthen oversight of the Palisades UT examination process that could have precluded extended operation with a through-wall flaw at nozzle 25 as revealed during the 2018 Palisades outage (e.g. the leakage event at Palisades was reasonably foreseeable and preventable).

Corrective Actions: The licensee's contractor staff completed training on the flaw characteristics observed in nozzles 25 and 33 and applied lessons learned from this training to the remainder of the reactor head nozzle population during the 2018 refueling outage to ensure all flawed nozzles were identified and the licensee repaired each of the flawed nozzles (25, 33 and 36) prior to returning the RVCH to service. The inspectors identified that the licensee had operated during cycle 26 with pressure boundary LEAKAGE which is prohibited by TS LCO 3.4.13 and the licensee entered this TS violation into the corrective action program for further corrective action.

Corrective Action References: CR-PLP-2019-02516

Performance Assessment:

Performance Deficiency: The licensee's failure to change plant operating conditions from Mode 1 (Power Operation) to Mode 3 (Hot Standby) within 6 hours, and Mode 5 (Cold Shutdown) within 36 hours, with pressure boundary LEAKAGE at RVCH nozzle 25 during operating cycle 26 was contrary to TS LCO 3.4.13 and a performance deficiency. In particular, the licensee's UT contractor mischaracterized flaw indications, and thus had not identified them as flaws before they resulted in operation with the pressure boundary LEAKAGE. The inspectors determined the condition was reasonably foreseeable and preventable by the licensee as there were several weaknesses in the licensee's oversight of its contractor that mischaracterized the nozzle flaw indications.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, continued operation with pressure boundary LEAKAGE at RVCH nozzle 25 if not corrected, would result in wastage of the RVCH which would increase the chance for a loss-of-coolant (LOCA) event and rod ejection.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors screened the safety significance as Green using IMC 0609, Appendix A, Exhibit 1, "LOCA Initiators,"

because, after a reasonable assessment of degradation, it was determined that the violation did not result in exceeding the PCS leak rate for a small-break LOCA and did not affect any other systems used to mitigate a LOCA that could result in a total loss of function. Although, the licensee's UT examination was not successful in identifying the flaw in nozzle 25 before minor leakage occurred, the licensee's bare metal visual exam was successful in identifying the leakage condition, and the licensee's timely corrective actions prevented this condition from becoming a more safety significant concern. Therefore, the inspectors determined that the issue is of very low safety significance (Green).

Cross-Cutting Aspect: H.2 - Field Presence: Leaders are commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations. Deviations from standards and expectations are corrected promptly. Senior managers ensure supervisory and management oversight of work activities, including contractors and supplemental personnel. In this case, the licensee failed to establish adequate oversight of the contractor during UT examinations of RVCH nozzles which resulted in extended operation with an undetected flaw in nozzle 25 that progressed through-wall and caused pressure boundary LEAKAGE [Item H.2].

Enforcement:

Violation: TS LCO 3.4.13 requires in part, "PCS operational LEAKAGE shall be limited to: a. No pressure boundary LEAKAGE;" with the reactor in Modes 1, 2 3 and 4.

TS LCO 3.4.13.b Action statements for Condition "Pressure boundary LEAKAGE exists" include: "B.1 - Be in MODE 3 completion time - 6 hours," and "B.2 - Be in MODE 5 completion time - 36 hours."

Contrary to the above, since approximately May of 2017 thru October 13, 2018, with the plant in Mode 1 (Power Operation) and pressure boundary LEAKAGE present through a nonisolable fault in a PCS component (reactor vessel head penetration nozzle 25), the licensee failed to place the plant in Mode 3 (Hot Standby) within 6 hours and Mode 5 (Cold Shutdown) within 36 hours.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

The disposition of this finding and associated violation closes URI: 05000255/2018004-01.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On April 11, 2019, the inspectors presented the Triennial Heat Sink to Mr. D. Lucy, Assistant General Manager of Plant Operations and other members of the licensee staff.
- On May 29, 2019, the inspectors presented the Debrief for Unresolved Item 05000255/2013005-06 to Mr. O. Gustafson, Director of Regulatory and Performance Improvement and other members of the licensee staff.
- On June 6, 2019, the inspectors presented the radiation protection baseline inspection results to Mr. D. Corbin, General Manager Plant Operations, and other members of the licensee staff.

- On June 27, 2019, the inspectors presented the Debrief for URI 05000255/2018004–01 “Potential Failure to Identify/Correct Rejectable Flaws in Reactor Pressure Vessel Head Penetration” and LER 05000255/2018-003-00 “Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations” to Mr. C. Arnone, Site Vice President and other members of the licensee staff.
- On July 9, 2019, the inspectors presented the Debrief for URI 05000255/2018004–01 “Potential Failure to Identify/Correct Rejectable Flaws in Reactor Pressure Vessel Head Penetration” to Mr. D. Corbin, Acting Vice President and other members of the licensee staff.
- On July 9, 2019, the inspectors presented the integrated inspection results to Mr. D. Corbin, Acting Site Vice President and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents	CR-PLP-2019-02146	Unsecured Compressed Cylinder Protective Cap Sitting on Post Near Safeguards Transformer 1-1	05/28/2019
		CR-PLP-2019-02150	Nitrogen Bottle Found Unsecured Outside the 590' Elevation North Entrance to the Turbine Building	05/29/2019
	Miscellaneous	PLP-RPT-12-00142	Palisades Nuclear Plant Flooding Walkdown Submittal Report for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Flooding	0
	Procedures	Admin 4.00	Operations Organization, Responsibilities, and Conduct	63
		Admin 4.02	Control of Equipment	81
		AOP-38	Acts of Nature	16
		SOP-30	Station Power	91
	Work Orders	WO 52775537	Annual Inspection of Watertight Barriers	08/07/2018
71111.04	Corrective Action Documents	CR-PLP-2019-02404	150/151-115 (Z-Phase) Component Cooling Pump P-52C OC Relay Flag Actuated	06/17/2019
		CR-PLP-2019-02477	Level 2 Oil Leak from VC-10 Compressor Shaft Seal	06/20/2019
		CR-PLP-2019-02528	Safeguards Transformer Found Power Available Light was not Illuminated Gas-in-Oil Monitor	06/25/2019
	Drawings	M-218, Sheet 6	Piping & Instrument Diagram, Heating, Ventilation and Air-Conditioning Control Room	16
		M-218, Sheet 6A	Piping & Instrument Diagram Heating, Ventilation and Air-Conditioning Control Room	7
		M-218, Sheet 7	Piping & Instrument Diagram, Heating, Ventilation and Air-Conditioning Control room	16
	Procedures	SOP-24	Ventilation and Air Conditioning System	77
		SPS-E-28	Safeguards Transformer 1-1 (EX-07) Load Tap Changer Voltage Settings	8
	Work Orders	WO52825095	Safeguards Transfer EX-07 Load Tap Changer Set	05/24/2019
		WO52825095	EX-07: Load Tap Changer Controller, Replace 1K Rheostat	04/19/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.05Q	Fire Plans	Pre Fire Plan 4, 34, 35, & 36 / Rooms 116A, 190, 191, & 192	1-C Switchgear Room and Manhole 1, 2, & 3 / Elevation 590	5
71111.07T	Calculations	EA-C-PAL-99-1209B-01	Generation of Flow Rate Acceptance Criteria for Technical Specification Surveillance Test RO-216	02/06/2012
		EA-EAR-2000-0119-01	Instrument Uncertainty Calculation for TI-1319, Critical Service Water Temperature Indication	08/21/2000
		EA-EC28106-03	Diesel Generator Lube Oil Cooler Tube Plugging	02/27/2013
		EA-GL-96-06-SWS-02	Service Water GL 96-06 Waterhammer Assessment	08/12/2004
		EA-GOTHIC-04-08	Containment Response to a LOCA Using GOTHIC 7.2a	10/21/2010
		EA-GOTHIC-04-09	Containment Response to a MSLB Using GOTHIC 7.2a	10/21/2010
		EAR-98-0512	Establish 85* as the Design Basis Service Water Inlet Temperature Limit	07/24/2001
		EC26869	E031A/B Lube Oil and E-22A/B Jacket Water Coolers Tube Plugging Allowance	02/14/2011
		EC62697	EDG Jacket Water Cooler Tube Plugging Revision	02/02/2016
	Corrective Action Documents	CR-PLP-2015-05318	Pre-NRC UHS Assessment	10/26/2015
		CR-PLP-2015-4504	RO-216 Acceptance Criteria for EDG1-1 Not Met	09/30/2015
		CR-PLP-2017-02226	RO-216, Service Water Flow Verification, Actual Containment Air Cooler Service Water Flow Was Outside of the Containment +/- 10 % Air Cooler Flow Band	05/05/2017
		CR-PLP-2018-00313	E-22B, 1-2 D/G Jacket Water Cooler 12 Partially Blocked Tubes	01/16/2018
		CR-PLP-2018-00318	E-22B, D/G 1-2 Jacket Water Cooler, Eddy Current Inspection Identified Tubes for Plugging	01/17/2018
		CR-PLP-2018-06058	VHX-3 Inspection Identified Tube Blockage	11/15/2018
Miscellaneous	RU14-021	Inspection of Raw Water Intake Pipe	10/30/2015	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		UCC Job # 02-07-203.97	Spring 2018 Inspection and Cleaning	04/24/2018
		UCC Job # 02-07-203.99	Fall 2018 Inspection and Cleaning	09/30/2018
	Procedures	AOP-21	EDG 1-2 Malfunctions	Revision 3
		ARP-20B	Diesel Generator 1-2 Scheme EK-30	08/18/14
		DWO-1	Operator's Daily/Weekly Items MODEs 1, 2, 3, and 4	07/20/2017
		EN-DC-316	Heat Exchanger Performance and Conditioning Monitoring	Revision 11
		MO-29	Engineered Safety System Alignment	Revision 40
		SEP-HX-PLP-001	Heat Exchanger Condition Assessment Program	Revision 3
		SEP-SW-PLP-002	Service Water and Fire Protection Inspection Program	Revision 6
		SEP-UIP-005	Underground Component Inspection Plan	Revision 5
	Work Orders	WO00429037	RO-144 - IST P-7A,B,C SWS PMP Comprehensive Test	05/08/2017
		WO00429039	RO-216 Service Water Flow Verification	05/11/2017
		WO00443731	VHX-2, Inspection for Tube Fouling	05/04/2017
		WO00496138	E-11B; Replace Jacket Water Cooler HT Exchanger Tube Bundle	07/17/2018
		WO52537659	RO-216 Service Water Flow Verification	09/30/2015
		WO52544850	VHX-1, Inspection for Tube Fouling and Eddy Current Test	10/16/2015
		WO52560090	VHX-1, Containment Air Cooler Air Side Inspection	09/22/2015
		WO52562743	VHX-2, Containment Air Cooler Air Side Inspection	09/22/2015
		WO52641426	QO-6 1R25 Cold Shutdown Valve Test Procedure (18 month Reg)	07/19/2018
		WO52673149	VHX-3, Containment Air Cooler Inspection	04/25/2017
		WO52673320	VHX-1, Containment Air Cooler Air Side Inspection	04/24/2017
		WO52673321	VHX-2, Containment Air Cooler Air Side Inspection	05/10/2017
		WO52741815	E-22B, Eddy Current Testing of EDG Jacket Water Cooler	05/03/2018
		WO52759701	VHX-3, Inspection for Tube Fouling	11/16/2018
		WO52776895	VHX-1, Containment Air Cooler Air Side Inspection	10/29/2018
		WO52779143	RO-144 -IST P-7A,B,C SWS Pmp Comprehensive Test	11/12/2018
		WO52780058	RO-216 Service Water Flow Verification	11/18/2018
WO52780063	VHX-2, Containment Air Cooler Air Side Inspection	11/13/2018		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		WO52780492	QO-6 - Cold Shutdown Valve Test Procedure	12/20/2018
		WO52809269	QO-14A - P-7A, IST Service Water Pump	06/01/2018
		WO52824503	QO-14A - P-7A IST Service Water Pump	08/20/2018
		WO52827609	QO-14C -P-7C, IST Service Water Pump	09/18/2018
		WO52838248	QO-14A - P-7A IST Service Water Pump	11/27/2018
		WO52843635	QO-14C -P-7C, IST Service Water Pump	12/29/2018
		WO52848008	MO-29 Engineering Safety System Alignment	02/26/2019
		WO52848499	MO-7A-2 Emergency Diesel Generator 1-2	02/19/2019
		WO52849692	MO-29 Engineering Safety System Alignment	03/26/2019
71111.08P	Corrective Action Documents Resulting from Inspection	CR-PLP-2019-02516	The NRC is Proposing a Green Finding and Associated NCV of TS 3.4.13.	06/25/2019
	NDE Reports	1075	Performance Demonstration Program Qualification for Jeffery Grigsby	08/20/2014
		180-9247379-000	Palisades Unit 1, 1 R024 Reactor Head Inspection Report	0
		180-9271125-000	Palisades Unit 1, 1RO25 Reactor Head Inspection Report	0
		180-9291875-000	Palisades Unit 1, 1RO26 Reactor Head Inspection Report	1
		180-9291875-000	Palisades Unit 1, 1RO26 Reactor Head Inspection Report	12/04/2018
		384	Performance Demonstration Program Qualification for Scott R. Breiholz	08/20/2014
		407	Performance Demonstration Program Qualification for Vladimir Zado	08/28/2014
		498	Performance Demonstration Program Qualification for Michael W. Key	08/25/2014
		51 - 9062418 - 000	Palisades Unit 1, RO19 Reactor Head Inspection Report	0
		51 - 9110490 - 000	Palisades Unit 1, RO20 Reactor Head Inspection Report	0
		51 - 9181224 - 000	Palisades Unit 1, 1RO22 Reactor Head Inspection Report	0
		51 - 9218473 - 000	Palisades Unit 1, RO23 Reactor Head Inspection Report	0
		51-9147146-000	Palisades Unit 1, 1RO21 Reactor Head Inspection Report	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		671	Performance Demonstration Program Qualification for Hrvoje Bezljaj	08/19/2014
		939	Performance Demonstration Program for Rickie L. Rose	08/26/2014
	Procedures	54-ISI-604-013	Automated Ultrasonic Examination of Open Tube RPV Closure Head Penetrations	08/31/2006
	71111.11Q	PLSEG-LOR-19B-01	Licensed Operator Re-qualification Cycle 19B as Found Scenario	1
71111.12	Corrective Action Documents	CR-PLP-2017-00257	Maintenance Rule Evaluation	02/23/2017
		CR-PLP-2017-00634	VC-11 Control Room HVAC Refrigeration Condensing Unit did not Automatically Start in Auto as Expected Following the Swap	02/22/2017
		CR-PLP-2017-04335	P-55B Low Oil Pressure During CVCO-4	09/21/2017
		CR-PLP-2017-05085	P-55C Unusual Noises in P-55A Cube with P-55C Running	11/03/2017
		CR-PLP-2017-05188	VC-11 Failed to Start After Being Returned to Auto	11/09/2017
		CR-PLP-2017-05299	VC-11 Control Room HVAC Refrigeration Condensing Unit Failed to Start	11/17/2017
		CR-PLP-2017-05599	P-55C Input Shaft Oil Leaks	12/08/2017
		CR-PLP-2017-05668	P-55A Exhibited Loud Banging Noises	12/12/2017
		CR-PLP-2018-00221	Returning the Charging Pumps to Active (a)(1) Status with Corrective Actions	01/11/2018
		CR-PLP-2018-00932	While Swapping CRHVAC Trains for MO-33B, VC-11 did not Pump Down as Expected	02/22/2018
		CR-PLP-2018-00939	Air Handling Unit V-96 Outside Air Damper was Slow to Open	02/23/2018
		CR-PLP-2018-00940	CR HVAC Testing, FIS-1681, Air Handling Unit V-95 Discharge Flow Indicator was Reading 5000 CFM	02/23/2018
		CR-PLP-2018-01050	Visual Inspection of RT-85D-B Control Room Emergency Ventilation Filtration Testing - B Train	02/28/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		CR-PLP-2018-03154	VC-11, Control Room HVAC Refrigeration Condensing Unit not Running	07/03/2018	
		CR-PLP-2019-00327	Multiple Equipment Failures Associated with the Control Room Ventilation System Over the Past Several Years	01/23/2019	
		CR-PLP-2019-00383	V-95 Control Room Ventilation Main Supply Fan Tripped Unexpectedly		
		CR-PLP-2019-00785	Control Room HVAC System (VAS-CRV) is Maintenance Rule "Near (a)(1)" Due to Experiencing Two (2) Functional Failures	02/22/2019	
		CR-PLP-2019-02512	Tracking CR for Maintenance Rule Evaluations (Failure Determinations) of Low Safety Significant Equipment Performance Issues	06/25/2019	
	Engineering Evaluations	EN-LI-118, Attachment 9.9	Equipment Failure Evaluation	01/25/2019	
	Miscellaneous	Q1-2019 System Health Report	Chemical Volume Control - Charging/Letdown	06/28/2019	
		Q3-2018	Control Room HVAC System Health Report	03/26/2019	
		Q4-2018	Chemical Volume Control - Charging/Letdown System Health Report	06/28/2019	
		Q4-2018	Control Room HVAC System Health Report	03/26/2019	
	Procedures	EN-DC-336	Control Room Ventilation System Reliability	13	
	71111.13	Drawings	E-5, Sheet 5B	Relay Diagram 480 Volt Motor Control Centers	12
		Miscellaneous		Operator's Risk Report	05/01/2019
Procedures		Admin 4.02	Control of Equipment	81	
		AOP-38	Acts of Nature	16	
71111.15	Corrective Action Documents	CR-PLP-2019-01671	High Pressure Safety Injection (HPSI) Pumps Operability Evaluation	04/24/2019	
		CR-PLP-2019-01863	1-1 EDG Failed to Start	05/06/2019	
		CR-PLP-2019-01871	G1-1/ESR1 Relay Coil was Found with a Cracked Housing with a White Substance Emanating From It	05/07/2019	
		CR-PLP-2019-02108	Preconditioning Evaluation for MO-7A-1 Emergency Diesel Generator	05/23/2019	
		CR-PLP-2019-	The TS/PB-R, SIS Test Button CKT No 2, was Momentarily	05/23/2019	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		02114	Released during Step 5.4.13 of QO-1 Safety Injection System Testing	
		CR-PLP-2019-02238	"Parallel" Light did not Light when G1-1/DSR Parallel/Unit Selector was Placed in Parallel	06/04/2019
	Drawings	E 17, Sheet 13	Diesel Generator Breakers	8
		E-17, Sheet 12	Diesel Engine Control Trips and Alarms	9
		VEN-M12, Sheet 16	Control Equipment Schematic, Excitation Relaying & Metering	20
		VEN-M12, Sheet 98(1)	Engine Control Diesel Generator 1-1	37
		VEN-M12; Sheet 94	Wiring Diagram Engine Exciter Panel C22 DG 1-1	21
		VEN-M12; Sheet 98(1)	Schematic Diagram Engine Control DG 1-1	37
	Miscellaneous	DBD-5.01	Diesel Engine and Auxiliary Systems	7
	Procedures	MO-7A-1	Emergency Diesel Generator 1-1	99
71111.18	Engineering Changes	81531	EX-10 Oil Cooler; Feed Cooler Bank 5 Pump from Temporary Power / and Connect Wavebook to Monitor Current	0
		82148	Supplemental Cooling to EX-10 Main Transformer	0
	Miscellaneous	PLP-RPT-19-00025	EX-10 Main Transformer - GSU Transformer Thermal Evaluation	0
		PLP-RPT-19-00028	Zones of Influence for Temporary Cooling Equipment in the Palisades Plant Yard Area	0
	Procedures	SOP-8	Main Turbine and Generating Systems	110
	Work Orders	WO 517052	Breaker 8-5 (EX-10), Oil Pump Tripped for Bank #5	01/25/2019
71111.19	Corrective Action Documents	CR-PLP-2019-02458	An N/O Set of Contacts on the Droop Relay G1-1/DR was Hanging up and not fully Changing States	06/20/2019
		CR-PLP-2019-02474	Unloaded Field Voltage Lower than Normal During MO-7A-1 for EDG 1-1	06/20/2019
	Miscellaneous	Work Instruction WI-EPS-E-01	Battery Charger Maintenance	15
		Work Instruction, WI-EPS-E-04	Calibration Testing of Electrical Meters	4

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
	Procedures	SOP-22	Emergency Diesel Generators	76	
	Work Orders	WO 525968	G1-1/DR; Parallel Light did not Light	06/20/2019	
		WO 52769842	ML-3070, Post-Maintenance Test: Inspect/Repair Oiler, Adj W/QO-5	05/09/2019	
		WO 52783497	Battery Charger Maintenance	05/13/2019	
		WO 52788631	VC-10, Condenser Overhaul Post-Maintenance	04/16/2019	
		WO 52788632	Check Calibration of EAI-48	5/13/2019	
		WO 52858408	MO-33B - Perform MO-33B for 'B' CRHVAC	04/19/2019	
71111.22	Corrective Action Documents	CR-PLP-2019-00145	CRD-24 did not Move with the Group	01/10/2019	
		CR-PLP-2019-01645	Control Rod #23 Temperature was Observed Rising	04/23/2019	
		CR-PLP-2019-01788	Question was Raised as to Whether the 1 Year Flex Pump Standby PMs Required a 2 Hour Run or a 30 Minute Run	05/01/2019	
		CR-PLP-2019-02061	Hi NO Alarm on the Portable NO Detector During MO-7A-2	05/20/2019	
	Procedures	EN-OP-201-05	Palisades FLEX Program Document	1	
		QI-39	Auxiliary Feedwater Actuation System Logic Test	9	
		QO-20	Inservice Test Procedure - Low Pressure Safety Injection Pumps	27	
		QO-34	Control Rod Exercising	7	
		RE-132	Diesel Generator 1-2 Load Reject	11	
		SOP-22	K-16 Security Diesel Generator Checklist	76	
	Work Orders	WO 52817904	FLEX Standby PM: P-1003 One Year Operational Test (FSB A)	04/10/2019	
		WO 52859570	QO-34 - Control Rod Exercising	04/23/2019	
		WO 52873536	QO-20A P-67A Inservice Test Low Pressure Safety Injection Pump	06/18/2019	
		WO 52881915	K-16, Security Diesel Generator Monthly Start Test	06/10/2019	
	71114.06	Corrective Action Documents	CR-PLP-2018-02083	Plant Public Address Announcements are not Being Heard at Warehouse 2	05/22/2019
			CR-PLP-2019-02084	Central Alarm Station (CAS) Secondary Work Station Would not Communicate with the CAS Printer	05/22/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CR-PLP-2019-02110	General Performance of the Provided EP Radios was Poor During Drill	05/23/2019
	Miscellaneous		May 22, 2019, Emergency Planning Drill Scenario Narrative	0
71124.05	Calibration Records		Calibration Record For GEM-5 Serial Number 1712-186	08/24/2018
			Calibration Record For ARGOS Serial Number 1712-183	08/30/2018
			M-54 Calibration Data Sheet For Serial Number 285662	03/31/2019
			Calibration Record For AMP-200 Serial Number 7704.032	06/01/2018
			Calibration Record For RAS-1 Serial Number 19529	05/02/2018
			Calibration Record For iSolo Serial Number 1047346	06/10/2018
		2018-B2.28-CALDAT-06948	Calibration Record for RO-20 Serial Number 1492	10/10/2018
		2018-B2.28-CALDAT-07015	Calibration Record For LM-177 Serial Number 273222	10/11/2018
		2019-B2.28-CALDAT-02731	Calibration Record For AMS-4 Serial Number 121	03/27/2019
	2019-B2.28-CALDAT-02950	Calibration Record For Telepole Serial Number 6600-019	04/03/2019	
	Miscellaneous		Gamma Spectroscopy Detector's 2018 Annual Efficiency/Lower Limit of Detection Verifications	01/03/2019
71124.06		DABD-03	Palisades - Stack Release Rate Calculations	06/24/2002
	Procedures	RT-85C	Fuel Handling Area Ventilation System Filter Testing	03/01/2018
	Self-Assessments	LO-PLPLO-2018-00014	Radiation Monitor Functionality Assessment	0
	Work Orders	52641428	Hi Range Noble Gas Effluent Monitor RIA-2327 Calibration	04/03/2017
71151	Miscellaneous		NRC Performance Indicator Data Sheet, Initiating Events - Unplanned Power Changes per 7,000 Critical Hours (IE03); Second Quarter 2018 through Second Quarter 2019	04/01/2018 to 06/30/2019
			NRC Indicator Safety System Functional Failures (MS05) Technique/Data Sheet; 2nd Quarter 2018 to 1st Quarter 2019	04/01/2019 to 03/31/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152	Corrective Action Documents	CR-PLP-2009-00346	Agastat Time Delay Relays Not Included in Site Calibration Sheet Database	01/28/2009
		CR-PLP-2018-05857	Bare Metal Visual Examination of the Reactor Pressure Vessel Head per Work Order 52779311 Identified Recordable Boron Indications at Head Penetration Number 25. Samples of the Leakage Confirmed a High Boron Concentration.	12/17/2018
		CR-PLP-2019-00063	As Found Condition Verified that CRDM Housing #37 & #28 Component Cooling Water Cooling Lines are Installed Incorrectly.	01/04/2019
		CR-PLP-2019-00117	Plant Trip due to RPS BD Matrix Loss of Power	02/26/2019
		CR-PLP-2019-01676	The Process to Review changes in Plant Design, Procedures/Processes and New Equipment has not been Consistently Implemented	04/04/2019
		CR-PLP-2019-01678	Objectives from Department Rollups are not Creating Clear Specific Gap Identification for Focused Coaching by Supervisors	04/18/2019
		CR-PLP-2019-01832	Identified Trend of Failure to Coach When an Issue was Identified by Non-consequential Procedure Compliance Issues	05/03/2019
		CR-PLP-2019-02241	Station Identified Leadership did not Act Promptly to More Broadly Address Subtle Signs of Performance Decline	06/04/2019
		CR-PLP-2019-2175	During Fire Drill Operator Inadvertently Made Contact with and Opened a Breaker	05/29/2019
		CR-PLP-32019-02520	Control Rod Drive Seal Leakage Measurement	06/25/2019
	Corrective Action Documents Resulting from Inspection	CR-PLP-2013-04010	2013 NRC Aging Management Inspection - Three MCCBs Are Exceeding Their Service Life	09/11/2013
		CR-PLP-2013-04344	Agastat Timing Relay Service Life Not Defined	10/03/2013
		CR-PLP-2015-01914	Resolution of Service Life TIA	05/08/2015

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Engineering Changes	EC20559	Validate Selective Agastat Relays Setpoint Data	0
	Miscellaneous		Performance Improvement Integrated Matrix (PIM) May 2019	0
		DPRM/APRM Report	Palisades Performance Improvement May 2019	0
		Human Performance Evaluation for CR-PLP-2019-01120	Received Alarm EK-0524, Load Shedding/Safeguards Bus Control CKT Undervoltage, Unexpectedly	03/18/2019
	Procedures	1707-01	Framatome Procedure Implementation of 10 CFR 21	02/06/2019
		EN-LI-108-01	10 CFR 21 Evaluations And Reporting	Revision 10
		EN-LI-118	Performance Analysis Template	28
	Self-Assessments	EN-LI-121, Attachment 9.1	Palisades Performance Improvement May 2019	25
		EN-LI-121, Attachment 9.3	Aggregate Performance Issue Worksheet for Failure to Provide Reinforcement of Some Expectations from Supervisors	0
	71153	Corrective Action Documents	CR-HQN-2019-00577	Fleet NDE Oversight of RXVCH Examinations
CR-PLP-2018-05857			Bare Metal Visual Examination of the Reactor Pressure Vessel Head per Work Order 52779311 Identified Recordable Boron Indications at Head Penetration Number 25.	11/10/2018
CR-PLP-2018-05895			Framatome Indication Notification Report RVCH-ISI-INR-1R026-2018-002 Provides Notification of a Change in Material Condition of Reactor Head Penetration Number 33.	11/21/2018
CR-PLP-2018-06225			Framatome Indication Notification Report RVCH-ISI-INR-1R026-2018-003 Rev O Provides Notification of a Change in Material Condition of Reactor Head Penetration Number 36.	11/21/2018
Corrective Action Documents Resulting from		CR-PLP-2019-02460	The LER Should have also Included Reporting Criteria for 10 CFR 73(a)(2)(B) for Operation in a Condition that was Prohibited by Tech Specs.	06/20/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Inspection	CR-PLP-2019-02468	The inspector Identified that a Review Under 10 CFR 21, Required by EN-LI-108-01, "10 CFR 21 Evaluations and Reporting," was not Properly Conducted by the Site.	06/20/2019
	Miscellaneous	05000255/2018-003-00	Licensee Event Report- Indications Identified in Reactor Pressure Vessel Head Nozzle Penetrations	01/30/2019