UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

February 10, 2022

Mr. Eric Carr
President and Chief Nuclear Officer
PSEG Nuclear LLC- N09
P.O. Box 236
Hancock's Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000272/2021004 AND 05000311/2021004

Dear Mr. Carr:

On December 31, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Salem Nuclear Generating Station, Units 1 and 2. On February 3, 2022, the NRC inspectors discussed the results of this inspection with Mr. David Sharbaugh, Vice President, Salem Generating Station and other members of your staff. The results of this inspection are documented in the enclosed report.

Four findings of very low safety significance (Green) are documented in this report. Each of these findings involved violations of NRC requirements and one was determined to be Severity Level IV. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations 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 I; the Director, Office of Enforcement; and the NRC Resident Inspector at Salem Nuclear Generating Station, Units 1 and 2.

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 I; and the NRC Resident Inspector at Salem Nuclear Generating Station, Units 1 and 2.

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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Brice A. Bickett

Digitally signed by Brice A. Bickett
Date: 2022.02.10 12:18:11 -05'00'

Brice A. Bickett, Chief
Projects Branch 3
Division of Operating Reactor Safety

Docket Nos. 05000272 and 05000311
License Nos. DPR-70 and DPR-75

Enclosure:
As stated

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SUBJECT: SALEM NUCLEAR GENERATING STATION, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000272/2021004 AND 05000311/2021004 DATED FEBRUARY 10, 2022

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000272 and 05000311
License Numbers:	DPR-70 and DPR-75
Report Numbers:	05000272/2021004 and 05000311/2021004
Enterprise Identifier:	I-2021-004-0004
Licensee:	PSEG Nuclear, LLC
Facility:	Salem Nuclear Generating Station, Units 1 and 2
Location:	Hancock's Bridge, NJ
Inspection Dates:	October 1, 2021 to December 31, 2021
Inspectors:	J. Demarshall, Senior Operations Engineer J. Dolecki, Senior Resident Inspector P. Finney, Senior Project Engineer T. Fish, Senior Operations Engineer M. Hardgrove, Resident Inspector J. Hawkins, Senior Project Engineer A. Turilin, Reactor Inspector G. Walbert, Reactor Engineer S. Wilson, Senior Health Physicist
Approved By:	Brice A. Bickett, Chief Projects Branch 3 Division of Operating Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Salem Nuclear Generating Station, Units 1 and 2, 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

Failure to Promptly Identify and Correct Inappropriately Written Emergency Operating Procedure Steps			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000272,05000311/2021004-01 Open/Closed	[H.3] - Change Management	71111.11Q
The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," when PSEG did not promptly identify and correct a condition adverse to quality (CAQ), a deficient quality-related emergency operating procedure (EOP), 1(2)-EOP-TRIP-1, "Reactor Trip or Safety Injection." Consequently, from April 1 to December 17, 2021, this deficient EOP could have adversely affected the operators' response during an inadvertent reactor coolant system (RCS) depressurization and was used in training during licensed operator requalification simulator scenarios.			

Failure to Establish Appropriate Foreign Material Exclusion Controls for Work Activities on Cold Leg Safety Injection Piping			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000311/2021004-02 Open/Closed	None (NPP)	71111.15
A self-revealing finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when PSEG did not establish appropriate foreign material exclusion (FME) controls while performing work activities on cold leg safety injection piping, an activity affecting quality. Specifically, the FME controls prescribed in both the October 12–24, 2012 and April 10–24, 2014 work orders did not provide adequate guidance. Consequently, foreign material in the 22-loop of the cold leg safety injection piping caused the discharge check valve, 22SJ17, to become bound in the closed position and rendered the 22-loop of the emergency core cooling injection subsystem inoperable on October 7, 2021.			

Failure to Perform 10 CFR 50.59 Written Evaluation of a Procedure Change That Adversely Affected the Design Function of the Turbine-Driven Auxiliary Feedwater Pump			
Cornerstone	Significance/Severity	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green Severity Level IV NCV 05000272,05000311/2021004-03 Open/Closed	[H.6] - Design Margins	71111.18
The inspectors identified a finding of very low safety significance (Green) and an associated Severity Level IV non-cited violation (NCV) of 10 CFR 50.59, “Changes, Tests, and Experiments,” because PSEG did not provide a written evaluation as the basis for why an adverse change did not require a license amendment. Specifically, PSEG did not perform the required 10 CFR 50.59 written evaluation to demonstrate prior NRC approval was not required for a procedure revision that removed the room cooler, VHE36, as a support system for the turbine-driven auxiliary feedwater pump (TDAFP) design function.			

Inadequate Corrective Actions for the Incorrect Installation of the 12 Containment Fan Cooling Unit Inboard Bearing			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000272/2021004-04 Open/Closed	[P.1] - Identification	71111.19
A self-revealing finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Actions,” was identified when PSEG did not ensure that a condition adverse to quality (CAQ) associated with a non-conforming condition of the 12 containment fan coil unit (CFCU) inboard bearing was promptly identified and corrected. Specifically, PSEG documented that the inboard bearing was not appropriately centered in the housing but did not document this non-conforming condition in a notification (NOTF) or correct the condition prior to restoring the 12 CFCU to service. Consequently, the 12 CFCU inboard bearing failed on August 20, 2021.			

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period at rated thermal power and remained at or near rated thermal power for the remainder of the inspection period.

Unit 2 began the inspection period at rated thermal power. On October 2, 2021, the unit was shutdown to enter planned refueling outage 25 (2R25). On November 6, 2021, the unit commenced start-up. The unit returned to rated thermal power on November 12, 2021.

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 activities described in IMC 2515, Appendix D, "Plant Status," conducted routine reviews using IP 71152, "Problem Identification and Resolution," observed risk significant activities, and completed on-site portions of IPs. 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

71111.04 - 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) Unit 2, spent fuel pool cooling system during 2R25 refueling outage for full core offload, on October 7, 2021
(2) Unit 1, 28VDC battery chargers and 28VDC batteries during the 1A2 28VDC battery charger repair window, on October 18, 2021
(3) Unit 2, offsite 500 kVAC, 13.8 kVAC, and 4.16 kVAC during refueling outage with 24 station power transformer and 2B vital bus out of service, on October 19, 2021

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated system configurations during a complete walkdown of the Unit 2 safety injection system, on November 4–5, 2021

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

(1) Unit 2, walk down of the containment during initial containment entry, on October 2, 2021
(2) Unit 2, 22 residual heat removal pump and heat exchanger room fire area FP-SA-2511, during the week of October 28, 2021
(3) Unit 2, walk down of the 460V and 4kV switchgear rooms, on December 2, 2021
(4) Unit 2, auxiliary building spent fuel cooling, component cooling, auxiliary feedwater and charging system areas, on December 2, 2021
(5) Unit 1, auxiliary building spent fuel cooling, component cooling, auxiliary feedwater and charging system during 13 charging pump maintenance, on December 6, 2021

71111.07A - Heat Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

(1) Unit 2, 22 component cooling heat exchanger during refueling outage 2R25, on October 12, 2021

71111.08P - Inservice Inspection Activities (PWR)

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

(1) 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 October 11, 2021 to October 21, 2021:

03.01.a - Nondestructive Examination and Welding Activities

- Automated ultrasonic examination of 23 cold leg dissimilar metal butt weld, 27.5-RC-1230-5 (NDE Summary S2-004640)
- Ultrasonic examination of Lower Shell to Lower Head reactor vessel weld 2-RPV-10442 (NDE Summary S2-001100)
- Ultrasonic examination of Lower Head Disc to Peel Segments reactor vessel weld 2-RPV-3443 (NDE Summary S2-001900)
- Ultrasonic examination of 14-RH-2224-9BC 3-inch branch connection on 14-inch RHR suction line per MRP 192 (NDE Summary S2-UT-21-049)
- General visual examinations of the primary containment accessible metal liner surfaces (CR20886028 CR20886307 CR20886113).
- Magnetic Particle examination of containment liner weld buildup on 78' elevation panel 5, S2-60142730-5-BU (WO 60142730)

- Radiography exam of S2-SGF-31-2 weld associated with 23 AFW pipe replacement due to FAC (WO 30324563)
- Visual Examination (VT-3) of Lower Radial Support Clevis Assembly at 60°, CIB-60°-2-A, CIB-60°-2-B (CR20886259)
- Welding activities associated with pipping replacement on the 23 AFW due to FAC, S2-SGF-31-2 (WO30324563)
- Welding activates associated with containment liner repair on panel 5, S2-60142730-5-BU (WO 60142730)
- Visual Examination (VT-3) of Thermal Shield Flexures per MRP 227, (NDE Summary 970101)
- Reactor Internals Hold Down Springs measurement, (PNJ-RV010-TM-CA-000001)

03.01.b - Pressurized-Water Reactor Vessel Upper Head Penetration Examination Activities

- PSEG did not perform reactor vessel upper head penetration examinations during this outage. The last head inspection visual examination was in fall 2014 outage. The next head inspections are scheduled for Spring 2023 (2R26).

03.01.c – Pressurized-Water Reactor Boric Acid Corrosion Control Activities

- Boric Acid from valve connection on 22 Reactor coolant pump loop Channel III transmitter S2RC-2FT426 (CR20885862)
- Boric Acid on body to bonnet of S2CVC-2CV79 (CR20885305)
- Boric Acid on pipe cap of valve 23SJ173 (CR20885848)

03.01.d – Pressurized-Water Reactor Steam Generator Tube Examination Activities

- Per Issuance of License Amendment No. 338 and 320 (ML21202A078), dated April 28, 2021, steam generator inspections scheduled for the fall 2021 (2R25) refueling outage were deferred to the spring of 2023 (2R26) refueling outage.

71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

Requalification Examination Results (IP Section 03.03) (1 Sample)

(1) The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification annual operating exam administered August - October 2021.

71111.11B - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Requalification Program (IP Section 03.04) (1 Sample)

(1) Biennial Requalification Written Examinations

The inspectors evaluated the quality of the licensed operator biennial requalification written examination administered August - October 2020.

Annual Requalification Operating Tests

The inspectors evaluated the adequacy of the facility licensee's annual requalification operating test.

Administration of an Annual Requalification Operating Test

The inspectors evaluated the effectiveness of the facility licensee in administering requalification operating tests required by 10 CFR 55.59(a)(2) and that the facility licensee is effectively evaluating their licensed operators for mastery of training objectives.

Requalification Examination Security

The inspectors evaluated the ability of the facility licensee to safeguard examination material, such that the examination is not compromised.

Remedial Training and Re-examinations

The inspectors evaluated the effectiveness of remedial training conducted by the licensee, and reviewed the adequacy of re-examinations for licensed operators who did not pass a required requalification examination.

Operator License Conditions

The inspectors evaluated the licensee's program for ensuring that licensed operators meet the conditions of their licenses.

Control Room Simulator

The inspectors evaluated the adequacy of the facility licensee's control room simulator in modeling the actual plant, and for meeting the requirements contained in 10 CFR 55.46.

Problem Identification and Resolution

The inspectors evaluated the licensee's ability to identify and resolve problems associated with licensed operator performance.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

(1) The inspectors observed and evaluated licensed operator performance in the control room during Unit 2 reactor start-up following 2R25, including reactor criticality and Mode change, on November 9–10, 2021

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

(1) The inspectors observed and evaluated licensed operator requalification training, on December 1, 2021

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

(1) Unit 1 and Unit 2, cold leg discharge plug check valves, SJ17, due to failure of the 22SJ17 to open during high head injection full flow surveillance, on October 7, 2021

Aging Management (IP Section 03.03) (1 Sample)

The inspectors evaluated the effectiveness of the aging management program for the following SSCs that did not meet their inspection or test acceptance criteria:

(1) Unit 1 and Unit 2, Service water intake structure following review of aging management program, on December 21, 2021

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

(1) Unit 2 elevated shutdown risk (Yellow) due to lowered reactor coolant system inventory in preparation for reactor disassembly, on October 3–4, 2021
(2) Unit 2, elevated shutdown risk (Yellow) due to full core offload to spent fuel pool for 2R25, on October 7, 2021
(3) Unit 2, elevated shutdown risk (Yellow) during 24 station power transformer and 2B 4160V vital bus outage work window, on October 19, 2021
(4) Unit 2, emergent work due to removal of 22SJ17 cold leg discharge plug check valve following failure to open during full flow testing, on October 21, 2021
(5) Unit 2, elevated shutdown risk (Orange) during planned reduced inventory (mid-loop) with nuclear fuel in the vessel due to reactor coolant system vacuum fill and venting, on November 3, 2021
(6) Unit 2, emergent work on 23 main steam isolation valve, 23MS167, due to valve drifting closed, on November 17, 2021

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

(1) Unit 2, 23 containment fan coil unit, due to multiple failures to start in high speed, on October 2 and 8, 2021 (NOTF 20880944)
(2) Unit 2, cold leg safety injection lines extent of condition, due to 22 cold leg discharge check valve, 22SJ17, failure to open, on October 7, 2021 (NOTF 20879285)
(3) Unit 2, review of operability with engineering justification for inner diameter weld flaw in 23 cold leg injection piping, on November 2, 2021 (OEJ 70220273)
(4) Unit 2, main steam control and isolation, due to degraded position indication of 22 main steam line atmospheric relief valve, 22MS10, on November 6, 2021 (NOTF 20887359)
(5) Unit 2, 23 main steam isolation valve, 23MS167, drifting from open position, on November 15, 2021 (NOTF 20891139)

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (3 Samples)

The inspectors evaluated the following permanent modifications:

(1) Unit 1 and Unit 2, 50.59 screening to change procedure, S1(2).OP-SO.SW-0005, "Service Water System Operation," to remove statement to declare 13(23) turbine-driven auxiliary feedwater pump inoperable when room cooler, VHE36, is inoperable
(2) Unit 2, Upflow conversion of reactor core flow (80126494)
(3) Unit 1 and Unit 2, revision 40 of EOP-TRIP-1, "Reactor Trip or Safety Injection," EOP-TRIP-2, "Reactor Trip Response," and EOP-TRIP-3, "SI Termination" to incorporate revision 3 of PWR Owners Group Emergency Response Guidelines

Severe Accident Management Guidelines (SAMG) Update (IP Section 03.03) (1 Sample)

(1) The inspectors verified the site SAMGs were updated in accordance with the PWR generic severe accident technical guidelines and validated in accordance with NEI 14-01, “Emergency Response Procedures and Guidelines for Beyond Design Basis Events and Severe Accidents,” Revision 1.

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (7 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

(1) Unit 2, 2B emergency diesel generator outage maintenance window, including exhaust leak repair, overspeed trip calibration, and preventive maintenance, on October 20, 2021

(2) Unit 2, 2B 4kV vital bus outage maintenance window, SC.MD-PM.4KV-0002(Q), Rev. 13, "GE 4KV Breaker Enclosure Maintenance," on October 25, 2021
(3) Unit 2, 22 loop residual heat removal heat exchanger flow control valve, 22RH18, actuator re-alignment following valve unable to control flow during testing, on October 28, 2021 (60151472)
(4) Unit 2, charging system cold leg injection, following replacement of 22 cold leg safety injection discharge check valve, 22SJ17, on October 29, 2021 (50219879)
(5) Unit 1, 12 containment fan cooling unit inboard fan bearing failure and replacement, on November 4, 2021 (60148484)
(6) Unit 2, 23 turbine driven auxiliary feedwater pump turbine overspeed components 18-month preventive maintenance, on November 9, 2021 (30348487)
(7) Unit 2, 22 main steam isolation valve, 22MS167, stroke time testing following degraded condition of actuator affecting ability to change stroke time, on November 11, 2021 (50220124)

71111.20 - Refueling and Other Outage Activities

Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated Unit 2 2R25 activities from October 1 to November 12, 2021

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

(1) Unit 2, S2.OP-ST.SSP-0001(Q), "Manual Safety Injection - SSPS," on October 4, 2021 (50195178)
(2) Unit 2, S2.OP-ST.RHR-0005(Q), "Inservice Testing Residual Heat Removal Valves and Orifices," on October 5, 2021 (50219768)
(3) Unit 2, S2.OP-ST.SJ-0006(Q), "Inservice testing safety injection valves MODE 6," on October 6, 2021 (50208818)
(4) Unit 2, S2.OP-ST.SJ-0020(Q), "Periodic Leakage Test RCS Pressure Isolation Valves," on November 7, 2021 (50220601)

Inservice Testing (IP Section 03.01) (1 Sample)

(1) Unit 2, S2.OP-ST.CS-0005(Q), "Inservice testing containment spray pump full flow test and containment spray check valves," on October 26, 2021 (50220172)

Containment Isolation Valve Testing (IP Section 03.01) (1 Sample)

(1) Unit 2, S2.OP-IR.FP-0001(Q), "Type C Leak Rate Test 2FP147 and 2FP148," on October 29, 2021 (30207586)

FLEX Testing (IP Section 03.02) (1 Sample)

(1) Unit 1 and Unit 2, SH.OP-PT.FLX-0480(Z), "FLEX 480V Caterpillar Diesel Generators," on October 19, 2021 (30357204)

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Sample)

(1) The inspectors reviewed the following:

Radiation Work Packages

- Unit 1 - refuel outage ALARA package number 98 for radiation work permit 32

Electronic Alarming Dosimeter Alarms

- Unit 1 - refuel outage accumulated dose alarm. RWP 35, Task 116, Notification 20866093

Labeling of Containers

- Unit 2 - containment building tooling and supply containers staged during refuel outage
- Unit 1 and Unit 2 - common radioactive material storage yard seal and containers

Contamination and Radioactive Material Control (IP Section 03.03) (2 Samples)

The inspectors observed/evaluated the following licensee processes for monitoring and controlling contamination and radioactive material:

(1) Unit 2 - observed licensee surveys of potentially contaminated materials removed from the refuel cavity water
(2) Unit 2 - observed licensee surveys of potentially contaminated materials removed from the containment building contaminated area

Radiological Hazards Control and Work Coverage (IP Section 03.04) (4 Samples)

The inspectors evaluated the licensee's control of radiological hazards for the following radiological work:

(1) Unit 2 - observed various refueling activities in the containment building
(2) Unit 2 - observed the reactor internals lifting apparatus decontamination in the containment building
(3) Unit 2 - observed the fuel handling grapple being removed from the refuel cavity and decontaminated
(4) Unit 2 - observed workers preparing and painting the reactor cavity with strippable paint for contamination control

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (3 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

(1) Unit 1 and Unit 2 - observed high radiation area key control and interviewed the senior radiation protection shift technician
(2) Unit 1 and Unit 2 - challenged high radiation area gates and doors to ensure positive control of the areas
(3) Unit 1 and Unit 2 - observed highly irradiated item control in spent fuel pools and Unit 2 refuel cavity

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

(1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

71124.02 - Occupational ALARA Planning and Controls

Radiological Work Planning (IP Section 03.01) (4 Samples)

The inspectors evaluated the licensee's radiological work planning for the following activities:

(1) Unit 1, ALARA Plan 2020-098 for radiation work permit number 32
(2) Unit 2 Station ALARA Committee review of containment scaffolding dose estimate; RWP 22, Task 222
(3) Unit 1, refuel radiation work permit number 34**;** Reactor Services
(4) Unit 1, radiation work permit number 32 evaluation, for work in regenerative heat exchanger room, pressurizer, and reactor coolant pumps

Verification of Dose Estimates and Exposure Tracking Systems (IP Section 03.02) (4 Samples)

The inspectors evaluated dose estimates and exposure tracking for the following activities:

(1) Unit 2, refuel outage scaffold work radiation work permit dose estimates. Radiation work permit 22
(2) Unit 2, refuel outage scaffold work radiation work permit work in progress report. Radiation work permit 22
(3) Unit 1, TEDE ALARA reviews for radiation work permits 32, 33, and 34
(4) Unit 1, ALARA plans for radiation work permits 32, 33, 34

Implementation of ALARA and Radiological Work Controls (IP Section 03.03) (3 Samples)

The inspectors reviewed as low as reasonably achievable practices and radiological work controls for the following activities:

The inspectors reviewed the following activities:

(1) Unit 2 - refuel outage heavy lifting activities on the 130-foot elevation of the containment building
(2) Unit 2 - refuel outage reactor cavity dose rate and contamination surveys and strippable paint preparation
(3) Unit 2 - containment building health physics radiological surveys and job coverage activities

Radiation Worker Performance (IP Section 03.04) (1 Sample)

(1) Unit 2 - outage activities on the refuel floor in containment

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS06: Emergency AC Power Systems (IP Section 02.05) (2 Samples)

(1) Unit 1, October 1, 2020 - September 30, 2021
(2) Unit 2, October 1, 2020 - September 30, 2021

MS10: Cooling Water Support Systems (IP Section 02.09) (2 Samples)

(1) Unit 1, October 1, 2020 - September 30, 2021
(2) Unit 2, October 1, 2020 - September 30, 2021

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

(1) From October 1, 2020, to September 30, 2021.

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) From October 1, 2020, to September 30, 2021.

71152 - Problem Identification and Resolution (PI&R)

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

(1) The inspectors reviewed the licensee’s corrective action program for potential adverse trends in technical evaluations that might be indicative of a more significant safety issue.

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) Review of Containment Fan Cooler Unit Bearing Issues
(2) Review of FLEX Corrective Actions following FLEX auxiliary feedwater pump oil sample issues

71153 - Follow Up of Events and Notices of Enforcement Discretion

Personnel Performance (IP Section 03.03) (2 Samples)

(1) The inspectors evaluated the failure of the Unit 2 22 cold leg discharge check valve, 22SJ17, failure to open during performance of the charging system full flow test surveillance and licensee's response, on October 7, 2021
(2) The inspectors evaluated the licensee's response during the Unit 2 change to Mode 3 after operators had achieved criticality following the refueling outage, on November 11, 2021

INSPECTION RESULTS

Failure to Promptly Identify and Correct Inappropriately Written Emergency Operating Procedure Steps			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000272,05000311/2021004-01 Open/Closed	[H.3] - Change Management	71111.11Q
The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," when PSEG did not promptly identify and correct a condition adverse to quality (CAQ), a deficient quality-related emergency operating procedure (EOP), 1(2)-EOP-TRIP-1, "Reactor Trip or Safety Injection." Consequently, from April 1 to December 17, 2021, this deficient EOP could have adversely affected the operators' response during an inadvertent reactor coolant system (RCS) depressurization and was used in training during licensed operator requalification simulator scenarios.			
Description: During the inspectors' observation of licensed operator requalification training in the simulator on December 1, 2021, operators paused and were challenged by procedural direction of 1(2)-EOP-TRIP-1, revision 40, step 19, pressurizer (PZR) power-operated relief valve (PORV) and spray valve status. The intent of Step 19 was to address PZR PORVs first because of the higher pressure setpoint, then to address the PZR spray valves. When the crew arrived at step 19, the operators discussed the wording and what the appropriate actions should be given the conditions of the plant. The reactor operator (RO) stated to the crew that the decision block to address a malfunctioning PZR spray valve was in error and recalled that a Notification (NOTF) had been written on the decision block error. The senior reactor operator (SRO) and RO discussed the matter and concluded that there was NOT an inadvertent RCS depressurization occurring due to malfunctioning PZR spray valve(s) or PORV(s), so the crew did NOT take action to close the PZR spray valves or PORVs. In other			

words, the crew deviated from the as-written EOP flow chart decision blocks to perform the scenario's designed and expected actions.

During the post-scenario PSEG critique, inspectors learned the crew took the expected actions as the simulator scenario was designed although the as-written step 19 contained errors. The simulated scenario did not include a malfunction associated with the PZR spray valve(s) or PORV(s) so the crew was not expected to take actions on either. To follow up to what the crew discussed during the scenario, inspectors reviewed the corrective action program (CAP) database and identified NOTF 20874515 was written for the 1(2)-EOP-TRIP-1, Step 19, discrepancy (bulleted item 'b' below).

Based on further review, the inspectors determined NOTF 20874515 was inadequate. The inspectors determined NOTF was not comprehensive in that the inspectors identified an additional error within the 1(2)-EOP-TRIP-1, Step 19, flow chart decision blocks that had not previously been identified within the CAP. Inspectors noted NOTF 20874515 was still open at the time of the simulator scenario and had been written on April 1, 2021. PSEG had classified the NOTF as Significance Level 5 (non-CAP) and had an Action Item (ACIT) to correct the EOP step. The inspectors noted that the originator had recommended resolution "ASAP." Further, the inspectors determined NOTF 20874515 did not capture the significance of the error because it was categorized as non-CAP and did not state how the error would impact licensed operators. No other NOTFs were written on other Step 19 decision blocks at the time of the simulator scenario. As a result of the review, the inspectors identified the 1(2)-EOP-TRIP-1, revision 40, Step 19 flow chart contained two decision block deficiencies:

a. The decision block states "Are PZR Spray Valves Response Abnormal" -- a "YES" answer bypasses additional actions and direct operators to the next decision block "Are BTH PZR SPRAY VALVES CLOSED," and a "NO" answer to takes the operators to "Are BOTH PZR spray valves Closed".
b. The decision block states "As (sic) PZR Spary (sic) Valves Responding as Expected" -- a "YES" answer directs operators to close BOTH PZR spray valves and a "NO" answer bypasses additional actions and direct operators to decision blocks pertaining to the power of the PORV stop valves.

Inspectors noted licensed operators went through three quarterly cycles of requalification training with these two deviations existing in 1(2)-EOP-TRIP-1, Step 19. The inspectors determined these decision blocks induced unwarranted challenges to operators and were not written to appropriately respond to an inadvertent RCS depressurization. Inspectors noted that item 'a' is a decision block related to PZR spray valves although it was intended to be written for the PZR PORVs. Also, inspectors noted that item 'b' had the "YES" and "NO" answers reversed because actions were expected to be taken if the PZR spray valves were not operating as expected. More significantly, the inspectors determined that if operators had answered the Step 19 items 'a' and 'b' decision blocks as-written with spray valves abnormally operating (e.g., stuck open), with or without the PORV(s) stuck open, this could result in operators not taking prompt action with an uncontrolled reduction in RCS pressure occurring. Inspectors concluded this would adversely affect licensee's response during an emergency.

Inspectors determined the deficiencies within 1(2)-EOP-TRIP-1, revision 40, Step 19 to be CAQs in accordance with CAP procedures LS-AA-120, "Issue Identification and Screening Process," and LS-AA-125, "Corrective Action Program." LS-AA-120, revision 22, step 2.3, states, in part, that a CAQ is a deficiency in a characteristic, documentation, or procedure that renders the quality of an activity unacceptable or indeterminate and care should be taken to make sure low-level issues related to 10 CFR Part 50, Appendix B compliance are

categorized as CAQs. Inspectors concluded that the deficiencies in Step 19 rendered the quality of the procedure to be unacceptable. LS-AA-120 states a CAQ is Significance Level 2 that is to be addressed within the CAP. LS-AA-125, revision 28, describes a Condition Report Directed Action as an action that restores a CAQ. Attachment 1, Action Development Guidance, includes timeliness to “Provide a reasonable due date that allows sufficient time to complete the action before more significant consequences occur from repeat events.” Inspectors determined the EOP discrepancies to not be editorial and met PSEG’s definition of a CAQ. Therefore, inspectors determined PSEG should have utilized the CAP process to create a corrective action to drive the station to resolve the deficient EOP before being available for use in the control room and in training during licensed operator requalification simulator scenarios.

As a result of the above, inspectors determined that PSEG did not promptly identify and correct the deficiencies in Step 19 of 1(2)-EOP-TRIP-1, revision 40, after the procedure was issued April 1, 2021.

Corrective Actions: PSEG revised 1(2)-EOP-TRIP-1 to revision 41 and implemented it on December 17, 2021 to, in part, rewrite the two decision blocks within Step 19 described as item ‘a’ and ‘b’ above. Specifically, “Are Spray Valves Response Abnormal” was changed to “Are BOTH PZR PORVs CLOSED” and “As (sic) PZR Spary (sic) Valves Responding as Expected was changed to “Are PZR Spray Valves Response Abnormal.” NOTF 20894060 was written in December 2021 to capture the inspectors identifying that the first decision block in step 19 did not have a CAP NOTF affiliated with it. Additionally, PSEG revised 1(2)-EOP-TRIP-2 and -3 to revision 41 to address minor issues. PSEG is planning to implement the remaining EOP revisions in early 2022.

Corrective Action References: 20874515, 20882870, and 20894060

Performance Assessment:

Performance Deficiency: Failure to prioritize and correct an EOP discrepancy, a CAQ, was a performance deficiency against 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," as directed in LS-AA-120 and LS-AA-125, because it was within PSEG’s ability to foresee and correct and should have been prevented. Inspectors determined PSEG did not identify and correct the EOP-TRIP-1, Step 19 deviations within an appropriate time period because the EOP was used in licensed operator requalification training and available for use in the main control room from April 1 to December 17, 2021.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, untimely correction of errors in 1(2)-EOP-TRIP-1 challenged or would have challenged licensed operators' reliability and capability to respond to a simulated or actual inadvertent RCS depressurization. This performance deficiency was compared to examples within IMC 0612, Appendix E, "Examples of Minor Violations," effective January 1, 2021, and determined example 4.i to have similarities. Specifically, the procedures were in a condition that could adversely affect the licensee's response to an emergency. The inspectors determined that if operators had answered the questions and took actions as written in 1(2)-EOP-TRIP-1 with the PZR spray valves stuck open, with or without the PZR PORV(s) stuck open, this would result in operators failing to take prompt actions to mitigate the RCS depressurization.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Specifically, based on discussions with senior reactor analysts, inspectors used IMC 0609, Appendix A, Exhibit 2 because the finding is associated with and best assessed under the Mitigating Systems cornerstone, based on its contribution to risk. Specifically, procedure 1(2)-EOP-TRIP-1, Step 19, provides directions to licensed operators to mitigate an inadvertent RCS depressurization caused by the pressurizer spray valve(s) and/or PORV(s), which are mitigating system SSCs. As a result, the finding screens to Green because, although inspectors determined the finding could delay the licensed operators' performance during accident mitigation, the pressurizer spray valve(s) and PORV(s) relied upon for the mitigating strategies would be directed for use and maintain their operability / PRA functionality. Specifically, based on discussions with region-based operator licensing examiners the inspectors determined that if operators had answered the questions and took actions as written in 1(2)-EOP-TRIP-1 with the pressurizer spray valve(s) stuck open, with or without the PORV(s) stuck open, this would result in licensed operators not initially performing actions to address an uncontrolled reduction in RCS pressure, but later steps within the EOPs provide additional directions to mitigate abnormally operating pressurizer spray valve(s) and/or PORV(s) before adverse impact to the overall strategy. Therefore, the finding was determined to be of very low safety significance (Green).

Cross-Cutting Aspect: H.3 - Change Management: Leaders use a systematic process for evaluating and implementing change so that nuclear safety remains the overriding priority. The inspectors determined PSEG did not adequately evaluate the proposed revision 40 to 1(2)-EOP-TRIP-1 prior to implementation, nor include the necessary oversight commensurate to the risk of an EOP change.

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," states, in part, that conditions adverse to quality, such as deficiencies, deviations, and nonconformance are promptly identified and corrected.

Contrary to the above, deficiencies in the quality-related 1(2)-EOP-TRIP-1, revision 40, Step 19 were not promptly identified and corrected from April 1 to December 17, 2021.

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

Failure to Establish Appropriate Foreign Material Exclusion Controls for Work Activities on Cold Leg Safety Injection Piping			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000311/2021004-02 Open/Closed	None (NPP)	71111.15
A self-revealing finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when PSEG did not establish appropriate foreign material exclusion (FME) controls while performing work activities on cold leg safety injection piping, an activity affecting quality. Specifically, the FME controls prescribed in both the October 12–24, 2012			

and April 10–24, 2014 work orders did not provide adequate guidance. Consequently, foreign material in the 22-loop of the cold leg safety injection piping caused the discharge check valve, 22SJ17, to become bound in the closed position and rendered the 22-loop of the emergency core cooling injection subsystem inoperable on October 7, 2021.

Description: At Salem, the intermediate head injection system, also referred to as the safety injection system, includes two safety injection pumps and the associated valves and piping in the flowpaths from the borated refueling water storage tank (RWST) to the RCS cold and hot legs. The system is designed to provide water from the RWST to the RCS in the case of a relatively small break in which the RCS pressure remains high for a relatively long period. The cold leg safety injection lines, including the check valves, are forward and reverse flow tested every outage (i.e., every 18 months). When the cold leg safety injection lines are not being tested, the lines are filled and vented, in preparation for injection to the RCS.

On October 7, 2021, while Salem Unit 2 was shutdown for a planned refueling outage, the 22-loop cold leg safety injection discharge check valve, 22SJ17, failed to open during performance of forward flow testing in accordance with S2.OP-ST.SJ-0016, "High Head Cold Leg Throttling Valve Flow Balance Verification." Operators observed 0 gallons-per-minute flowing through the 22-loop of cold leg safety injection. Operators subsequently declared the 22-loop cold leg safety injection line inoperable and initiated corrective actions to address the valve failure.

The 22SJ17 was inspected and replaced under Work Order 60151136. Foreign material was discovered within the valve during investigation. Specifically, metallic foreign material had become lodged in the valve between the disc and guiding surfaces, so the valve was not capable of opening to perform its safety function. PSEG performed a causal evaluation within 70220086 and determined the likely source of the foreign material to be a result of work activity 60096805 in October 2012, replacement of two vent valves, 2SJ346 and 2SJ347. These valves are located directly upstream of the 22SJ17, in a vertical pipe run, and were required to be cut-out to be replaced. Additionally, the inspectors identified that the only other work conducted on the 22-loop of cold leg safety injection near the 22SJ17 was under Work Order 60111056 in April 2014. Work Order 60111056 included inspecting the 22SJ17 and replacing the valve plug after 22SJ17 had failed during backflow leakage testing and the diametric clearances were determined to be out of tolerance. Since April 2014, no additional internal work activities have been performed on the 22-loop of the cold leg safety injection piping.

Based on a review of causal evaluation 70220086, inspectors determined PSEG did not establish adequate FME controls in accordance with MA-AA-716-008, "Foreign Material Exclusion Program," Revisions 7 and 8, during both Work Order 60096805 (replacement of the 2SJ346 and 2SJ347 valves) and Work Order 60111056 (inspection and repair 22SJ17), respectively. Specifically, inspectors determined PSEG did not follow the directions for activities breaching primary systems and categorize these work activities on the cold leg safety injection line as FME Area (FMEA) 1 plans. During these 60096805 and 60111056 work activities, PSEG did not follow guidance within MA-AA-716-008 for work that breached a primary system and also instead categorized each work activity as a FMEA 2 plan. FMEA 1 plan is the highest level of FME controls imposed on a system or component to prevent and control introduction of foreign material.

As stated in the revision applicable at the time of the work activities and the current revision of MA-AA-716-008, Step 4.5.6 and Attachment 4, a flush is to be used as necessary to prevent the transport of debris into the reactor vessel following maintenance and work on any

system communicating directly with the RCS requires a FMEA 1 plan, respectively. The 2SJ346 and 2SJ347 valves and 22SJ17 valve are in the cold leg safety injection line, which communicates directly with RCS because the line is part of the emergency core cooling system injection. Additionally, as stated in MA-AA-716-008, Section 2, FMEA 1 plans are required if the configuration or other circumstances does not make a final visual inspection of internal cleanliness possible. The 2SJ346 and 2SJ347 valves do not provide a configuration in which a final inspection of internal cleanliness is possible. For these reasons, the use of FMEA 1 Plan activities outlined in MA-AA-716-008, Attachment 6, were to be utilized. Within FMEA 1 plans, work activities (e.g., cutting) are to be thoroughly controlled to prevent foreign material (e.g., debris from cutting) and to allow inspection and retrieval of the foreign material. These Attachment 6 directions state, in part, to employ a cutting method that will not result in any internal cutting debris, unless other methods are used to contain debris caused by cutting, when breaching a vertical pipe run. As stated in Attachment 6, closeout inspections are to be performed immediately before closing the equipment breach and “borescope, mirrors, and other aids may be used to examine inaccessible or difficult-to-see- surfaces properly.”

As a result of the inspectors’ review, it was determined that PSEG’s failure to establish proper FME controls in accordance with MA-AA-716-008 for the 60096805 and 60111056 work activities resulted in foreign material to be able to lodge in the 22SJ17 valve and render the valve unable to open during performance of S2.OP-ST.SJ-0016.

Corrective Actions: The 22SJ17 valve was cut out and replaced using an FMEA 1 plan. As an extent of condition, the adjacent piping was borescoped and all the cold leg injection lines were flushed. Foreign material was discovered in the 22-loop of cold leg safety injection in the vertical piping upstream of the 22SJ17; however, foreign material was not discovered in the other loops of the cold leg safety injection piping.

As a result of these corrective actions, the inspectors have reasonable assurance that foreign material has been removed from the system and did not transverse to the RCS.

Corrective Action References: 20879285, 70220086

Performance Assessment:

Performance Deficiency: The licensee’s failure to establish adequate work instructions in 60096805 and 60111056 in accordance with 10 CFR Part 50, Appendix B, "Instructions, Procedures, and Drawings," using the FME controls within MA-AA-717-008 was a performance deficiency because it was reasonably within the licensee’s ability to foresee and correct and should have been prevented.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Inspectors determined maintenance work activities on the 22-loop of cold leg safety injection adversely affected the availability, reliability, and capability of the cold leg safety injection system. The inspectors compared this performance deficiency against examples in IMC 0612, Appendix E, “Examples of Minor Issues,” effective January 1, 2021, and found similarities to example 4.c. Specifically, the cold leg safety injection line was returned to service after work activities but because of inadequate FME controls during these work activities on the cold leg safety injection piping, foreign material was able to lodge in the

22SJ17 check valve preventing its ability to perform its safety function.

Significance: The inspectors assessed the significance of the finding using Appendix G, "Shutdown Safety SDP." IMC 0609, Attachment 4 directs the use of Appendix G if the finding pertains to a degraded condition while the plant was shutdown. At the time of the 22SJ17 failure on October 7, 2021, Salem Unit 2 was shutdown in Mode 6 with approximately 150 (of 193) fuel assemblies in the core. In accordance with IMC 0609, Appendix G, Attachment 1, Exhibit 3, the finding screens to Green because the safety injection system maintained its operability or PRA functionality. Specifically, the minimum boron injection flow was still maintained using the other 3 cold leg safety injection loops. However, based on discussions with Senior Reactor Analysts, due to the potential contribution of risk at-power with this valve nonfunctional, inspectors also used IMC 0609, Appendix A to inform the significance screening. In accordance with IMC 0609, Appendix A, Exhibit 2 the finding screens to Green because the PRA functionality was maintained. Therefore, the finding was determined to be of very low safety significance (Green).

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance. Specifically, it has been greater than three years since the performance deficiency and based on a review of recent corrective actions, including actions within the self-assessment conducted in 70211134, inspectors determined adequate correctives have been initiated since 2014 to address FME program weaknesses.

Enforcement:
Violation: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions.

Contrary to the above, in October 12–24, 2012 and April 10–24, 2014, quality-related maintenance Work Orders 60096805 and 60111056, respectively, on the cold leg safety injection piping did not establish appropriate FME controls for work activities on systems or components communicating directly with the RCS. Specifically, PSEG failed to establish adequate FME control in accordance with MA-AA-716-008 to prevent and control introduction of foreign material into the cold leg safety injection piping.

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

Failure to Perform 10 CFR 50.59 Written Evaluation of a Procedure Change That Adversely Affected the Design Function of the Turbine-Driven Auxiliary Feedwater Pump			
Cornerstone	Significance/Severity	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green Severity Level IV NCV 05000272,05000311/2021004-03 Open/Closed	[H.6] - Design Margins	71111.18
The inspectors identified a finding of very low safety significance (Green) and an associated Severity Level IV non-cited violation (NCV) of 10 CFR 50.59, "Changes, Tests, and Experiments," because PSEG did not provide a written evaluation as the basis for why an adverse change did not require a license amendment. Specifically, PSEG did not perform the required 10 CFR 50.59 written evaluation to demonstrate prior NRC approval was not			

required for a procedure revision that removed the room cooler, VHE36, as a support system for the turbine-driven auxiliary feedwater pump (TDAFP) design function.

Description: As described in section 10.4.7.2 of the updated final safety analysis report (UFSAR), the auxiliary feedwater (AFW) system consists of two safety-related 50% capacity motor-driven pumps and one safety-related 100% capacity TDAFP. The AFW system is capable of functioning for extended periods, allowing time either to restore normal feedwater flow or to proceed with an orderly cooldown of the plant to design temperature of the residual heat removal (RHR) system. The TDAFP is driven from two steam lines, available without electric power, and will automatically start when specific logic is met. The TDAFP can supply feedwater to all four steam generators. The TDAFP room is cooled by the safety-related room cooler, VHE36, which is part of the auxiliary building ventilation (ABV) system. As described in section 9.4.2 of the UFSAR, the ABV system is designed to maintain temperatures below 110°F through automatic controls and the primary function is to cool the pump rooms.

10 CFR 50.59, "Changes, Tests, and Experiments," states, in part, that changes in procedures as described in the UFSAR may be made without obtaining an NRC license amendment if the applicable criteria of 50.59(c)(2) are met. Procedures as described in the UFSAR means those procedures that contain information described in the UFSAR such as how SSCs are operated and controlled (including assumed operator actions and response times). SSCs may have preventive or mitigative design functions. Regulatory Guide 1.187, Revision 3, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," endorses the use of NEI 96-07, Revision 1, "Guidelines for 10 CFR 50.59 Implementation," for licensees to use for 10 CFR 50.59 implementation. PSEG procedure LS-AA-104, "50.59 Review Process," directs qualified staff, with reference to NEI 96-07 guidance, on how to meet the 50.59 regulations. Specifically, PSEG uses a combination of these documents to perform a 50.59 screening and, if the screening determines the change has an adverse effect, then a 50.59 written evaluation to determine the magnitude of the adverse effect. This 50.59 written evaluation is used to compare the magnitude of the adverse effect resulting from the change to the 50.59(c)(2) criteria to determine if NRC approval is required.

As described in IMC 0335, "Changes, Tests, and Experiments" and NEI 96-07, a formal 50.59 written evaluation is required for changes that adversely affect design functions, methods used to perform or control design functions, or evaluations that demonstrate that intended design functions will be accomplished (i.e., "adverse changes"). Adverse changes may have direct or indirect effects. As stated in IMC 0335, "changes reducing the SSC capability, performance, qualification, or reliability are adverse." NEI 96-07 states adverse changes, for example, "would introduce a new type of accident or malfunction," "have the potential to increase the likelihood of malfunction," or "add steps necessary for performing tasks." PSEG uses procedure LS-AA-104, Revision 8, "50.59 Review Process," to direct staff on how to perform a 50.59 screening in order to determine if the change is adverse and requires a 50.59 written evaluation. Specifically, section 4.3 and Form 3, state, in part, that if any of the 50.59 screening questions 1 through 4 is "YES," then a 50.59 evaluation is required in accordance with Section 4.4 of LS-AA-104.

1. Does the proposed Activity involve a change to an SSC that adversely affects an UFSAR-described design function? (See Section 4.2.1.1 of NEI 96-07 Revision 1)
2. Does the proposed Activity involve a change to a procedure that adversely affects how UFSAR described SSC design functions are performed or controlled? (See Section 4.2.1.2 of NEI 96-07 Revision 1)
3. Does the proposed Activity involve an adverse change to an element of a UFSAR

described evaluation methodology, or use of an alternative evaluation methodology, that is used in establishing the design bases or used in the safety analyses? (See Section 4.2.1.3 of NEI 96-07 Revision 1)

4. Does the proposed Activity involve a test or experiment not described in the UFSAR, where an SSC is utilized or controlled in a manner that is outside the reference bounds of the design for that SSC or is inconsistent with analyses or descriptions in the UFSAR? (See Section 4.2.2 of NEI 96-07 Revision 1)

On August 2, 2021, PSEG performed a 50.59 screening (S2021-102) in accordance with LS-AA-104 to determine if the proposed change to the procedure S1(S2).OP-SO.SW-0005, "Service Water System Operation," potentially adversely effects how the UFSAR described TDAFP and ABV systems' design functions are performed or controlled. The procedure revision was made for both Salem Unit 1 and Unit 2 to, in part, remove the requirement to declare the TDAFP inoperable (i.e., enter the Limiting Condition for Operation 3.7.1.2 72-hour action statement) if the respective VHE36 room cooler was inoperable (i.e., the 13/23 TDAFP remains operable with the respective VHE36 room cooler inoperable). As a basis for this change and to support the 50.59 screening, PSEG used a calculation (S-C-AF-MEE-1749) to demonstrate that the TDAFP can perform its design function without the VHE36 room cooler available for the minimum duration of approximately 2 hours required to mitigate the longest credited design basis accident. PSEG determined the proposed change did not adversely affect the UFSAR-described design functions and, as a result, a formal 50.59 written evaluation was not required (i.e., screened-out). Additionally, inspectors noted PSEG concluded that this issue did not constitute a new degraded or unanalyzed condition involving an SSC that is either required to be OPERABLE or required to perform a support function for such SSCs. Therefore, PSEG concluded that an OPERABILITY determination was not required. As a result of the above information, on August 2, 2021, the new revision of S1(S2).OP-SO.SW-0005 was available for use.

The inspectors determined the revision to the procedure could potentially adversely affect how the UFSAR-described TDAFP and ABV systems' design functions are performed or controlled. Inspectors concluded this change would result in no longer having a room cooler that would start automatically and operate continuously to remove the heat from the TDAFP room while TDAFP is relied upon to mitigate an accident. The inspectors noted the ABV sections of the UFSAR (Sections 9.4.2.2.2 and 9.4.2.3) state the room coolers will start automatically and operate continuously at full capacity in response to the above normal ambient temperatures that develop as the auxiliary feedwater pumps are started. The UFSAR section also states that the ambient temperature in vital pump rooms will not be exceeded assuming a single failure of any individual room cooler or electrical bus. As a result, the inspectors determined this change introduces a potential new type of malfunction (TDAFP failure due to lack of cooling) that is not described in the UFSAR. Not having the TDAFW room cooler will result in increasing AB and TDAFP room temperatures trending toward the AB design limit and the limiting component temperature of the TDAFP, respectively, especially during TDAFP operation, and may introduce an earlier than expected, unanalyzed failure. As such, this change has the potential to degrade environmental qualifications and increase the likelihood of malfunction of the TDAFP. Due to this change, inspectors determined operators would need to monitor and control the duration of TDAFP operation, which is not described in the UFSAR. Inspectors noted that PSEG's 50.59 screening and the S-C-AF-MEE-1749 acknowledge the TDAFP may fail at some time with the room cooler unavailable.

The inspectors determined that because PSEG did not consider the procedure change

adverse within their 50.59 screening, PSEG did not adequately evaluate the procedure change's adverse effects against 50.59(c)(2). The inspectors determined the calculation (S-C-AF-MEE-1749) to support this change assessed the magnitude of the adverse effect so it should not be used in the 50.59 screening. The primary focus of the 50.59 written evaluation is to determine the magnitude of the adverse effect so it can then be compared against the 50.59(c)(2) criteria. As stated in NEI 96-07 and IMC 0335, "the magnitude of the adverse effects is irrelevant for the screening process" and "if the change has both beneficial and adverse effects, then the change should be screened-in and the 10 CFR 50.59 evaluation is required." Also, NEI 96-07 states that even if technical/engineering information supporting the change demonstrates all safety functions are satisfied, the analyses necessary to demonstrate acceptability are beyond the scope/intent of 50.59 screenings, thus a 50.59 written evaluation is required. PSEG did not document a written evaluation in accordance with 50.59(d)(1) to provide a basis for why the procedure change, for example, did not (i) result in a more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the FSAR (as updated) and/or (ii) result in a more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the UFSAR. The procedure change adversely impacted environmental qualification and the TDAFP and ABV systems' reliability and introduced the need to control the duration that the TDAFP can operate. The inspectors also noted there are no design controls or operating procedures to trip the TDAFP if a specified time or room temperature is reached.

Based on this review, absent the 50.59 written evaluation, the inspectors could not reasonably determine if the change to S1(S2).OP-SO.SW-0005 to remove the room cooler, VHE36, as a support system for the TDAFP design function, would have required prior NRC approval.

Corrective Actions: Based on inspectors' review, on October 24, 2021, PSEG generated CAP NOTF 20887083 to perform an independent review of the 50.59 screening and to perform a revision of the 50.59 screening. Also, a temporary Standing Order was issued by Operations to not utilize the revised procedure. On January 5, 2022, PSEG generated NOTF 20894366 concluding that a 50.59 written evaluation was required and to initiate corrective actions to perform the 50.59 written evaluation for this procedure change.

Corrective Action References: 20887083, 20894366

Performance Assessment:

Performance Deficiency: The inspectors determined that PSEG's failure to perform a written evaluation which provides the basis for the determination that a change did not require a license amendment was a reasonably within their ability to foresee and correct and is therefore a performance deficiency.

LS-AA-104, "50.59 Review Process," section 4.3 and Form 3, provide directions on how to perform the 50.59 screening. The procedures states, in part, that the 50.59 screening questions should be documented to a degree commensurate with the safety significance of the change and if all questions are answered "NO" then a 50.59 evaluation is not required. The inspectors determined that, for example, questions 1 and 2 should have been answered "yes" because the change adversely affects the UFSAR-described design function for the room cooler to start and run continuously when the TDAFP starts and how the UFSAR-described design function is controlled by limiting the duration the TDAFP runs, respectively. The inspectors determined PSEG failed to provide a written basis for why

removing the room cooler, VHE36, as a support function for the TDAFP design function within S1(S2).OP-SO.SW-0005 met the criteria of 50.59(c)(2) and did not require NRC approval.

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. The performance deficiency was evaluated against IMC 0612, Appendix E, "Examples of Minor Issues," dated December 10, 2020. The inspectors determined this issue to be similar to the discussions in examples 13.a and 5.a. Specifically, absent NRC intervention, PSEG's incorrect use of a regulatory process to revise a procedure could have led the licensee to take the VHE36 room cooler out of service, without entering the Limiting Condition for Operation 3.7.1.2 72-hour action statement, permitting the TDAFP to run in response to a design basis accident running without room cooling (i.e., impacted risk). The inspectors noted that PSEG's PRA notebooks state room cooling is required for the TDAFP.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered "No" to each of the questions in IMC 0609, Appendix A, Exhibit 2 because Salem had not experienced a failure of the TDAFP attributed to loss of room cooling. Therefore, the inspectors determined that this finding is of very low safety significance (Green).

Cross-Cutting Aspect: H.6 - Design Margins: The organization operates and maintains equipment within design margins. Margins are carefully guarded and changed only through a systematic and rigorous process. Special attention is placed on maintaining fission product barriers, defense-in-depth, and safety related equipment. The inspectors determined PSEG did not include adequate technical rigor for the procedure change and associated 50.59 screening commensurate to the risk of operating the safety-related TDAFP with the safety-related room cooler out of service.

Enforcement: The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it is necessary to address this violation which impedes the NRC's ability to regulate using traditional enforcement to adequately deter non-compliance.

Severity: Inspectors used NRC Enforcement Manual, Section 2.1.3, and Enforcement Policy, Section 6.1, to inform this violation. As a result, because PSEG failed to perform a 50.59 written evaluation and the resulting change was evaluated by the SDP as having very low safety significance (Green), this violation is categorized as Severity Level IV. The Severity Level is consistent with Example 6.1.d.2 of the NRC Enforcement Policy.

Violation: 10 CFR 50.59(d)(1) requires, in part, that the licensee shall maintain records of changes in procedures made pursuant to paragraph (c) of this section. These records must include a written evaluation which provides the bases for the determination that the change does not require a license amendment pursuant to paragraph (c)(2) of this section.

10 CFR 50.59(c)(2) requires, in part, that a licensee shall obtain a license amendment pursuant to Sec. 50.90 prior to implementing a proposed change if the change would (i) result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the final safety analysis report (as updated); or (ii) result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the final safety analysis report (as updated).

Contrary to the above, from August 2, 2021, to October 25, 2021, PSEG did not maintain

records of a change in a procedure made pursuant to paragraph (c) of this section that included a written evaluation which provided the bases for the determination that the change does not require a license amendment pursuant to paragraph (c)(2) of this section. Specifically, PSEG revised the procedure S1(S2).OP-SO.SW-0005, "Service Water System Operation," to remove the VHE36 room cooler as a support system for the TDAFP and ABV systems, but did not perform a written evaluation to determine that the change, for example, did not result in a more than minimal increase in the frequency of occurrence of an accident previously evaluated in the final safety analysis (as updated) and/or result in more than minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the final safety analysis report (as updated).

In accordance with the Enforcement Policy, (Section 6.1.d.2), the violation was classified as a Severity Level IV violation because the underlying technical issue was of very low risk significance. Because this finding was of very low safety significance, was not repetitive or willful, and the non-compliance was promptly entered into PSEG's CAP as NOTF 20894366, this violation is being treated as an NCV.

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

Inadequate Corrective Actions for the Incorrect Installation of the 12 Containment Fan Cooling Unit Inboard Bearing

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000272/2021004-04 Open/Closed	[P.1] - Identification	71111.19

A self-revealing finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified when PSEG did not ensure that a condition adverse to quality (CAQ) associated with a non-conforming condition of the 12 containment fan coil unit (CFCU) inboard bearing was promptly identified and corrected. Specifically, PSEG documented that the inboard bearing was not appropriately centered in the housing but did not document this non-conforming condition in a notification (NOTF) or correct the condition prior to restoring the 12 CFCU to service. Consequently, the 12 CFCU inboard bearing failed on August 20, 2021.

Description: The containment fan cooling system is an engineered safeguard that is designed to operate during normal power generation, and during the design basis loss of coolant accident. The system reduces containment stress by removing heat from the containment atmosphere to limit the average temperature during normal power operation and shutdown conditions.

On August 20, 2021, the 12 CFCU inboard bearing was discovered to be failed and documented in NOTF 20883034, and entered the associated 14-day technical specification action statement for the inoperability of the 12 CFCU.

PSEG's casual evaluation (70219265) determined that the 12 CFCU inboard bearing failed as a result of being incorrectly installed in 2008. Specifically, PSEG determined the bearing was installed against the housing vice centered which allowed relative motion and rotation to develop between the adapter sleeve and the bearing inner ring (known as creep). This creep created a source of abnormal friction, eventually causing the bearing to fail. PSEG's

evaluation also determined that bearing failure was due to a missed opportunity to correct the installation discrepancy when noted during planned work in 2018, Work Order 40044214, for a 42-month bearing repack. The inspectors noted within Work Order 40044214 the note said that the inboard bearing was not centered in the pillow block housing, and was sitting against the fan side of the housing. The inboard bearing is designated as a floating bearing, with the purpose to shift axially with the shaft to accommodate for thrust and expansion.

The inspectors reviewed PSEG's casual evaluation, work orders, maintenance, and CAP procedures. The last replacement of the 12 CFCU inboard bearing occurred on November 2, 2008 under Work Order 60079226, in accordance with PSEG procedure SC.MD-PM.CBV-0001(Q), Revision 8, "Containment Fan Coil Unit Shaft, Pillow Block Bearing and Labyrinth Seal Repack and/or Replacement." In addition, the inspectors noted that PSEG's CAP procedure LS-AA-120, Revision 17, Section 4.1.1, states that if at any time a CAQ arises, then initiate a NOTF in accordance with LS-AA-120. LS-AA-120, "Issue Identification and Screening," Section 4.2, states, in part, to implement or initiate immediate actions upon discovery of an issue and generate a NOTF.

Based on the information above, the inspectors determined that PSEG did not ensure a CAQ associated with a non-conforming condition on the 12 CFCU inboard bearing was promptly identified and corrected. Specifically, during the 42-month planned repacking of the 12 CFCU inboard bearing on March 28, 2018, PSEG did not document the non-conformance in a NOTF or correct the inboard bearing misalignment prior to restoring the 12 CFCU to service.

Corrective Actions: PSEG's corrective actions involved completing a casual evaluation, replacing the inboard bearing, and revising CFCU maintenance procedure SC.MD-PM.CBV-0001(Q).

Corrective Action References: 20883034

Performance Assessment:

Performance Deficiency: The inspectors determined that PSEG did not ensure a NOTF was generated or correct the inboard bearing misalignment prior to restoring the 12 CFCU to service as required by 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," as implemented by LS-AA-120, Revision 17, Sections 4.1.1 and 4.2, which was a performance deficiency that was within their ability to foresee and correct, and which should have been prevented.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the SSC and Barrier Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The inspectors used Example 4.g in IMC 0612, Appendix E, "Examples of Minor Issues," in their determination that the performance deficiency was associated with SSC and Barrier performance attribute. Specifically, the CFCU reliability and availability was impacted by the inboard bearing misalignment via the inboard bearing temperature increase and subsequent failure, causing the 12 CFCU to be unavailable.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors assessed the significance of the finding using Appendix A, "Significance Determination of Reactor

Inspection Findings for at Power," Exhibit 3 – Barrier Integrity Screening Questions, Section C for Reactor Containment. The finding screened to Green, very low safety significance, because there was no actual open pathway in the physical integrity of the reactor containment, no failure of the containment isolation system, no failure of containment heat removal components, or no failure of the plant's severe accident mitigation features. Additionally, there was no actual reduction in function of the hydrogen igniters in the reactor containment.

Cross-Cutting Aspect: P.1 - Identification: The organization implements a corrective action program with a low threshold for identifying issues. Individuals identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, PSEG did not generate a NOTF or corrective actions following notes within Work Order 40044214 during the 42-month CFCU repack maintenance on March 28, 2018. The inspectors focused on the behavior of the missed opportunity of identifying the misaligned inboard bearing versus the incorrect installation in 2008 that was annotated in NOTF 20883034.

Enforcement:
Violation: 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," requires, in part, that measures shall be established to ensure that CAQs, such as deviations and non-conformances, are promptly identified and corrected. Contrary to the above, from March 2018 to August 2021, PSEG did not promptly identify or correct the CAQ, a misaligned 12 CFCU inboard bearing, that ultimately failed.

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

Observation: Review of FLEX Corrective Actions following FLEX auxiliary feedwater pump oil sample issues	71152

Due to recent oil sample issues for FLEX auxiliary feedwater (AFW) pumps documented as a Green finding in Salem Integrated Inspection Report 05000272,311/2020001-01, the inspectors performed a review of corrective actions in PSEG's CAP to assess PSEG's ability to adequately identify problems, evaluate the causes of the equipment issues, and resolve the issues in a timely manner.

Following the Green finding, PSEG reviewed the maintenance plans and preventative maintenance strategies for the FLEX AFW pumps via an ACIT in evaluation 70212563. On May 27, 2020, the maintenance plans for each FLEX AFW pump 6-month inspections were updated to include more detailed notes about how and what to check when inspecting the oil bubblers. Specifically, a note was added stating, "CHECK lube oil level in oiler and observe the oil condition. With a light illuminating the oiler from the top, oil should be clear with no visible particulates, contamination, or separation. If a degraded condition is identified, a notification should be written to drain and flush existing oil and replace per the lube screen."

The inspectors followed up on perceived delays associated with PSEG inspections of the fire protection equipment for the FLEX emergency diesel generators. Through discussions, the inspectors learned there were substantial planning required to inspect the misting systems.

The inspectors reviewed the biennial review process related to FLEX procedures. The inspectors questioned the consistency of biennial reviews related to procedure SH.OP-AM.FLX-0051(Q), "Salem/Hope Creek Shared FLEX Equipment Phase Two Deployment," as it was observed that the biennial review deadline has been exceeded. NRC-identified NOTFs

20893954 and 20893979 were generating citing procedure SH.OP-AM-FLX-0051(Q) was incorrectly classified as a Q procedure under procedure AD-AA-101-1006, “Procedure Biennial Reviews,” and under Attachment 3 should be exempt from biennial review. PSEG under NOTF 20893954 has captured the procedure biennial review performance in CAP.

The NRC inspectors did not identify any findings or violation of more than minor significance associated with this review.

Observation: Semi-Annual Trend Review	71152

The inspectors evaluated a sample of issues and items tracked within PSEG’s CAP from July 2021 through December 2021 to determine whether issues were appropriately considered as emerging or adverse trends. The inspectors verified that PSEG was evaluating issues for potential trends; however, the inspectors identified a potential trend regarding the quality of evaluations.

In accordance with LS-AA-125, “Corrective Actions Program,” section 4.3, after PSEG generates CAP NOTFs, inspectors determined that an evaluation is, in general, initiated to address the issues and initiate corrective actions in a timely manner. Inspectors reviewed a sample of evaluations to assess if PSEG appropriately initiated technical evaluations at a low threshold to better understand the issue and then, if deemed necessary, in accordance with LS-AA-125-1001, “Cause Analysis,” performed a cause analysis to initiate corrective actions.

The inspectors identified weaknesses within a sample of recent evaluations, the most notable of which were within Technical Evaluations 70216808, 70219861, and 70220388. The removal of breaker cycling and inspections as part of routine preventive maintenance was evaluated in 70216808; the failure of the 12 CFCU due to incorrect installation of a bearing was evaluated in 70219861; and the degraded (leaking) 22-loop cold leg safety injection discharge check valve (22SJ17) due to installation of the replacement valve without a gasket was evaluated in 70220388. Inspectors noted each one of these evaluations were approved through the CAP Management Review Committee.

· NOTF 20871639 resulted in 70216809, which was performed to change the preventive maintenance strategy so that the 2-year preventive maintenance would no longer require cycling or cleaning and inspecting the molded case breakers. Inspectors determined this evaluation overlooked a previous technical evaluation in 70174576 where more frequent breaker cycling was established as the result of a common cause analysis looking into a recent trend in molded case breaker performance. Specifically, the 70216809 evaluation led to the removal of preventive maintenance strategies that were deemed appropriate to address degraded molded case breaker performance. Inspectors also noted PSEG generated NOTF 20892732 to state the concerns with 70216809.

· NOTF 20885231 resulted in the work group evaluation in 70219861, which was performed to determine the cause of installing non-conforming bearings in safety-related applications of the 11, 12, and 23 CFCUs. The inspectors noted PSEG did not identify a direct cause of how this occurred because the “legacy aspect of the issue (nine years) prohibits any further evaluation into why the parts were added the [bill of material].” Inspectors determined that further investigation into the procedures and processes at the time (i.e., sequence of events leading to the installation of the parts) could have identified a better understanding of the cause and could have led to corrective actions in processes or procedures. Additionally, inspectors noted that recent NOTFs 20880051 and 20886133 include issues with parts inappropriately listed within work activity documents. As a result,

inspectors determined the 70219861 evaluation missed an opportunity to review how parts are procured and installed in the plant so that recurrence is prevented.

· NOTF 20888126 resulted in the work group evaluation in 70220388, which was performed to determine the cause of installing the replacement 22SJ17 valve without a gasket. Inspectors noted PSEG did not identify a "missed opportunity to identify valve assembly discrepancies prior to installation." Specifically, PSEG stated "there were no viable opportunities to identify the assembly discrepancies prior to installation." Inspectors observed that more adequately written work instruction could have prevented the installation of this inappropriately assembled valve. As a result, the 70220388 evaluation missed an opportunity to address potential gaps in work instructions and to prevent recurrence.

For the work group evaluations detailed above, the inspectors viewed the observations as a potential trend regarding the quality of evaluations. The inspectors did not identify any issues of more than minor safety significance associated with this review. PSEG generated NOTF 20895375 to capture this identified trend.

Observation: Review of Containment Fan Cooler Unit (CFCU) Bearing Issues	71152

Due to recent CFCU motor bearing equipment issues at Salem Unit 1 and Unit 2, the inspectors performed a review of the bearing issues in PSEG's CAP to assess their ability to adequately identify problems, evaluate the causes of the equipment issues and resolve the issues in a timely manner.

The inspectors reviewed NOTFs 20843496 and 20843618 in which PSEG identified that the installed bearings on the 11, 12, and 23 CFCUs were non-safety related items procured without quality assurance (PC-4) vice being the required commercial grade items intended for important to safety applications (PC-2). PSEG's review determined the installed PC-4 bearings were interchangeable with the PC-2 bearings because they are of the same form, fit and function. PSEG documented this determination in an operability evaluation (OPEVAL 70211221) to justify the non-conforming condition until the installed PC-4 bearings could be replaced. PSEG also completed a commercial grade item dedication evaluation for all future bearing replacements to upgrade the PC-4 bearings to a PC-2 status in accordance with their procedure CC-AA-300-1006, Guidelines for Procurement Activities for Commercial Grade Dedications.

During the review of these evaluations, inspectors identified the following:

- In NOTF 20843496, PSEG evaluated the non-conforming condition but did not identify causal factors to address the potential performance issues that led to the PC-4 bearings being installed in a PC-2 application.

- When PSEG changed their OPEVAL process and procedures in April 2021, the PC-4 bearing OPEVAL was closed because the non-conforming condition no longer met the threshold for requiring an OPEVAL under procedure OP-AA-108-115, Operability Evaluations and Functionality Assessments. The inspectors noted that when PSEG closed this OPEVAL, no additional actions were taken by PSEG to ensure that technical justification existed for their continued operations with the installed PC-4 bearings.

- The inspectors also noted that multiple NOTFs (20866379, 20843756 and 20847671) were documented between January and November 2020 in PSEG's CAP requesting that the installed PC-4 bearings be replaced. The inspectors determined that PSEG's prioritization

and planning processes had not been timely in replacing the PC-4 bearings in accordance with PSEG's CAP procedure for the completion of corrective actions.

In response to the issues identified by the inspectors above, PSEG completed a causal evaluation and extent-of-condition (EOC) review under NOTF 20885231 and Order 70219861. PSEG also completed a technical evaluation under NOTF 20885154 and Order 70219943. PSEG's evaluation determined that the direct cause of the initial PC-4 bearing installation into the 11, 12, and 23 CFCUs was the inappropriate inclusion of the PC-4 bearings on the bill of materials and subsequent work order parts list. As part of PSEG's corrective actions, PSEG corrected the bill of materials for the CFCUs to show only the approved bearing type allowed to be installed. PSEG's EOC review found a total of 6,835 functional locations that utilized PC-4 bearings, with 400 of these being safety-related components. PSEG EOC then reviewed and evaluated about 100 of these finding that in each case the use of PC-4 bearings in that location was appropriate since the bearing did not perform a safety function. The inspectors reviewed the PSEG's EOC and sampled additional items. The inspectors did not find any issues associated with PSEG's EOC assessment.

The inspectors also reviewed failures of the 12 CFCU inboard bearing on August 20, 2021 (70219265), and the 21 CFCU outboard bearing on December 13, 2020 (70215971). The NRC had previously documented a Green NCV (2021001-02) regarding the 21 CFCU outboard bearing for inadequate lubrication maintenance procedures. The inspectors noted that the 12 CFCU inboard bearing did not fail because of the same failure mechanism as the 21 CFCU bearing, and neither bearing failed because of PC-4 bearings being installed in a PC-2 application. The details regarding the 12 CFCU bearing failure are captured in a Green NCV in this report (2021004-04). Aside from this NCV, the NRC inspectors did not identify any further findings or violations of more than minor significance.

EXIT MEETINGS AND DEBRIEFS

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

- On October 21, 2021, the inspectors presented the Salem Unit 2 Inservice Inspection inspection results to Mr. David Sharbaugh, Vice President, Salem Generating Station and other members of the licensee staff.
- On November 4, 2021, the inspectors presented the Radiation Protection Inspection Debrief inspection results to Mr. David Sharbaugh, Vice President, Salem Generating Station and other members of the licensee staff.
- On December 8, 2021, the inspectors presented the Occupational ALARA and Controls Inspection Debrief inspection results to Mr. Richard DeSanctis, Salem Plant Manager and other members of the licensee staff.
- On February 3, 2022, the inspectors presented the integrated inspection results to Mr. David Sharbaugh, Vice President, Salem Generating Station and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Work Orders	50225067	performance of S2.OP-ST.SJ-0003(Q), "Inservice Testing Safety Injection Valves Modes 1-6"	11/05/2021
71111.05	Corrective Action Documents Resulting from Inspection	20891715* 20891720* 20892757*		
71111.08P	Corrective Action Documents	20763513	2017 Clevis notification	04/30/2017
		20886199	Salem U2 Insulated Bolted Connections	
		20886258	Salem U1 Insulated Bolted Connections	
		20886259	60 Deg Clevis in RPV Has 2 Broken Bolts	10/12/2021
	Engineering Changes	80126494	Salem Unit 2 Up-flow Conversion and eLBB Implementation	Revision 0
	Miscellaneous	903839	Vendor Information Form	05/05/2017
		PNJ-RV010-TM-CA-000001	Reactor Internals Hold Down Springs measurement Westinghouse Report	10/13/2021
	NDE Reports	004640	27.5-RC-1230-5, 23 Cold Leg	12/01/2015
		970101	Thermal Shield Flexures per MRP 227 License renewal	11/05/2021
		S2-001100	2-RPV-10442 Lower Shell to Lower Head (RPV)	10/25/2021
		S2-001900	2-RPV-3443 Lower Head Disc to Peel Segments	10/25/2021
		S2-UT-21-049	14-RH-2224-9BC 3-inch branch connection on 14-inch RHR suction line per MRP 192	10/20/2021
	Work Orders	70193788	Evaluation of Degraded Clevis Bolts on the Reactor Vessel Internals Lower Radial Support System	
71111.11Q	Corrective Action Documents	20874515	Step 19 of EOP-TRIP-1 has several errors	04/01/2021
71111.12	Corrective Action Documents Resulting from Inspection	20885154	Review OpEval 20-001 closure	10/01/2021
71111.13	Corrective Action Documents	20885244	23MS167 only stays closed 5 minutes then it drifts to full open	10/02/2021
		20886754	During 23MS167 detent PM IAW 30347451 the bearing that is captured inside of the guide plate was found displaced from	10/23/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			the plate	
		20889584	overhead alarm G-15, ADFCS Trouble, in alarm Unit 2 control room	11/14/2021
		20890316	overhead alarm G-34, 21-24 MS167 valve NOT fully open, in alarm Unit 2 control room	11/14/2021
		20891139	Capture the decisions made in the OTDM for 23MS167 valve drift	11/19/2021
	Corrective Action Documents Resulting from Inspection	20886165	When evaluating the requirements for protection schemes IAW OP-AA-108-116 section 4.7.8 additional protection was required for identified plant conditions to prevent an ORANGE condition for Shutdown Cooling SFAT (S2-CRM-0003, Rev 9 SDC-2)	10/11/2021
	Miscellaneous	2021-003	Operational and Technical Decision Making (OTDM) for 23 main steam isolation valve drifting closed	11/18/2021
		2021-009	Adverse Condition Monitoring and Contingency Plan (ACMP) for 23 main steam isolation valve drifting closed	11/18/2021
	Procedures	SC.MD-CM-MS-0002(Q)	Overhaul of Main Steam Stop Valves (Top Removal) MS167	26
	Work Orders	30347451	23MS167 Clean, Lube, and Inspect Detent Mechanisms	11/04/2021
71111.15	Corrective Action Documents	20879285	22SJ17 failed to open during performance of S2.OP-ST.SJ-0016	10/07/2021
		20880945	23 CFCU failed to start in high speed	10/08/2021
		20885184	23 CFCU failed to start in high speed	10/02/2021
		20886366	indication on 23 reactor cold leg nozzle	10/14/2021
	Engineering Evaluations	70220086	On 10/07/2021, the 22SJ17 (22 Safety Injection Cold Leg Check Valve) failed to open during S2.OP-ST.SJ-0016.	11/16/2021
		70220273	Operability with Engineering Justification for 23 Cold Leg indication signature	11/02/2021
	Procedures	S2.OP-ST.SJ-0016(Q)	High Head Cold Leg Throttling Valve Flow Balance Verification	37
71111.18	Corrective Action Documents	20847005	perform a page by page review of Salem TD 320832 against current Westinghouse Footnote Basis Document rev 3 issued 2014.	03/25/2020
	Corrective Action	20887083	Request for independent review of 50.59 screening	10/25/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents Resulting from Inspection	20894060	S1/S2 EOP-TRIP-1, Step 19, issue	12/28/2021
		20894366	NRC identified gap in 50.59	01/05/2022
	Engineering Changes	50.59 Screening Number S2021-102	S1(S2).OP-SO.SW-0005, Service Water System Operation, Revision 50/52	08/02/2021
	Miscellaneous	80123987	Severe Accident Management Guidelines revision and Nantel computer-based training transition	12/17/2018
		Final Safety Analysis Report (as updated) Section 10.4.7.2	Auxiliary Feedwater System	05/11/2009
		Final Safety Analysis Report (as updated) Section 9.4.2	Auxiliary Building Ventilation System	10/17/2007
		NEI 14-01, Revision 1 (ML16224A619)	Emergency Response Procedures and Guidelines for Beyond Design Basis Events and Severe Accidents	02/02/2016
	Procedures	1(2)-EOP-TRIP-1	Reactor Trip or Safety Injection	34
		1(2)-EOP-TRIP-1	Reactor Trip or Safety Injection	40
		1(2)-EOP-TRIP-1	Reactor Trip or Safety Injection	41
		S1(S2).OP-SO.SW-0005(Q)	Service Water System Operation	August, 2021
71111.19	Corrective Action Documents	20879285	22SJ17 failed to open during performance of ST.SJ-0016	10/07/2021
		20886764	22SJ17 leaking 1 drop/second from cap	10/28/2021
		20886897	During internal inspection of SJ17 foreign material was discovered within the valve	10/22/2021
		20889726	During stroke of the 22MS167 in support of Operations stroke time testing, the 22MS167 stroked at 7.78 seconds	11/10/2021
71111.20	Procedures	OP-AA-108-108	Unit Restart Review	14
71111.22	Corrective Action Documents	20885061	21SJ17 back flow leakage 0.3 GPM	10/01/2021
		20885062	23SJ17 back flow leakage 3.5 GPM	10/01/2021
		20885063	24SJ17 back flow leakage 1.8 GPM	10/01/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Procedures	OP-AA-108-116-F2	Protected Train Work Approval Form	10/04/2021