



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries > Salem 1 > Quarterly Plant Inspection Findings

Salem 1 – Quarterly Plant Inspection Findings

4Q/2017 – Plant Inspection Findings

On this page:

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness
- Occupational Radiation Safety
- Public Radiation Safety
- Security

Initiating Events

Significance: G May 04, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Fire Risk Assessment and Management

Inspectors identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) 50.65 (a)(4) when PSEG did not adequately assess and manage the risk of online maintenance activities associated with the 13 and 23 charging (CV) positive displacement pumps (PDPs) and the 16 service water (SW) pump. Consequently, this resulted in the approval of hot work and the introduction of unaccounted for transient combustibles into a restricted fire area. PSEG wrote notifications (NOTFs) 20758370, 20759221, and 20761411 to document the observations and fire risk program gaps. On March 9, a roving fire watch was implemented as previously planned by PSEG.

The finding was more than minor given its similarity to IMC 0612, Appendix E, example 7.e, in that had an adequate risk assessment been performed, it procedurally would have required additional risk management actions (RMAs). Additionally, this finding was more than minor because it adversely impacted the protection against external factors (fire) attribute of the Initiating Events cornerstone objective to limit the likelihood of events that upset plan stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated the finding in accordance with IMC 0609, Attachment 4 and Appendix K, since it involved a maintenance rule (MR) risk assessment. Since the performance deficiency was related to maintenance activities affecting structures, systems, and components (SSCs) needed for fire mitigation, Appendix K directed the significance to be determined by an internal NRC management review using risk insights. A Senior Reactor Analyst used risk insights from IMC 0609, Appendix F and its Attachment 2, to inform the significance and determined the issue screened to Green given that the combustible conditions and quantities were predominantly representative of a Low degradation rating.

Inspection Report# : 2017001 (*pdf*)

Mitigating Systems

Significance: MINRPD Nov 14, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

EXPIRATION OF PERIODIC INSERVICE TESTING OF 14 SERVICE WATER PUMP

Inspectors identified a Severity Level IV (SLIV) non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z) when a periodic Inservice Test (IST) of the 14 service water (SW) pump and its strainer outlet check valve was not completed prior to expiration of its testing frequency on August 4 without Nuclear Reactor Regulation (NRR) authorization. PSEG's corrective actions (C/As) included making repairs to the 14 SW strainer, satisfactory completion of the 14 SW IST on August 21, chartering an apparent cause evaluation (ACE), and entering the issue in their Corrective Action Program (CAP) as notification (NOTF) 20772390.

The issue was assessed in accordance with IMC 0612 and traditional enforcement applied since the issue impeded the regulatory process. Specifically, PSEG did not perform the prescribed IST or obtain prior NRR authorization for an alternative measure in accordance with 10 CFR 50.55(a)(z). The Reactor Oversight Process's (ROP) significance determination process does not specifically consider regulatory process impact in its assessment of licensee performance. Therefore, it was necessary to address this violation, which impeded the NRC's ability to regulate, using traditional enforcement to adequately assess the non-compliance. The violation was determined to be a SLIV since: 1) the delay in the inservice test required, and PSEG did not obtain, prior Commission review and approval, 2) the associated consequence was minor or of very low safety significance, and 3) the NRC would have likely approved an alternative, given reasonable assurance of operability of the 14 SW train, in accordance with Section 6.1 of the NRC Enforcement Policy. The NRC also determined this violation was associated with a minor ROP performance deficiency. Traditional enforcement violations are not assessed for cross-cutting aspects.

Inspection Report# : 2017003 (*pdf*)

Significance:  Jul 14, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Design Verification that Inter-Cabinet Bolts were Installed Between SEC and Bailey Cabinets

The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because between May 1995 to July 2017, PSEG did not verify that bolts, or other suitable connections, were installed to connect the safeguard equipment control (SEC) cabinets to the Bailey termination cabinets to satisfy the Seismic Qualification Utilities Group (SQUG) recommended method to resolve effects of potential cabinet interaction during a seismic event. PSEG's immediate corrective actions included initiating several corrective action notifications (NOTFs) to evaluate operability, extent-of-condition, and long-term resolution.

This issue is more than minor because it is associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, PSEG performed a SQUG evaluation in response to unresolved safety issue (USI) A-46, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors," and submitted the results to the NRC detailing a potential for SEC cabinet seismic interaction with the adjacent Bailey termination cabinet. The evaluation results recommended bolting the SEC cabinet to the Bailey cabinet to eliminate the interaction. However, PSEG did not ensure and verify that the SQUG recommended bolts were installed, which resulted in a reasonable doubt on the operability of the SEC to reliably perform its intended function during and

following a design basis seismic event. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The SDP for Findings At-Power," the team determined that this finding was Green because it was a design deficiency that potentially affected the design or qualification of a mitigating system, however, the mitigating system maintained its operability. The team determined there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance.

Inspection Report# : 2017007 (*pdf*)

Significance: G Jul 14, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate PM for the EDG Room Ventilation System

The team identified a Green non-cited violation of Technical Specification (TS) 6.8.1, "Procedures and Programs," because since January 2007, PSEG did not establish an appropriate preventive maintenance (PM) schedule for the emergency diesel generator (EDG) ventilation dampers. Specifically, PSEG cancelled a pre-existing 36-month lubrication/clean/inspect PM in 2007 but failed to add the lubrication task to an existing 6-year damper PM as intended. As a result, since January 2007, the intended lubrication PM was cancelled for the inlet, recirculation, and exhaust ventilation dampers on all six Unit 1 and Unit 2 EDG ventilation systems. PSEG's immediate corrective actions included initiating a corrective action NOTF to address the PM inadequacy and extent-of-condition.

The issue is more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the removal of the EDG ventilation damper lubrication PM had the potential to adversely impact EDG reliability. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The SDP for Findings At-Power," the team determined that this finding was Green because it was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent the actual loss of a safety function of a single train for greater than its TS allowed outage time, and did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in PSEG's Maintenance Rule program for greater than 24 hours. The team determined there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance.

Inspection Report# : 2017007 (*pdf*)

Significance: G May 04, 2017

Identified By: Self-Revealing

Item Type: FIN Finding

Loss of Unit 1C 4kV Vital Bus due to Inadequate Activity Risk Screening

A self-revealing Green finding (FIN) was identified when PSEG did not screen the risk associated with replacing the Unit 1C emergency diesel generator (EDG) output breaker in accordance with WC-AA-105, "Work Activity Risk Management." Specifically, on December 14, 2016, the Unit 1C 4 kilovolt (kV) vital bus was inadvertently de-energized when the Unit 1 'C' EDG output breaker, which was removed without adequate risk mitigation actions, made contact with the switchgear (SWGR) cubicle door containing relays for bus differential current protection. PSEG entered this issue into their corrective action program (CAP) as NOTF 20751669 and performed apparent cause evaluation (ACE) 70191319. PSEG's corrective actions (CAs) included inspecting the involved relay and re energizing the vital bus.

The finding was determined to be more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems relied upon to mitigate the consequences of an accident. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, Exhibit 2, and determined the finding was Green because it did not affect

the design or qualification of a mitigating SSC, and did not represent an actual loss of function or system. The finding had a cross cutting aspect in the area of Human Performance, Work Management, because the work process did not include the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, PSEG did not identify the level of medium risk associated with the work activity, did not manage the level of risk commensurate with the work, and did not coordinate appropriate mitigating actions with different work groups.

Inspection Report# : 2017001 (*pdf*)

Significance:  May 04, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Conduct Post-Maintenance Testing Required by Procedure and Work Order Resulting in Inoperable Containment Fan Coil Units

A self-revealing Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1, "Procedures and Programs;" TS 3.6.2.3, "Containment Cooling Fans;" TS 3.6.1.1, "Primary Containment Integrity;" and TS 3.0.4, "Applicability," was identified. Specifically, PSEG did not perform a specified post-maintenance test (PMT) after replacing the air supply valve for service water (SW) system accumulator discharge valve 11SW535. As a result, valve 11SW535 failed its subsequent technical specification (TS) required stroke time to close surveillance, and rendered two of the five containment fan coil units (CFCUs) inoperable. PSEG entered this issue in the corrective action program (CAP) as NOTF 20736868 and completed corrective actions (CAs) included coaching the senior operator involved in closing the work order (WO) without ensuring the PMT was completed and a review of similar retest activities (no additional deficiencies identified).

This issue was more than minor because it was associated with the human performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the incomplete PMT resulted in a delay in identifying a degraded stroke time and resultant inoperability of two CFCUs. The inspectors determined that this finding was Green in accordance with IMC 0609, Appendix A, Exhibit 2, because the finding did not result in an actual loss of function of a system or train. The finding had a cross-cutting aspect in the area of Human Performance, Work Management, because the organization did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, PSEG did not execute WO instructions to conduct the appropriate PMT following maintenance on an air supply valve for SW accumulator discharge valve 11SW535, which resulted in 11SW535 stroking closed too fast and required declaring two CFCUs inoperable.

Inspection Report# : 2017001 (*pdf*)

Barrier Integrity

Significance:  Nov 14, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

VIOLATION OF CONTAINMENT INTEGRITY TECHNICAL SPECIFICATION

The inspectors identified a Green non-cited violation (NCV) of Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.6.1.1, "Containment Integrity," when PSEG did not ensure that the APD backup CIVs, associated with penetrations required to be closed during accident conditions, were unisolated intermittently under appropriate administrative controls. Specifically, manual CIVs associated with the APD sampling system were opened and left continuously open for 27 days, under tagging instructions that would have resulted in an actual open penetration

outside of containment during certain design basis accidents and PSEG had not evaluated the adequacy of the tagging instruction to ensure radiological dose consequences would remain in conformance with the licensing basis. PSEG entered this issue in the Corrective Action Program (CAP) as notifications (NOTFs) 20751423 and 20777663. Technical Specification (TS) compliance was restored on January 4, 2017, when PSEG restored the normal air APD sample valve configuration.

This issue was more than minor since it was associated with the configuration control attribute of the Barrier Integrity cornerstone and adversely impacted its objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide release cause by accidents or events. Using Appendix H, the inspectors determined this finding was of very low safety significance, or Green, because this was a Type B finding (Section 4.0), involving small diameter lines that were not important to large early release frequency (LERF), as described in Table 4.1. The finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that the organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the planned tagging instructions for control of the back-up sampling valves did not ensure the work activity was controlled and executed in accordance with TS.

Inspection Report# : 2017003 ([pdf](#))

Significance: G Nov 14, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO FOLLOW MAINTENANCE PROCEDURE TO ASSURE PROPER INSTALLATION OF SERVICE WATER CHECK VALVE

A self-revealing Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, was identified because PSEG did not install the 12 service water (SW) accumulator injection check valve (12SW536) in accordance with written procedures. Specifically, the check valve was installed in the wrong orientation, which impacted the ability of the valve to close and support containment integrity. PSEG entered this issue in the Corrective Action Program (CAP) as notifications (NOTFs) 20771353 and 20776321, and performed Equipment Reliability Evaluation (ERE) 70195309. Corrective actions (C/As) consisted of removing the check valve from the system, clearing the silt build-up, and reinstalling the check valve in the correct orientation.

This issue was more than minor since it was associated with the configuration control attribute of the Barrier Integrity Cornerstone and adversely impacted its objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases cause by accidents or events. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 3, the inspectors determined that this finding was of very low safety significance, or Green, because the finding did not result in an actual open pathway in the physical integrity of reactor containment. The inspectors determined there was no cross-cutting aspect associated with this finding because the causal factors associated with this finding occurred outside the nominal three-year period of consideration and were not considered representative of present performance, in accordance with IMC 0612.

Inspection Report# : 2017003 ([pdf](#))

Emergency Preparedness
Occupational Radiation Safety
Public Radiation Safety
Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : February 01, 2018

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