

# Salem 1

## 4Q/2012 Plant Inspection Findings

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### Initiating Events

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### Mitigating Systems

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Maintain Adequate Liquid CO2 Inventory for Fire Suppression**

The inspectors identified a Green NCV of the Unit 1 Operating License Condition 2.C because PSEG did not maintain an adequate CO2 inventory to ensure the operability of the installed deluge fire suppression system in accordance with the approved Fire Protection Plan. Specifically, the CO2 tank liquid level gage was not calibrated periodically, the gage was stuck at 72 percent level for a period of five months, and the tank lost pressure and was inoperable because it was empty on September 1, 2012. This issue was entered into PSEG's corrective action program (CAP) as notification 20573227. PSEG's immediate corrective actions were to establish compensatory measures to restore fire protection system operability of the affected spaces on September 2, 2012, and then to complete replacement of the failed tank liquid level gage, leak check the tank and associated piping, and refill the liquid CO2 tank to restore the CO2 tank to operable status on October 23, 2012.

The performance deficiency was determined to be more than minor because it affected the protection against external factors attribute of the Mitigating Systems cornerstone, in that it impacted automatic fire suppression capability, and affected the cornerstone objective of ensuring the availability of systems that respond to external events. The finding was evaluated under IMC 0609, Appendix F, "Fire Protection Significance Determination Process." The conditional core damage probability was calculated utilizing SAPHIRE 8 for Salem Unit 1. Since the delta core damage frequency calculated in step 2.1.4 of Appendix F was less than the value specified in table 2.1.3, "Phase 2 Screening Step 1 Quantitative Screening Criteria," the finding was determined to be of very low safety significance (Green). This finding has a cross-cutting aspect in the area of human performance, work control component. PSEG did not appropriately coordinate work activities by incorporating actions to plan work activities to support long-term equipment reliability by limiting safety system unavailability and reliance on manual actions. Specifically, a liquid level gage calibration preventive maintenance (PM) to maintain operability of the ten ton CO2 tank was created in accordance with vendor guidance in 2008, but the PM had not been implemented as of September 1, 2012.

Inspection Report# : [2012005](#) (*pdf*)

**Significance:**  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **13 Service Water Strainer Unavailability due to Inadequate Post Maintenance Test**

A self-revealing NCV of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because the 13 service water (SW) strainer failed while in-service on March 13, 2012. PSEG failed to perform adequate post-maintenance testing (PMT) on the 13 SW strainer before declaring it operable on January 13, 2012, and therefore did not find adequate clearance between the strainer drum and body. This issue was entered into PSEG's CAP as notification 20550115. PSEG's immediate corrective actions were to replace the strainer drum o-ring, adjust the strainer clearances, and perform a PMT of the strainer.

The inspectors determined that the performance deficiency was more than minor because it was associated with the

human performance attribute of the Mitigating Systems cornerstone and it adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the trip of the 13 SW strainer while the 14 SW pump was inoperable for planned maintenance resulted in Salem Unit 1 entering a 72 hour unplanned limiting condition of operation (LCO) for 11.5 hours. The finding was evaluated in accordance with IMC 0609, Attachment 4, "Initial Screening and Characterization of Findings," and was determined to require additional evaluation. The finding was subsequently evaluated in IMC 0609, Phase 3 utilizing the NRC's SAPHIRE 8 risk analysis SDP interface tool using the Salem specific standardized plant analysis review model, and confirmed to be of very low safety significance. This finding has a cross-cutting aspect in the area of human performance, work practices, because PSEG personnel did not follow procedures. Specifically, PSEG personnel failed to comply with procedure "Service Water Auto Strainer Adjustment, Inspection, Repair and Replacement," which required an evaluation of a torque curve generated by a baker box.

Inspection Report# : [2012003](#) (*pdf*)

**Significance:**  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Correct Repeat Failures in Safety-Related Solenoid Valves in a Timely Manner**

A self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified because PSEG did not correct a condition adverse to quality. Specifically, repeat failures of solenoid operated valves (SOVs) with voltage applied greater than design voltage has not been corrected in a timely manner and caused a failure of the 11 control area chiller (CAC).

The performance deficiency 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 objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using IMC 0609, Attachment 4, "Initial Screening and Characterization of Findings," the inspectors determined that a single train of a safety-related system was unavailable for eight hours, less than the TS allowed outage time. Therefore, the issue was of very low safety significance (Green) because it did not result in a loss of system safety function, loss of a single train for greater than TS allowed outage time, or potentially risk-significant due to a fire, flooding, or severe weather initiating event. Immediate corrective actions taken included replacement of the failed SOV, and compensatory measures include periodic temperature monitoring of similar energized SOVs. This finding has a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not take appropriate corrective actions to address a safety issue in a timely manner, commensurate with the safety significance and complexity. Specifically, the premature failure of SOVs, due to a higher than design voltage that created higher than design heat in the coil and insulation, was a known issue that was not corrected in a timely manner.

Inspection Report# : [2012003](#) (*pdf*)

**Significance:**  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Deficient Control of Transient Equipment in Seismic Class Auxiliary Building**

The inspectors identified a NCV of TS 6.8.1.a, "Procedures and Programs," because PSEG failed to properly control and store transient material within seismic class I buildings such that the equipment did not pose a hazard to safe plant operation. Specifically, two large tool gang boxes were stored unrestrained in the vicinity of the sodium hydroxide storage tank and associated containment spray valves and two full 55 gallon SW maintenance drums were stored unrestrained next to the 11, 12, and 15 containment fan cooler unit SW flow transmitters. This issue was entered into PSEG's CAP as notification 20559092. PSEG's immediate corrective actions were to restrain the subject material in accordance with the PSEG procedure CC-AA-320-011, "Transient Loads."

The performance deficiency 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 objective of ensuring the

availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The issue was also similar to IMC 0612, Appendix E, “Examples of Minor Issues,” example 4.a, which stated the issue was more than minor if the licensee routinely failed to follow their procedure and safety-related equipment was adversely impacted. Specifically, PSEG was not following the requirements of procedure CC-AA-320-011, “Transient Loads,” and equipment had been stowed in close vicinity of safety-related equipment. The finding was evaluated under IMC 0609, Attachment 4, “Initial Screening and Characterization of Findings.” The inspectors determined that the finding is of very low safety significance (Green) because it did not involve loss or degradation of equipment specifically designed to mitigate a seismic event, and did not involve total loss of a safety function that contributes to external event initiated core damage sequences. The finding has a cross-cutting aspect in the area of human performance, work practices, in that PSEG did not define and effectively communicate expectations regarding procedural compliance and personnel did not follow procedures. Specifically, station personnel did not follow procedures for the storage of transient loads in the auxiliary building.

Inspection Report# : [2012003](#) (*pdf*)

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## **Barrier Integrity**

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

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## **Public Radiation Safety**

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## **Security**

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## **Miscellaneous**

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