

# Salem 2

## 2Q/2010 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 30, 2010

Identified By: Self-Revealing

Item Type: FIN Finding

#### **21 Steam Generator Feed Pump Trip Due to Failure to Follow Procedures**

A self-revealing finding of very low safety significance was identified on January 21, 2010, because a control system short circuit caused the 21 steam generator feed pump (SGFP) to trip. This caused a turbine runback and ultimately an automatic Unit 2 reactor trip due to low water level in one of four steam generators (SGs). The short circuit occurred because technicians did not use the correct procedure to repair degraded insulation on the barrel of a connector lug that was identified in the 21 SGFP control system in November 2009. PSEG repaired the short circuit prior to restart of Unit 2 on January 23, 2010. The issue was entered into the corrective action program as notification 20448229. PSEG's immediate corrective actions for this issue included repairing the degraded insulation, fixing lug alignment, and performing extent of condition inspections on the other Unit 2 SGFP panels for degraded insulation. No other deficiencies were identified.

This performance deficiency is more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Specifically, not following PSEG procedure SC.DE-TS.ZZ-2039 on November 11, 2009, caused the 21 SGFP trip and subsequent automatic reactor trip due to low SG water level on January 21, 2010. The finding was evaluated under IMC 0609, Attachment 4. The inspectors determined that the finding is of very low safety significance because it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedure requirements while repairing plant equipment. Specifically, technicians applied electrical tape to the 21 SGFP pressure switch connector lug barrel on November 11, 2009, which did not meet PSEG procedure SC.DE-TS.ZZ-2039 requirements.

Inspection Report# : [2010003](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Dec 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Salem Unit 2 Degradation of Shutdown Cooling caused by Failure of 22RH18**

A self-revealing NCV of TS 6.8.1.a, Procedures and Programs, was identified because 22RH18 failed while in-service on October 17, 2009. This caused a degradation of shutdown core cooling on October 18, 2009. PSEG determined that the cause of the valve failure was that PSEG did not adequately plan and perform maintenance on residual heat removal valve 22RH18. Specifically, in March 2008, PSEG did not complete scheduled maintenance on 22RH18 in accordance with the appropriate site procedure.

The performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to correctly maintain 22RH18 reduced the reliability of the shutdown cooling system. The inspectors evaluated the significance of this finding using IMC 0609, Appendix G, "Shutdown Operations SDP." The Phase 2 SDP determined that change in

core damage frequency related to this issue was substantially less than 1E-6, therefore the finding is GREEN.

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Inadequate Maintenance of the 22 CCHX Service Water Outlet Butterfly Valve**

A self-revealing NCV of Technical Specification 6.8.1, Procedures and Programs, was identified because bolting between the valve body and actuator for the 22 component cooling heat exchanger (CCHX) service water isolation valve broke causing the valve to partially close. This resulted in an unplanned reduction in service water flow through the only available CCHX while the unit was in cold shutdown conditions for a planned refuel outage. The inspectors determined that the cause of the failure was that PSEG did not establish adequate maintenance procedures for valve actuator installation.

This performance deficiency was more than minor because it was associated with the equipment 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, use of an inadequate maintenance procedure for the manual valve operator installation on the 22 SW 356 valve led to the bolting failure and inadvertent partial closure of this manual butterfly valve. The inspectors evaluated the significance of this finding using IMC 0609, Appendix G, "Shutdown Operations SDP." The Phase 2 SDP determined that change in core damage frequency related to this issue was substantially less than 1E-6, therefore the finding is GREEN. This finding has a cross cutting aspect in the area of Human Performance because maintenance on 22SW356 was performed in 2002 with an inadequate procedure and work instructions [H.2(c)].

Inspection Report# : [2009005](#) (pdf)

**Significance:**  Jul 10, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO ESTABLISH GOALS AND MONITOR FOR (a)(1) SERVICE WATER SYSTEM**

The inspectors identified a non-cited violation of very low safety significance of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," paragraph (a)(1), for PSEG's failure to monitor the performance of the service water system against established (a)(1) goals in a manner sufficient to provide reasonable assurance that the system was capable of fulfilling its intended function. PSEG also failed to take corrective action when system performance exceeded the (a)(1) unavailability goals. Specifically, PSEG failed to establish (a)(1) goals and monitor service water system performance from January 2008 through October 2008. Additionally, the inspectors identified a second example of this issue when PSEG failed to recognize that the service water system exceeded the new (a)(1) monitoring goals from April 2009 through June 2009. PSEG entered this issue into their corrective action program under notifications 20422672 and 20422673.

This finding is more than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). This finding is not suitable for evaluation using the SDP because the performance deficiency did not cause the degraded equipment performance. Findings for which the SDP does not apply may be Green or assigned a severity level after NRC management review. Per the guidance provided in Inspection Procedure 71111.12, this issue is considered to be a Category II finding and thus, per NRC management review, is considered to be Green. With respect to assigning a cross-cutting aspect to this finding, the inspectors determined that the most meaningful insight into PSEG's performance was a programmatic concern with the implementation of the maintenance rule program at Salem. PSEG acknowledged this programmatic concern, which included ownership and accountability issues, initiated a focused self-assessment of the maintenance rule program, and will assign corrective actions as appropriate. This insight is not aligned with the specific cross cutting attributes defined in IMC 0305 and, as such, the inspectors have not assigned a cross-cutting aspect to this finding.

Inspection Report# : [2009007](#) (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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## Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

**Significance:** N/A Jul 10, 2009

Identified By: NRC

Item Type: FIN Finding

### **SALEM BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION**

The inspectors concluded that Public Service Enterprise Group Nuclear, LLC (PSEG) was generally effective in identifying, evaluating, and resolving problems. PSEG personnel identified problems, entered them into the corrective action program at a low threshold, and prioritized issues commensurate with their safety significance. In most cases, PSEG appropriately screened issues for operability and reportability, and performed causal analyses that appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions to address the problems identified in the corrective action program in a timely manner. However, the inspectors identified one violation of NRC requirements in the area of effectiveness of corrective actions. The inspectors concluded that, in general, PSEG adequately identified, reviewed, and applied relevant industry operating experience to Salem Nuclear Generating Station (Salem) operations. In addition, based on those items selected for review by inspectors, PSEG's audits and self-assessments were thorough. Based on the interviews the inspectors conducted over the course of the inspection, observations of plant activities, and reviews of individual corrective action program and employee concerns program issues, the inspectors did not identify any indications that site personnel were unwilling to raise safety issues nor did they identify conditions that could have had a negative impact on the site's safety conscious work environment.

Inspection Report# : [2009007](#) (pdf)

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