

# Salem 2

## 3Q/2011 Plant Inspection Findings

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### Initiating Events

**Significance:**  Sep 30, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Evaluate Corrective Action Options for RCP Motor Cables**

A self-revealing finding of very low safety significance was identified on June 26, 2011, as Salem Unit 2 tripped following a trip of the 23 reactor coolant pump (RCP) due to a ground fault inside the 23 RCP motor junction box. PSEG determined that the cause of the ground fault was RCP motor cable jacket cracking that was first identified in 2005. PSEG entered this event into the CAP as notification 20515977.

The performance deficiency was more than minor because it was associated with the equipment 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 during power operations. Specifically, action from notifications in January 2006 for the engineering department to determine various options to address RCP motor lead jacket cracking including an evaluation on whether to replace the cables during the June 2008 refueling outage (RFO) was not completed prior to the June 2008 motor replacement and continued to be an open action up to the point of the June 2011 RCP cable failure and reactor trip. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined that the finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not take appropriate corrective action to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, PSEG did not ensure that the CAP assignment for the engineering department to evaluate long-term corrective action options for the RCP motor lead cables were completed timely and effectively in accordance with their CAP procedure. (P.1(d))

Inspection Report# : [2011004](#) (*pdf*)

**Significance:**  Jun 30, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

#### **INADEQUATE CONTROL OF SWITCHYARD MAINTENANCE**

A self-revealing finding of very low safety significance was identified on April 1, 2011, because a 500 KV load break disconnect 3T60 failed to operate upon the restoration of switchyard maintenance. This caused a four-hour delay in the restoration from a single source of offsite power, the exit from a 72-hour limiting condition for operation (LCO), and the extension of a yellow probability risk assessment condition. PSEG investigation revealed that the vendor, who was conducting maintenance on the 3T60 disconnect, removed the motor control fuse holder that was not a part of the tagout for the maintenance. PSEG determined that the cause of the disconnect not closing was that PSEG did not adequately brief and control the maintenance evolution. PSEG entered this event into their CAP as notification 20503254. PSEG's immediate corrective actions were to reinstall the fuses and close the 3T60 disconnect.

The inspectors determined that the failure of PSEG to assign a supplemental workforce supervisor or task manager to provide in-field supervision of the 3T60 disconnect maintenance in accordance with AD-AA-2001, "Management and Oversight of Supplemental Workforce", was a performance deficiency. The inspectors determined that the performance deficiency was 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. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings", and the inspectors concluded that a Phase 2 evaluation

was required since the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigating systems would not have been available. This conclusion was based upon the potential for emergency diesel generator (EDG) operation to be challenged upon the loss of all offsite power. A regional Senior Reactor Analyst completed a Phase 3 evaluation under the SDP. The performance deficiency was characterized as of very low safety significance (Green) based upon the results of this evaluation. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, because PSEG did not ensure supervisory and management oversight of the vendor work activity. Specifically, PSEG personnel did not assign a supervisor to provide in-field supervision, conduct an adequate pre-job brief with the vendor, and did not conduct an adequate post-maintenance restoration walkdown of the 3T60 switchyard maintenance. (H.4(c))

Inspection Report# : [2011003](#) (pdf)

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## Mitigating Systems

**Significance:**  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate IST Program Evaluation of a Pressure Relief Valve**

The inspectors identified a NCV of Salem Technical Specification (TS) 6.8.4.j, "In Service Testing," that implements the in service testing program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code. Specifically, PSEG did not complete an adequate ASME OM code required evaluation following the test of the Unit 2 Boron Injection Tank (BIT) relief, 2SJ10, which lifted outside of its acceptance criteria. This finding was determined to be of very low safety significance. PSEG entered this issue into their CAP as notifications 20523948 and 20518249. Corrective actions at that time included replacing the damaged seat and disk, rebuilding the valve, and performing a post maintenance test of the rebuilt valve.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and it impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, leakage of greater than 10 gpm through the 2SJ10 valve degraded the ability of the charging system to deliver design flow rates to the reactor following a safety injection signal that would un-isolate the BIT. The inspectors evaluated this finding using IMC 0609, Attachment 4. The finding was determined to be of very low safety significance because it was not a design or qualification deficiency, did not represent an actual loss of system safety function, and was not potentially risk significant for external events. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. Specifically, PSEG's evaluation following the 2SJ10 failure in April 2011 did not meet the requirements of PSEG procedure ER-SA-321-1010. The evaluation contained incorrect information regarding valve refurbishment that prevented PSEG from identifying the cause of the 2SJ10 failure. (P.1 (c))

Inspection Report# : [2011004](#) (pdf)

**Significance:**  Feb 18, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **INADEQUATE CALCULATIONS FOR DEGRADED VOLTAGE RELAY VOLTAGE SETPOINT**

The team identified a finding of very low safety significance involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control", because PSEG had not verified the adequacy of the design for the DVR voltage setpoint. Specifically, PSEG had not performed calculations for motor starting and running conditions, and for operation of other safety-related equipment based on voltages afforded by the degraded voltage relays. PSEG entered this issue into their corrective action program and performed preliminary calculations to demonstrate reasonable assurance of operability.

The finding is more than minor because it is associated with the design control 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. The team evaluated the finding in accordance with IMC 0609, Attachment 0609.04, Phase 1 – Initial Screening and Characterization of Findings, Table 4a for the Mitigating Systems Cornerstone. The team determined that the finding was of very low safety significance because it was a design deficiency confirmed not to result in loss of operability.

The team determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience Component, because PSEG did not ensure that relevant internal and external operating experience was collected, evaluated, and communicated to affected internal stakeholders in a timely manner. Specifically, PSEG did not adequately evaluate a similar finding documented in a Hope Creek Generating Station NRC component design bases inspection report in November 2009 (NCV 05000354/2009007-03) and missed an opportunity in their internal response to NRC Information Notice 2008-02, “Findings Identified During Component Design Bases Inspections”, issued in March 2008.

Inspection Report# : [2011007](#) (*pdf*)

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## Barrier Integrity

**Significance:** SL-IV Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO SUBMIT AN LER FOR A CONDITION PROHIBITED BY TS ASSOCIATED WITH CONTAINMENT ISOLATION**

The inspectors identified a Severity Level IV NCV of 10 CFR 50.73, “Licensee Event Reporting (LER) System”, because PSEG personnel did not provide a written report to the NRC within 60 days after discovery of a condition prohibited by Technical Specification (TS) 3.6.1, “Containment Integrity”. This was an NRC-identified violation of reporting requirements and potentially impacted the regulatory process. This type of violation is dispositioned using the traditional enforcement process defined in the NRC Enforcement Policy. In accordance with Section 6.9.d of the Enforcement Policy, this violation is categorized as a Severity Level IV violation.

PSEG documented the issue in their CAP and conducted an evaluation to determine why the assignment to submit an LER was missed. The inspectors determined that this traditional enforcement violation did not involve a Reactor Oversight Process (ROP) finding, therefore, no cross-cutting issue was assigned.

Inspection Report# : [2011002](#) (*pdf*)

**Significance:**  Feb 18, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY AFFECTING THE CREACS EXPANSION JOINTS**

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action”, because PSEG did not identify and correct a condition adverse to quality. Specifically, PSEG did not identify and correct the degraded condition of the Unit 1 and Unit 2 control room emergency air conditioning system (CREACS) common suction expansion joints because they did not implement appropriate preventive maintenance (PM) per their performance-centered maintenance (PCM) template. PSEG placed the finding and the associated issues in its corrective action program. In response to the identified control room envelope (CRE) breach, operators promptly entered TS 3.7.6 and initiated mitigation actions. PSEG affected prompt repairs, performed an appropriate post maintenance test, declared the CRE fully operable, and exited the TS limiting condition for operation action statement.

The finding is more than minor because it is associated with the barrier performance attribute of the Barrier Integrity

Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the control room operators from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4, Table 4a for the containment barrier. Since the finding had the potential to impact more than the radiological barrier function, a Region I Senior Reactor Analyst (SRA) performed a Phase 3 analysis. The SRA determined that the dominant sequence involved a sufficient degradation of the CREACS barrier that would allow sufficient in-leakage to force an evacuation of the control room during a fire or toxic gas event. The areas with the degradation were in room 15615 and 25615 for Units 1 and 2, respectively. The SRA evaluated these areas and determined that the potential impact due to in-leakage through the degraded barrier from fire and toxic gas would be negligible. The SRA also reviewed the results of recent CRE in-leakage testing conducted in September 2010. The condition of the expansion joint tearing and wear could reasonably be assumed to have existed during the September testing. This testing also confirmed that the total in-leakage in these areas was small. Based on the above factors, the SRA determined the finding was of very low safety significance (Green).

The team determined that this finding has a cross-cutting aspect in the area of Human Performance, Work Control Component, because PSEG did not plan work activities to support long-term equipment reliability by ensuring that maintenance scheduling was more preventive than reactive. Specifically, PSEG did not implement appropriate PMs on the CREACS filter expansion joints necessitating several reactive corrective maintenance activities.

Inspection Report# : [2011007](#) (pdf)

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## Emergency Preparedness

**Significance:**  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

### Late State Notification of UE

The inspectors identified a NCV of 10 CFR 50.47, "Emergency Plans." Specifically, state officials were not notified within 15 minutes of the declaration of an Unusual Event (UE), a risk significant planning standard. PSEG has entered this issue into their CAP as notification 20518004. PSEG's corrective actions for this performance deficiency was to complete licensed operator training regarding classification and notification requirements for short duration emergency events terminated before classifications and notifications can be completed.

The inspectors determined that a performance deficiency was identified associated with timely notification to state and local government agencies during an actual event. PSEG did not notify Delaware and New Jersey state government agencies within the specified 15 minutes after declaring a UE. The finding was greater than minor because it is associated with the Emergency Planning cornerstone attribute of Emergency Response Organization performance during actual event response. The finding affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The inspectors reviewed this finding using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 2, "Actual Event Implementation Problem." This finding was determined to be of very low safety significance because it was a failure to implement a risk significant planning standard during an actual event associated with the declaration of a UE. This finding had a cross-cutting aspect in the area of human performance, work practices, because PSEG personnel did not ensure supervisory and management oversight of work activities, such that nuclear safety is supported. Specifically, the Shift Manager was distracted from his supervisory oversight role and did not direct the communicators to perform state notifications within the required 15 minute time period. (H.4(c))

Inspection Report# : [2011004](#) (pdf)

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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 21, 2011

Identified By: NRC

Item Type: FIN Finding

### **Biennial PI&R Summary Assessment**

The inspectors concluded that 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 and cause, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions to address identified problems in a timely manner. However, for one issue reviewed by the inspectors, the corrective actions completed by PSEG were not timely and the inspectors determined that this was a violation of NRC requirements, in the area of corrective action implementation.

The inspectors concluded that, in general, PSEG adequately identified, reviewed, and applied relevant industry operating experience to Salem operations and identified appropriate corrective actions. In addition, based on those items selected for review, the inspectors determined that PSEG self-assessments and audits were thorough and appropriately used the corrective action program to initiate corrective actions for identified issues.

With respect to safety conscious work environment, based on interviews and reviews of the corrective action program and the employees concerns program (ECP) the inspectors did not identify conditions that negatively impacted the site's safety conscious work environment and determined that site personnel were willing to raise safety issues through multiple means.

Inspection Report# : [2011009](#) (*pdf*)

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