

Salem 2

4Q/2009 Plant Inspection Findings

Initiating Events

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.

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 performance deficiency attributes defined in IMC 0305 and, as such, the inspectors have not assigned a cross-cutting aspect to this finding.

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

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

IMPROPER MAINTENANCE RULE SCOPING OF THE SERVICE WATER INTAKE STRUCTURE SUMP SYSTEM

The NRC identified a NCV of 10 CFR 50.65 because PSEG did not include the service water intake structure (SWIS) sump within the scope of the Salem maintenance rule program and consequently did not recognize that preventive maintenance on the SWIS sump was not effective. Failure to perform preventive maintenance on the SWIS sump led to an accumulation of water in the number 2 SWIS bay and adversely affected operability and reliability of the 22 service water strainer and pump.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and because it affects the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. On April 12, 2009, bay 2 of the SWIS sump failed and allowed water accumulation to a depth of 21-inches, adversely affecting the reliability of the SW pump and strainer. The inspectors determined that the finding was of very low safety significance (Green) per Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings" (IMC 0609.04). The performance deficiency has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not thoroughly evaluate SWIS sump failures such that the resolutions address causes and extent of conditions [P.1(c)]. PSEG had ten SWIS sump pump failures since January 2008. The evaluation of those events did not recognize that the SWIS sump is relied upon to protect the SWPs from flooding.

Inspection Report# : [2009003](#) (pdf)

Significance:  Feb 13, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE SPURIOUS OPERATION OF SAFETY INJECTION SIGNAL

The team identified that PSEG failed to evaluate a single spurious operation of a safety injection signal during a main control room fire and its impact on the ability to achieve and maintain hot standby conditions. This finding was determined to be of very low safety significance (Green) and a NCV of the Salem Nuclear Generating Station, Unit Nos. 1 and 2 Operating License conditions 2.C.(5) and 2.C.(10) respectively, Fire Protection.

The team determined that this finding was more than minor because it was associated with the external factors attribute (fire) of the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, PSEG did not ensure that post-fire operator manual actions subsequent to a single spurious operation of the safety injection signal during a main control room fire could be performed within sufficient time to achieve and maintain hot standby conditions. The team assessed this finding in accordance with NRC IMC 0609, Appendix F, Fire Protection Significance Determination Process (SDP). This finding affected the completeness of the post-fire safe shutdown analysis. This finding screened to very low safety significance (Green) in phase 1 of the SDP because it was assigned a low degradation rating. A low degradation rating was assigned because a technical evaluation of pressurizer level response to a spurious safety injection signal from a main control room fire concluded that pressurizer level would remain in the indicating range. The team determined that this finding had a cross cutting aspect in the area of problem identification and resolution because PSEG identified the issue on February 15, 2006 but never thoroughly evaluated the issue and its potential impact on the ability to achieve and maintain post-fire hot standby conditions. (P.1(c))

Inspection Report# : [2009006](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

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*)

Last modified : March 01, 2010