

Salem 2

3Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

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)

Significance:  Dec 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

SALEM UNIT 2 HIGH STEAM FLOW PROTECTION CHANNELS INOPERABLE

A self-revealing NCV of 10 CFR 50, Appendix B, Criteria XI, "Test Control," was identified because all Unit 2 high steam flow protection channels were discovered inoperable on May 12, 2008. Specifically, following steam generator replacement on Unit 2, PSEG did not perform adequate post-modification acceptance testing and, as a result, did not maintain Technical Specification (TS) required steam flow instrumentation operable. PSEG entered this issue into the corrective action program and implemented corrective actions that included specifying testing requirements and acceptance criteria for the steam line instrumentation, enforcing procedure use standards and heightened managerial oversight of power ascension testing.

The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and because it affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, all channels of the Unit 2 engineered safety feature actuation system (ESFAS) high steam flow protective function were not correctly calibrated after completion of steam generator replacement. As a result, operators declared

the affected ESFAS channels inoperable and shutdown the plant in accordance with TS requirements. Per Inspection Manual Chapter (IMC) 0609.04, "Initial Screening and Characterization of Findings," the inspectors conducted a Phase 1 screen and determined the finding to be of very low safety significance (Green) because the performance deficiency was a qualification deficiency confirmed to result in loss of operability that did not result in an actual loss of safety function and did not screen as potentially risk significant due to external initiating events. This finding had a cross-cutting aspect in the area of human performance because PSEG did not provide complete, accurate and up-to-date design documentation, procedures, and work packages [H.2(c)]. Specifically, PSEG did not specify adequate testing requirements and acceptance criteria for steam flow instrumentation in the design change package 80083522, Supplement 12 as required by PSEG design change implementation procedure guidance.

Inspection Report# : [2008005](#) (pdf)

Significance:  Dec 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE IMPLEMENTATION OF RISK MANAGEMENT ACTIONS ASSOCIATED WITH PLANNED MAINTENANCE ON THE UNIT 2 PRESSURIZER POWER OPERATED RELIEF VALVES

The inspectors identified a Green NCV of 10 CFR 50.65(a)(4) because PSEG did not implement prescribed risk management actions (RMA) while both Unit 2 pressurizer (PZR) power operated relief valves (PORV) were isolated. PSEG's corrective actions included adding the requirement for operators to record protected SSCs in the control room narrative log and training operators on the risk assessment process.

This finding was more than minor because PSEG did not implement a prescribed significant compensatory measure for an identified yellow risk condition. Specifically, PSEG did not implement equipment risk awareness and control measures while both PZR PORVs were isolated, and conducted testing on a protected component without the required written authorization and supervision. The inspectors completed a Phase 1 screening of the finding per Appendix K of Inspection Manual Chapter (IMC) 0609, "Maintenance Risk Assessment and Risk Management Significance Determination Process." The inspector determined that the incremental core damage probability (ICDP), based on PSEG's risk analysis of the event, was 5.6E-8. Therefore, the inspectors determined the finding to be of very low safety significance (Green) because the ICDP for the event did not exceed 1.0E-6. The finding had a cross-cutting aspect in the area of human performance because PSEG did not define and effectively communicate expectations regarding procedural compliance and personnel did not follow procedures [H.4(b)]. Specifically, operators did not implement the RMAs specified by an approved risk assessment per PSEG work management and operations procedures.

Inspection Report# : [2008005](#) (pdf)

Significance:  Dec 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL FOR NO. 22 COMPONENT COOLING WATER HEAT EXCHANGER SERVICE WATER OUTLET TEMPERATURE CONTROL VALVE

The inspectors identified a self-revealing NCV of 10 CFR 50, Appendix B, Criterion III, Design Control, because the No. 22 component cooling water heat exchanger (CCWHX) service water (SW) outlet temperature control valve (22SW127) did not stroke open when the 22 CCWHX was placed in service following a high flow flush on November 18, 2008. Specifically, PSEG did not ensure that the design basis was correctly translated into valve set-up instructions for the 22SW127 valve. PSEG's corrective actions included mechanical adjustment to the valve's stroke, revising the valve's set-up instructions, and an extent of condition review.

The finding was more than minor because it was 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. Specifically, the improper valve set-up instructions caused the 22SW127 to operate not as expected resulting in an unexpected rise in component cooling water (CCW) system temperatures after the 22CCWHX was placed in service on November 18, 2008. As a result operators declared the 22CCWHX inoperable and documented the condition in the corrective action program. In

accordance with NRC IMC 0609 the inspectors determined the finding was of very low safety significance (Green) because it was a design deficiency that was confirmed not to result in a loss of CCW train operability. The finding has a cross-cutting aspect in the area of human performance, resources, because PSEG did not ensure that adequate resources were available to maintain complete, accurate and up-to-date design documentation, procedures, and work packages [H.2(c)]. Specifically, PSEG did not maintain the 22SW127 ICD card and valve set-up work order up-to-date in accordance with the valve's design basis documentation.

Inspection Report# : [2008005](#) (*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 : December 10, 2009