

Salem 1

4Q/2006 Plant Inspection Findings

Initiating Events

Significance:  Feb 17, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURE FOR LOSS OF COMPONENT COOLING WATER

The team identified a finding of very low safety significance involving a non-cited violation of Technical Specification 6.8.1, Procedures, for an inadequate procedure to respond to a loss of component cooling water (CCW) event. The procedure was inadequate because it required operators to trip the reactor and immediately enter the emergency operating procedures (EOPs), but relied on an alarm response procedure to accomplish time critical and risk significant actions. The team identified that the execution of the alarm response procedure could be delayed during EOP implementation. As a consequence of relying on a lower tier procedure, the delayed actions significantly decreased margin with respect to reactor coolant pump (RCP) seal temperatures approaching operating limits during this postulated event.

This finding was more than minor because it was similar to Example 3.k in NRC Inspection Manual Chapter (IMC) 0612 Appendix E, Examples of Minor Issues. Specifically, PSEG's human reliability analysis associated with a loss of CCW event, assumed operators could complete required risk significant, time critical actions in less than one minute, when in fact, the actions could have nominally taken 14 minutes. As a result of this procedure deficiency, there was a significant reduction in the time margin assumed in PSEG's analysis to perform risk significant manual actions (i.e., isolate letdown flow and transfer charging pump suction). This finding affected the Initiating Events Cornerstone objective to limit the likelihood of events that challenge critical safety functions, because it was associated with the cornerstone's attribute for procedure quality. The finding was of very low safety significance because it screened to Green in Phase 1 of the significance determination process (SDP) documented in IMC 0609, Appendix A, Significance Determination of Reactor Inspection Findings for At-Power Situations. Specifically, while the finding directly affected the likelihood of an RCP seal failure because PSEG's previous procedures had little margin for operator error or delay, it appeared that operators could have isolated letdown prior to reaching excessive RCP seal temperatures. Additionally, there was no affect on mitigating systems. A contributing cause of this finding was related to the cross-cutting area of problem identification and resolution. Inspection Report# : [2006006](#) (*pdf*)

Mitigating Systems

Significance:  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE PROCEDURE IMPLEMENTATION FOR SCAFFOLD CONSTRUCTION

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because PSEG did not adequately implement procedural controls for scaffold construction in safety-related areas. This performance deficiency had the potential to adversely impact the upper bearing cooling supply to five of the six Unit 2 service water (SW) pumps and three of the six Unit 1 SW pumps. Once identified, PSEG corrected the scaffold deficiencies.

The issue screened as more than minor based on NRC Inspection Manual Chapter (IMC) 0612, Appendix E, "Examples of Minor Issues and Cross-Cutting Aspects," Example 4.a, because the inspectors identified multiple examples where there was not an engineering seismic impact evaluation to demonstrate no adverse effect on safety-related SW equipment. The finding was determined to be of very low safety significance (Green) because the performance deficiency was not a design deficiency or qualification deficiency; did not represent an actual loss of safety function of a system; did not represent an

actual loss of safety function of a single train for greater than the Technical Specification allowed outage time; did not represent an actual loss of safety function of one or more non-Technical Specification trains of equipment; and did not screen as potentially risk significant due to seismic, flooding or a severe weather initiating event. This finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedures.

Inspection Report# : [2006005](#) (*pdf*)

Significance:  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH STATION COLD SHUTDOWN REPAIR PROCEDURES

The team identified a non-cited violation (NCV) for failure to maintain equipment required for cold shutdown (CSD) repairs in the designated location. Specifically, procedure SC.MD-AB.ZZ-0001, Installation of Temporary 4KV Power Cables to CCW and RHR Motors, states that "All equipment required to install jumpers, cooling fans and make cable terminations are located in the Salem Safe Shutdown Equipment Storage Area." Salem Safe Shutdown Equipment Storage Area is located in the Northwest area of the Hope Creek Unit 2 reactor building. An inventory of the designated area in response to inspector inquiries revealed that a significant number of CSD repair materials was found missing. The licensee generated a notification and restocked the missing repair materials.

The finding is more than minor because it is associated with the Mitigating Systems cornerstones attribute objective to ensure the availability of the post-fire cold shutdown system that responds to initiating events to prevent undesirable consequences. Under Manual Chapter 0609 Appendix F, Fire Protection, the finding was evaluated as representing a medium degradation. However, because the equipment involved only effects Cold Shutdown, the finding was determined to be of very low safety significance in accordance with the Fire Protection Significance Determination Process. The performance deficiency had a problem identification and resolution cross-cutting aspect because there was a previous case where cold shutdown repair equipment were found missing and where the corrective actions were ineffective to prevent recurrence.

Inspection Report# : [2006007](#) (*pdf*)

Significance:  Feb 17, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

DEGRADED COMPONENT COOLING WATER VALVE IMPACT ON COMPONENT COOLING WATER HYDRAULIC ANALYSES

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. Specifically, the corrective actions for a degraded condition that impacted the existing design analysis for component cooling water flowrates to safety-related components under certain accident scenarios was inadequate. PSEG had failed to identify and evaluate the impact of a 700 gpm leak-by through a spent fuel pool heat exchanger valve which invalidated existing component cooling hydraulic model design analysis assumptions.

The finding was more than minor because the condition affected the design control performance attribute of the mitigating system cornerstone objective to ensure the capability of systems that respond to initiating events. The team reviewed this finding using the Phase 1 SDP worksheet for mitigating systems and determined the finding was of very low safety significance (Green), because there was no loss of system safety function.

Inspection Report# : [2006006](#) (*pdf*)

Significance:  Feb 17, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

LACK OF SUPPORTING ANALYSES FOR TURBINE DRIVEN AUXILIARY FEEDWATER OPERATION UNDER STATION BLACKOUT CONDITION

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. The team determined that analyses did not exist to verify the availability of the auxiliary feedwater (AFW) equipment and capability to operate during temperature conditions which would exist due to a postulated SBO event.

The finding was more than minor because it affected the design control attribute associated with the mitigating systems cornerstone as related to the availability, reliability, and capability of the AFW system. The team reviewed this finding using the Phase 1 SDP worksheet for mitigating systems and determined the finding was of very low safety significance (Green), because it did not represent a loss of system safety function.

Inspection Report# : [2006006](#) (*pdf*)

Significance:  Feb 17, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE SUPPORTING ANALYSES FOR AUXILIARY FEEDWATER PUMP LOW SUCTION TRIP 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. The technical basis of the AFW pump low suction pressure trip setpoint was not available, and the setpoint appeared to be inadequate to protect the pumps with respect to air entrainment under vortex conditions during a postulated extreme weather event which damages the AFW suction tank. This issue was applicable to all the AFW pumps for both units.

The finding was more than minor because it affected the design control attribute associated with the mitigating systems cornerstone as related to the availability, reliability, and capability of the AFW system. The team reviewed this finding using the Phase 1 SDP worksheet for mitigating systems and determined the finding was of very low safety significance (Green), because it was a design deficiency confirmed not to result in loss of operability. Based on PSEG's evaluation and credit for operator actions to mitigate the condition, the deficiency would not have resulted in the AFW system becoming inoperable given the failure of the AFW suction tank due to an extreme weather event.

Inspection Report# : [2006006](#) (*pdf*)

Significance:  Feb 17, 2006

Identified By: Self-Revealing

Item Type: FIN Finding

FAILURE OF NO. 11 SWITCHGEAR EXHAUST FAN DUE TO LACK OF PREVENTIVE MAINTENANCE PERFORMANCE

A self-revealing finding of very low safety significance (Green) was identified which was associated with the failure of the No. 11 Switchgear return exhaust fan breaker to close and start the fan in October 2005. Specifically, the failure occurred due to latch binding, caused by grease hardening, which was a result of the inadequate implementation of a station procedure which required the performance of preventive maintenance tasks on or before their suggested due dates.

The finding was more than minor because the failure of the 11 switchgear return exhaust fan breaker affected the Mitigating Systems cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. In accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 1 Significance Determination Process screening. This screening determined that a Phase 2 evaluation was required, because the finding represented an actual loss of safety function of one non-Technical Specification Train of equipment designated as risk-significant per 10 CFR 50.65, for greater than 24 hours.

A Phase 3 evaluation was performed instead of a Phase 2 evaluation because the risk informed notebook directed performance of a Phase 3 evaluation for issues involving the Switchgear ventilation system. A Phase 3 Risk Assessment determined this finding to be of very low safety significance (Green). While a performance deficiency was identified with regard to the failure to properly implement a station procedure for a preventive maintenance task, there were no violations identified during the review of this issue.

Inspection Report# : [2006006](#) (*pdf*)

Significance:  Mar 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

INADEQUATE MAINTENANCE PRACTICES RESULT IN UNAVAILABILITY OF THE 11 CONTAINMENT FAN COIL UNIT

A self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified. PSEG maintenance personnel omitted procedure steps to obtain motor vibration data at the conclusion of 11 containment fan coil unit (CFCU) preventive maintenance, and the 11 CFCU motor outboard bearing subsequently failed. PSEG initiated actions to correct this post-maintenance testing problem.

The finding is more than minor because it affected the human performance attribute of the barrier integrity cornerstone objective to provide reasonable assurance that containment barriers protect the public from radionuclide releases caused by accidents or events. The 11 CFCU was unavailable for about 92.5 hours. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors were directed to IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," because the finding represented an actual loss of defense-in-depth of a system that controls containment pressure. The finding was determined to be of very low safety significance (Green) because the Salem Units include a large, dry containment and containment fan coil unit failures do not significantly contribute to large early release frequency. The performance deficiency had a human performance cross-cutting aspect.

Inspection Report# : [2006002](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

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