

Salem 2

4Q/2005 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

THROUGH-WALL LEAKAGE IN REACTOR COOLANT SYSTEM INSTRUMENT TUBING

The inspectors identified a non-cited violation, in that, corrective actions established in July 1998 to identify, clean, and inspect Unit 2 reactor coolant system (RCS) instrument tubing were not implemented. Because these corrective actions were not implemented, four through-wall cracks were identified in RCS instrument tubing in April 2005. This finding was a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions."

Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function, and was not the result of any willful violation of NRC requirements. This finding was more than minor because it was associated with the equipment performance attribute of the initiating events cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shut down as well as power operations. The inspectors determined that the finding was of very low safety significance (Green) using a Phase 1 screening in Appendix A of Inspection Manual Chapter 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." It is expected that a tubing crack would result in an increase in RCS leakage, and operators would take action prior to exceeding Technical Specification limits for RCS leakage. Therefore, assuming worst case degradation, the finding would not result in exceeding the Technical Specification limit for identified RCS leakage and would not have likely affected other mitigation systems resulting in a total loss of their safety function. The performance deficiency had a problem identification and resolution (corrective action) cross cutting aspect.

Inspection Report# : [2005003\(pdf\)](#)

Mitigating Systems

Significance:  Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

22 CONTROL AREA CHILLER INOPERABLE DUE TO INADEQUATE MAINTENANCE PROCEDURE

A self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when the 22 control area chiller tripped due to its associated condenser service water outlet valve (22SW102) failing closed. The 22SW102 valve was identified one month earlier as having significant wear conditions during a preventive maintenance activity. The conditions were not corrected and the valve was returned to service without further evaluation. The wear conditions were an indication of the 22SW102 ultimate failure condition.

This finding is more than minor because it is associated with the equipment performance attribute, and it affected the mitigating systems cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The chilled water system is listed as a mitigating system in Table 2 of the Risk Informed Inspection Notebook for Salem Generating Station, Revision 2, and provides support and cooling for the control area ventilation system and the emergency control air compressors. This issue also impacted the initiating events cornerstone because unavailability of one train of a chiller increased the likelihood of loss of control area ventilation and loss of control air events. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 1 SDP screening and determined a more detailed Phase 2 evaluation was required to assess the safety significance because the finding affected two cornerstones (initiating events and mitigating systems). Using the Phase 2 SDP analysis, the inspectors determined that the finding was of very low safety significance (Green). The performance deficiency has a problem identification and resolution cross-cutting aspect.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Sep 30, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

UNAVAILABILITY OF STATION BLACK-OUT AIR COMPRESSOR DUE TO INCOMPLETE PREVENTATIVE MAINTENANCE

A self-revealing finding was identified for failure to implement corrective actions to create a preventive maintenance task to clean lube oil coolers on the station black-out air compressor (SBOAC). As a result, the SBOAC tripped due to a high air outlet temperature condition during a monthly performance test on August 14, 2005. PSEG entered the failure to perform necessary preventive maintenance into their corrective action program for resolution. The finding was not a violation of NRC requirements because it pertained to non-safety related equipment. The cause of the finding is related to the cross-cutting element of problem identification and resolution.

Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements. This finding was more than minor because it was associated with the equipment performance attribute, and it affected the mitigating systems cornerstone objective to ensure the availability 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 (SDP) screening and determined that the safety function of the SBOAC, which is risk significant per 10 CFR 50.65, was lost for greater than 24 hours. This required that a Phase 2 SDP analysis be performed. Because the Salem Risk-Informed Inspection Notebook did not consistently describe the SBOAC, the regional Senior Reactor Analyst conducted a Phase 3 SDP analysis and determined the issue to be of very low safety significance.

Inspection Report# : [2005004\(pdf\)](#)

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Significance: Sep 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

2A EMERGENCY DIESEL GENERATOR INOPERABLE DUE TO OPERATOR PROCEDURE ERROR

A self-revealing non-cited violation was identified for PSEG's failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Operators performed surveillance procedure steps out of sequence, inadvertently tripping the 2A emergency diesel generator on undervoltage on August 18, 2005. PSEG entered the failure to implement a surveillance procedure into their corrective action program for resolution. The cause of the finding is related to the cross-cutting element of human performance.

Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements. This finding was more than minor because it was associated with the human performance attribute, and it affected the mitigating systems cornerstone objective to ensure the availability 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 and determined the issue to be of very low safety significance. The finding was not a design or qualification deficiency, did not represent a loss of system safety function, did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, did not represent an actual loss of safety function of one or more non-Technical Specification trains of equipment designated as risk significant per 10 CFR 50.65 for greater than 24 hours, and did not screen as potentially risk significant due to external events.

Inspection Report# : [2005004\(pdf\)](#)

G

Significance: Jun 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

UNAVAILABILITY OF 22 CHARGING PUMP DUE TO DISCHARGE CHECK VALVE LEAKAGE

A self-revealing finding was identified when the 22 charging pump was rendered unavailable to repair a degraded discharge check valve. Corrective actions from a similar occurrence on Unit 1 in June 2004 were not implemented in a timely manner to prevent recurrence. This finding was a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Actions."

Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements. This finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that the finding was of very low safety significance (Green) using a Phase 1 screening in Appendix A of Inspection Manual Chapter 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The finding was not a design or qualification deficiency that resulted in a loss of function, did not result in an actual loss of system safety function, did not represent the actual loss of a safety function of a single train for greater than its Technical Specification allowed outage time, and was not screened as potentially risk significant from external events. The performance deficiency had a problem identification and resolution (corrective actions) cross cutting aspect.

Inspection Report# : [2005003\(pdf\)](#)

G

Significance: Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

REACTOR SUMP ROOM DOOR DESIGN DEFICIENCY

The inspectors identified a non-cited violation, in that, the Unit 2 reactor sump room door was contrary to plant design. The configuration discrepancy reduced the available margin to identify and isolate a postulated service water leak from a containment fan coil unit prior to

flooding safety-related equipment during loss-of-coolant accident conditions. The finding was a non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control."

Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements. This finding was more than minor because it was associated with the design control attribute of the mitigating systems cornerstone and affected the objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance (Green) using a Phase 1 screening in Appendix A of Inspection Manual Chapter 0609, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The finding was a design control deficiency that did not result in a loss of function.
Inspection Report# : [2005003\(pdf\)](#)

Significance:  May 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY PROBLEM RESOLUTION FOR REPEAT FAILURES OF 125VDC BATTERY CHARGERS

The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for ineffective and untimely corrective action associated with the 1C1 125VDC battery charger. NRC inspection report 05000272, 05000311/2004004, documented several previous battery charger failures, but timely corrective actions were not implemented to eliminate the identified defective condition for all battery chargers of identical design and like vintage. Consequently, the failure of another battery charger occurred on November 16, 2004.

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the Mitigating Systems cornerstone objective to ensure the capability and reliability of systems that respond to initiating events. The finding was of very low safety significance based upon a Phase 1 SDP, because the finding was not a design deficiency, it did not result in an actual loss of safety function, and it did not screen as potentially risk significant for externally initiating events (seismic, flooding, or severe weather). The performance deficiency had a problem identification and resolution (corrective actions) cross cutting aspect.

Inspection Report# : [2005007\(pdf\)](#)

Significance:  May 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

DEFICIENT CONTROL AREA CHILLER CONTROLS

The team identified non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement timely and effective corrective actions following repetitive failures of the control area chillers due to a deficient temperature control system.

The finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone. This finding affected the cornerstone objective, in that it reduced the availability and reliability of a system that responds to initiating events. The finding was determined to be of very low safety significance (Green) based upon a SDP Phase 1 analysis, because it was not a design deficiency, did not result in an actual loss of safety function, and did not screen as potentially risk significant due to external initiating events (seismic, flooding, or severe weather). The performance deficiency had a problem identification and resolution (corrective actions) cross cutting aspect.

Inspection Report# : [2005007\(pdf\)](#)

Barrier Integrity

Significance:  Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

POOR MAINTENANCE RESULTS IN UNAVAILABILITY OF 25 CONTAINMENT FAN COIL UNIT

A self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when the 25 containment fan coil unit (CFCU) malfunctioned. The malfunction was a result of previous inadequately performed maintenance. Maintenance technicians did not follow work instructions and incorrectly installed an air booster relay diaphragm to an associated air-operated valve, which resulted in equipment unavailability.

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. 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 has a human performance cross-cutting aspect.

Inspection Report# : [2005005\(pdf\)](#)

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Significance: Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE CONTAINMENT CLOSURE PROCEDURE REQUIREMENTS

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for deficient containment closure controls during the Spring 2005 Unit 1 refueling outage. PSEG did not ensure that one of the containment equipment hatches could be closed, either inside or outside of containment, for a postulated event involving core boiling or fission product release. Installation of either hatch required a heavy lift crane. The inside crane would be affected by high temperatures and high humidity on a loss of decay heat removal with the reactor coolant system vented, and the outside crane was unavailable for several hours during high wind conditions.

The finding is more than minor because it affected the procedure quality 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. Based upon the finding representing a potential open pathway in the physical integrity of reactor containment while the unit was shutdown, IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," was used to determine the significance of the finding. Appendix H, Table 6.3 was used for the Phase 1 screen. Based upon Salem Unit 2 being a pressurized water reactor with a large, dry containment and the finding impacting an intact containment penetration, the finding required a Phase 2 analysis. The Phase 2 risk approximation determined the finding to be of low to moderate safety significance. Consistent with IMC 0609 guidance, a Senior Reactor Analyst performed a Phase 3 risk assessment to more accurately identify the risk significance and determined the issue to be of very low safety significance (Green).

Inspection Report# : [2005005\(pdf\)](#)

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Significance: Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

CONTAINMENT CLOSURE REQUIREMENTS NOT SATISFIED

The inspectors identified a non-cited violation for a failure to accomplish containment closure precautions in accordance with established procedures when the outage equipment hatch was blocked with a Sea-Van container during Unit 2 core alterations without a ready overhead crane. This finding was a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings."

Traditional enforcement does not apply because the issue did not have any actual safety consequence or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements. The finding was more than minor because it was associated with the human performance attribute of the barrier integrity cornerstone and affected the objective to provide reasonable assurance that containment barriers protect the public from radio nuclide releases caused by accidents or events. In accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," the inspectors conducted a Phase 1 SDP screening using checklist 4 and determined the finding to be of very low safety significance (Green). The finding did not increase the likelihood of a loss of RCS inventory, did not degrade the ability to terminate a leak path or add RCS inventory when needed, and did not degrade the ability to recover decay heat removal systems once lost. The performance deficiency had a human performance (personnel) cross cutting aspect.

Inspection Report# : [2005003\(pdf\)](#)

Emergency Preparedness

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Significance: Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

INDEPENDENT QUALITY ASSURANCE AUDIT TO ASSESS ALL ELEMENTS OF THE EMERGENCY PREPAREDNESS PROGRAM WAS NOT COMPLETED AS REQUIRED BY 10 CFR 50.54(t)

The inspectors identified that PSEG did not complete an independent quality assurance audit to assess all elements of the emergency preparedness program as required by federal regulations. The finding was determined to be a non-cited violation 10 CFR 50.54(t), "Conditions of Licenses."

Traditional enforcement does not apply because the finding did not have any actual safety consequence or potential for impacting the NRC's regulatory function, and was not the result of any willful violation of NRC requirements. This finding was more than minor because it was associated with all attributes of the emergency preparedness cornerstone and affected the objective to ensure 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 determined that the finding was of very low safety significance (Green) using Appendix B of Inspection Manual Chapter 0609, "Emergency Preparedness Significance Determination Process, Sheet 1, Failure to Comply," because it did not constitute a failure to meet an Emergency Preparedness planning standard or risk significant planning standard.

Inspection Report# : [2005003\(pdf\)](#)

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

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

Miscellaneous

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO IMPLEMENT THE EXECUTIVE REVIEW BOARD PROCESS

The inspectors identified a finding for several lapses in the use of the Executive Review Board (ERB) process. This finding involved not properly implementing a corrective action which had been intended to improve management effectiveness in detecting and preventing retaliation and the creation of a chilling effect. This finding was not a violation of regulatory requirements.

Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function, and was not the result of any willful violation of NRC requirements. This finding was more than minor, because if left uncorrected, it would lead to the potential for retaliation and a chilled work environment. This finding was of very low safety significance (Green), based on management review, because there was no direct impact on human performance or equipment reliability. The performance deficiency had problem identification and resolution (corrective action) and safety conscious work environment cross cutting aspects.

Inspection Report# : [2005003\(pdf\)](#)

Significance: N/A May 02, 2005

Identified By: NRC

Item Type: FIN Finding

SALEM AND HOPE CREEK PROBLEM IDENTIFICATION AND RESOLUTION BIENNIAL INSPECTION

The team determined that, in general, problems were adequately identified, evaluated and corrected. However, the team noted that PSEG's implementation of their corrective action program was inconsistent. The team identified weaknesses in each of the three fundamental areas: problem identification, evaluation, and the effectiveness of corrective actions. The team identified six findings in which PSEG did not properly evaluate and correct conditions adverse to quality. Several staff interviews were conducted during the inspection. The team identified no new safety conscious work environment issues.

Inspection Report# : [2005007\(pdf\)](#)

Last modified : March 03, 2006