Salem 1
4Q/2005 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Dec 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
FREON LEAKS ON '11' CONTROL AREA CHILLER
The team identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG failed to properly evaluate and correct freon leaks on control area chillers. This condition resulted in a trip and unplanned unavailability of the '11' control area chiller. PSEG entered this issue into the corrective action program.

The finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone in that it reduced the availability of systems that respond to initiating events to prevent undesirable consequences. This issue also impacted the Initiating Events cornerstone because unavailability of one chiller train 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 2 SDP evaluation and determined the issue to be of very low safety significance (Green). The performance deficiency had a problem identification and resolution cross-cutting aspect, in that previous evaluations were narrow in scope and did not include periodic monitoring of freon inventory to preclude repeat trips.
Inspection Report# : 2005012*(pdf)*

Significance: G Dec 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE OF 12SW39 RENDERS 1B EMERGENCY DIESEL GENERATOR UNAVAILABLE
The team identified an NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to properly evaluate and correct a known degraded condition on 12SW39, the service water stop valve to the 1B emergency diesel generator (EDG) jacket water and lube oil coolers. PSEG documented degraded operation of the 12SW39 valve in October 2004, when PSEG evaluated a similar failure of the 23SW39 valve to pass its surveillance stroke time test. On September 19, 2005, the 12SW39 valve failed to open causing the 1B EDG to be unavailable until operators opened the valve. PSEG entered this issue into the corrective action program.

The finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Because the valve was demonstrated operable on September 18, 2005, the exposure time for the failure of 12SW39 was less than one day. 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 the issue to be of very low safety significance (Green). 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, and did not screen as potentially risk significant due to external events. The performance deficiency had a problem identification and resolution cross-cutting aspect, in that evaluation of the 12SW39 valve was incomplete and did not provide for adequate corrective actions.
Inspection Report# : 2005012*(pdf)*

Significance: G Dec 31, 2005
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
11 SAFETY INJECTION PUMP INOPERABLE DUE TO OPERATOR PROCEDURE ERROR
A self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified when the 11 safety injection pump discharge valve was discovered closed prior to a routine inservice pump test. The discharge valve was left closed five days earlier at the conclusion of a refueling outage surveillance test due to procedure implementation errors and inadequate operator fundamental standards.

This finding is more than minor because it is 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 IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 1 SDP screening and determined that a Phase 2 SDP analysis was required because the finding represented an actual loss of safety function of a single train for greater than its Technical Specification (TS) allowed outage time. Using the Phase 2 SDP analysis, the inspectors determined that the risk significance of the finding based on internal initiating events that lead to core damage could have been of substantial safety significance. The inspectors referred the results to a senior reactor analyst (SRA) for further review and a more detailed Phase 3 SDP analysis. The SRA completed a Phase 3 analysis of the finding and determined the issue was of very low safety significance (Green). The Salem Standardized Plant Analysis Risk model Revision 3.21, indicated that the finding increased the chance of core damage, over the 132 hour exposure time, on the order of 1 in 200,000,000 or mid E-9. The performance deficiency has a human performance cross-cutting aspect.
Inspection Report# : 2005005*(pdf)*

Significance: G Dec 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE RISK ASSESSMENT
The inspectors identified a non-cited violation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," for a failure to incorporate an unavailable pressurizer power operated relief valve (1PR2) into a risk assessment during emergent maintenance activities. Operators inappropriately assumed that the weekly risk assessments were calculated such that equipment out of service for any portion of the week was calculated out of service for the entire week. The probabilistic risk assessment group changed its practice to only measure risk for actual scheduled maintenance durations.

This finding is more than minor because PSEG failed to adequately consider the unavailability of 1PR2, a risk significant SSC (included in Table 2 of the Salem Phase 2 SDP risk-informed notebook). The finding was evaluated in accordance with Appendix K of Inspection Manual Chapter 0609, "Maintenance Risk Assessment and Risk Management Significance Determination Process," and is determined to be of very low safety significance (Green). This determination is based on PSEG's incremental core damage probability calculated to be 1.7E-9 for the 3.2 hours that 1PR2 was out of service. The performance deficiency has a human performance cross-cutting aspect.
Inspection Report# : 2005005*(pdf)*

Significance: G Dec 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
EMERGENCY CORE COOLING SYSTEMS CONTAINMENT SUMP DEFICIENCIES
The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because operators did not properly follow a surveillance test procedure for inspecting the emergency core cooling systems (ECCS) containment sump during a closeout inspection. Operators did not identify and document gaps in the sump screen during the inspection, as specified in the procedure.

This finding is more than minor because it affected the design control attribute of the mitigating systems cornerstone objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. 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 the issue to be of very low safety significance (Green). The inspectors reviewed a PSEG engineering evaluation for past operability, and concluded that potentially affected ECCS components and the containment spray system were likely capable of performing their intended safety functions. 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. The performance deficiency has a human performance cross-cutting aspect, because a design change package did not close some gaps and operators did not identify other sump gaps.
Inspection Report# : 2005005*(pdf)*

Significance: G 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)*

Significance: G May 02, 2005
Identified By: NRC
Item Type: FIN Finding
COMPONENT COOLING WATER CONFIGURATION CONTROL DEFICIENCY
The team identified a finding of very low safety significance because PSEG did not properly follow its procedural guideline for conducting an apparent cause evaluation (ACE) in response to a component cooling water configuration control problem that caused the 11 residual heat removal heat exchanger to be inoperable.

This finding is more than minor because it is associated with the Mitigating Systems cornerstone's configuration control attribute and affected the cornerstone's objective to ensure the availability and reliability of systems that respond to initiating events. This finding was of very low safety significance (Green) based on a Phase 1 SDP, 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 human performance cross cutting aspect. The individuals performing the ACE did not follow the site procedural guidelines for the conduct of the ACE.
Inspection Report# : 2005007*(pdf)*

Significance: G 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: G Mar 31, 2005
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
MAINTENANCE PRACTICES RENDER A PROTECTION INSTRUMENT INOPERABLE
A self-revealing non-cited violation was identified when the 11 steam generator steam flow protection channel 1 instrument failed downscale due to an open instrument equalizing valve. The equalizing valve was left partially open at the conclusion of calibration activities contrary to procedure requirements. This finding was determined to be 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 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 reliability 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 considered to not represent the actual loss of a safety function of a single train for greater than its Technical Specification allowed outage time, because only one instrument in engineered safety feature (ESF) channel 1 was affected. The 11 steam generator steam line flow channel 2 remained operable as well as other channel 1 ESF signals from low pressurizer pressure, steam line differential pressure, and containment high-high pressure. The finding was also not a design or qualification deficiency that resulted in a loss of function, did not result in an actual loss of safety function, and was not screened as potentially risk significant from external events. The performance deficiency had a human performance (personnel) cross cutting aspect.
Inspection Report# : 2005002*(pdf)*

Significance: G Mar 31, 2005
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
13 AUXILIARY FEEDWATER PUMP STEAM ADMISSION VALVE REPEAT MALFUNCTIONS
A self-revealing, non-cited violation was identified on October 16, 2004, when the 13 auxiliary feedwater pump steam admission valve (1MS132) position indication malfunctioned and the valve stem rotated. Inadequate problem evaluation resulted in recurrent 1MS132 valve issues and the 13 auxiliary feedwater (AFW) pump being unnecessarily unavailable in July 2004 and October 2004. Specifically, the 1MS132 had exhibited stem rotation on three previous occasions, and PSEG did not evaluate the root cause of the valve rotational forces. PSEG also did not evaluate a loose actuator stem nut in July 2004. This finding was determined to be a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action."

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. Senior Reactor Analysts determined that the finding was of very low safety significance (Green) using a Phase 3 analysis. The performance deficiency had a problem identification and resolution (evaluation) cross cutting aspect.
Inspection Report# : 2005002*(pdf)*

Barrier Integrity

Significance: G Dec 31, 2005
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
INADEQUATE MAINTENANCE PRACTICES RESULTED IN UNAVAILABILITY OF 13 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 13 containment fan coil unit (CFCU) malfunctioned. The malfunction was a result of previous inadequately performed maintenance. Maintenance technicians and operations and engineering personnel did not perform comprehensive troubleshooting efforts for an associated service water flow control valve, resulting in repeat malfunctions and extended unavailability of the 13 CFCU.

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)*

Significance: G Jun 30, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
15 CONTAINMENT FAN COIL UNIT INOPERABLE DUE TO CONFIGURATION CONTROL ERROR
A self-revealing finding was identified when the 15 containment fan coil unit (CFCU) failed to start in high speed on May 24, 2005. PSEG determined that charging spring toggle switches on the high and low speed CFCU breakers were mis-positioned during a surveillance test on May 18, 2005. The configuration control error rendered the CFCU inoperable for 160 hours. The 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 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 structure, system, or component performance attribute of the barrier integrity cornerstone and affected the cornerstone 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 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 (LERF). The performance deficiency had a human performance (personnel) cross cutting aspect.
Inspection Report# : 2005003*(pdf)*

Significance: G Jun 30, 2005
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
FAILURE TO PROPERLY INSPECT SILT BUILD-UP IN THE 12 SERVICE WATER ACCUMULATOR LINE
A self-revealing finding was identified when a portion of the 12 service water accumulator outlet line was found nearly full of silt. Established corrective actions to inspect for silt on an eighteenth-month frequency were inappropriately deferred in April 2004. 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 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 structure, system, or component (SSC) 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. The inspectors determined that the finding was of very low safety significance (Green) using Inspection Manual Chapter (IMC) 0609, Appendix H, "Containment Integrity Significance Determination Process," because the CFCUs are not important to large early release frequency, in that, the Salem units have large dry containments and the CFCUs only impact late containment failure and source terms. The performance deficiency had problem identification and resolution (evaluation and corrective action) cross cutting aspects.
Inspection Report# : 2005003*(pdf)*

Emergency Preparedness

Significance: G 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

Significance: G Dec 31, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO SURVEY THE RESIDUAL HEAT REMOVAL PIT
The inspectors identified a non-cited violation of 10 CFR 20.1501, "Surveys and Monitoring," for deficient radiological area access control. An NRC inspector was exposed to unanticipated radiation levels of approximately 72 millirem per hour (mrem/hr) because PSEG radiation protection technicians were not directed to survey a residual heat removal (RHR) room after control room operators established the RHR system in a shutdown cooling lineup. Radiation levels in the area were as high as 150 mrem/hr.

The finding is more than minor because it is associated with the program and process attribute of the occupational radiation safety cornerstone and affected the objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Since this occurrence involved workers' unplanned, unintended dose or potential for such a dose that could have been significantly greater as a result of a single minor, reasonable alteration of circumstance, this finding was evaluated in accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process." The inspectors determined that the finding was of very low safety significance (Green), because it did not involve (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for an overexposure, or (4) an impaired ability to assess dose. The performance deficiency has a human performance cross-cutting aspect.

Inspection Report# : 2005005*(pdf)*

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Significance: G 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